



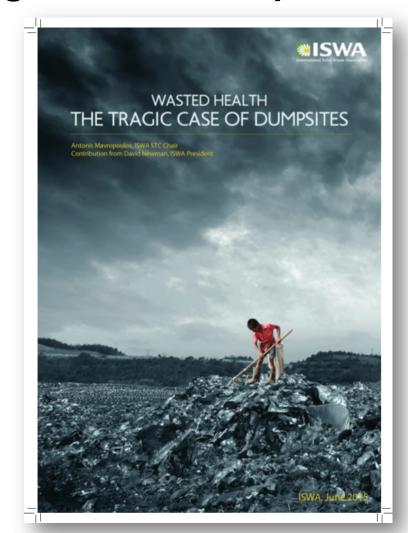






Wasted Health: the tragic case of dumpsites

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Scope of work

- The purpose of this report is to highlight the severe health risks that are posed by dumpsites to tens of millions of people
- The main part of the report presents the scientific evidence for health risks from dumpsites, the impacts on workers, informal recyclers and nearby residents and the factors affecting the extent of those impacts.
- We want to remind all governments and local authorities, all international stakeholders that waste management is first and above all a public health issue



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Dumpsites and environment

Dumpsites Vs controlled disposal





Conceptual Framework

Source: UNEP, Environmental Pollution and Impacts on Public Health: Implications of the Dandora Municipal Dumping Site in Nairobi, Kenya, Summary Report, 2007

Flow Chart of the Public Health Effects brought about by Environmental Pollution emanating from Dandora Waste Dumping Site

DANDORA WASTE DUMPING SITE

- Industrial Waste e.g., falloff or unused chemicals and raw materials, expired products and substandard goods
- Agricultural Waste e.g., pesticides (herbicides and fungicides)
- Hospital Waste e.g., packaging materials and containers, used syringes and sharps, biological waste and pharmaceuticals

ENVIRONMENTAL POLLUTANTS

- Heavy Metals e.g., lead, mercury, cadmium, arsenic, chromium, zinc, nickel and copper
- Persistent Organic Pollutants e.g.,
 aldrin, dieldrin, dichlorodiphenyl-trichloroethane
 (DDT), endrin, heptachlor, toxaphene, chlordane,
 hexachlorobenzene, mirex (organochlorines, or ganophosphates, carbamates) and polychlorinated
 biphenyls (PCBs)

PUBLIC HEALTH EFFECTS

- Skin Disorders Fungal infection, allergic dermatitis,
 pruritis and skin cancer
- Respiratory Abnormalities bacterial upper respiratory tract infections (pharyngitis, laryngitis and rhinitis), chronic bronchitis and asthma.
- Abdominal and Intestinal Problems bacterial enteritis,
 helminthiasis, amoebiasis, liver cancer, kidney and renal failure
- Dental Disorders dental carries and dental pain
- · Ear Infections otitis media and bacterial infections
- Skeletal Muscular Systems back pain
- Central Nervous System impairment of neurological development, peripheral nerve damage and headaches
- Eye Infections allergic conjunctivitis, bacterial eye infections
- Blood Disorders Iron deficiency anaemia
- Others malaria, chicken pox, septic wounds and congenital abnormalities, cardiovascular diseases and lung cancer

ROUTES OF EXPOSURE

These toxicants can be found in air, water and soil and could find their way into the human body through:

- Inhalation movement of air from the external environment through the airways during breathing
- Ingestion the consumption of a substance by an organism either man or animals
- Absorption the movement and uptake
 of substances into cells or across tissues such
 as skin by way of diffusion or osmosis



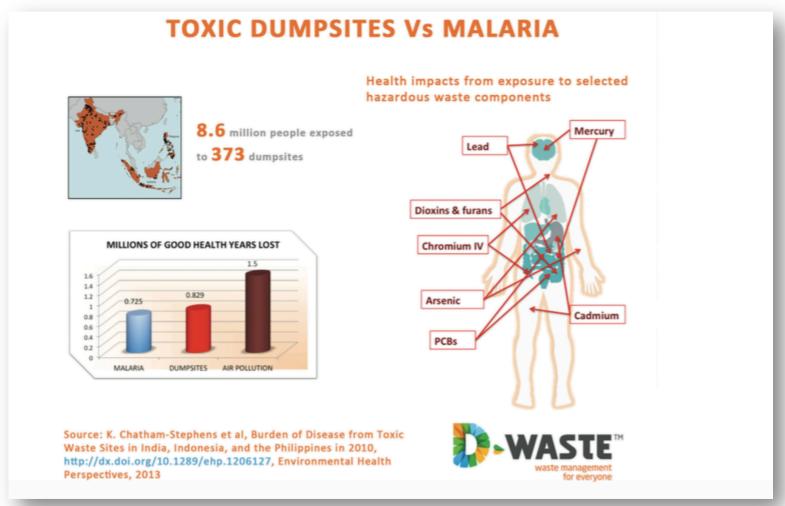
Key-findings: Great gains by sanitary landfills!

SOURCES OF EMISSIONS

- a. The wastes as they are brought onto site, normally in heavy vehicles,
- b. Emissions from transport and bulldozers, compactors etc.
- c. Waste blown by the wind as it is tipped or deposited at the dumpsite,
- d. Dust generated from the surface of the dumpsite and when waste is tipped or unloaded
- e. Historical waste that have been already disposed off,
- f. Any gas generated as the waste decomposes (if not collected and treated)
- g. Any leachate produced as the waste decomposes
- h. The discharges from any processes used to treat the leachate (if any at all).



Key-findings: Hazardous waste dumpsites are worst than malaria!





Key-findings: E-waste poses new threats

	Component of electrical and electronic equipment	Ecological source of exposure	Route of exposure
Persistent organic pollutants			
Brominated flame retardants	Fire retardants for electronic equipment	Air, dust, food, water, and soil	Ingestion, inhalation, and transplacental
Polybrominated diphenyl ethers			
Polychlorinated biphenyls	Dielectric fluids, lubricants and coolants in generators, capacitors and transformers, fluorescent lighting, Ceiling fans, dishwashers, and electric motors.	Air, dust, soil, and food (bioaccumu- lative in fish and seafood)	Ingestion, inhalation or dermal contact, and transplacental
Dioxins			
Polychlorinated dibenzodioxins and dibenzofurans	Released as combustion byproduct	Air, dust, soil, food, water, and vapor	Ingestion, inhalation, dermal contact, and transplacental
Dioxin-like polychlorinated biphenyls	Released as a combustion byproduct but also found in dielectric fluids, lubricants and coolants in generators, capacitors and transformers, fluorescent lighting, ceiling fans, dishwashers, and electric motors	Released as combus- tion byproduct, air, dust, soil, and food (bioaccumulative in fish and seafood)	Ingestion, inhalation, and dermal absorption
Perfluroalkyls	Fluoropolymers in electronics	Water, food, soil, dust, and air	Ingestion, dermal contact, inhalation, and transplacental
Polyaromatic hydrocarbons			
Acenaphthene, acenaphthylene, anthracene, benz[a]anthracene, benzo[a] pyrene,benzo[e]pyrene, benzo[b]fluoranthene, benzo[g,h,i] perylene, benzo[j] fluoranthene,benzo[k] fluoranthen e,chrysene,dibenz[a,h]anthracene, fluoranthene, fluorene,indeno[1,2,3-c,d] pyrene, phenanthrene, and pyrene	Released as combustion byproduct	Released as combus- tion byproduct, air, dust, soil, and food	Ingestion, inhalation, and dermal contact



Key-findings: Open burning is criminal

Table 5: Emissions from burning dumps and landfill fires (ng/m3)⁶³

Compound	Controlled landfill fire	Uncontrolled landfill fire
Acenaphthylene	90	60
Acenaphthene	50	30
Fluoranthene	100	50
Phenanthrene	520	30
Anthracene	160	85
Fluorene	120	180
Pyrene	120	170
Benzo [a] anthracene	60	60
Chrysene	80	70
Benzo [b&k] fluoranthene	50	20
Benzo [a] pyrene	20	15
Indeno [1,2,3-cd]pyrene	10	10
Dibenz [a,h] anthracene	10	10
Benzo [g,h,i]perylene	10	10
Total PAHs	1480	810
Total PCBs	15.5	590



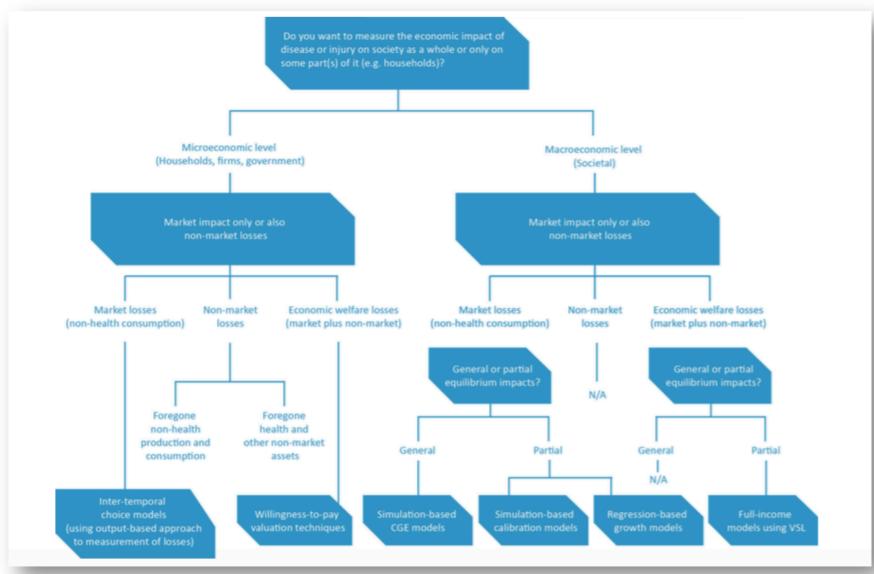
OCCUPATIONAL HEALTH ISSUES

Prevalence	Seriousness
Joint pain	Infectious diseases
Injuries / cuts	Respiratory issues
Respiratory issues	Skin infection
Gastrointestinal disorders	Gastrointestinal disorders
Fatigue	Injuries / cuts
Skin infection	Joint pain
Infectious diseases	Fatigue



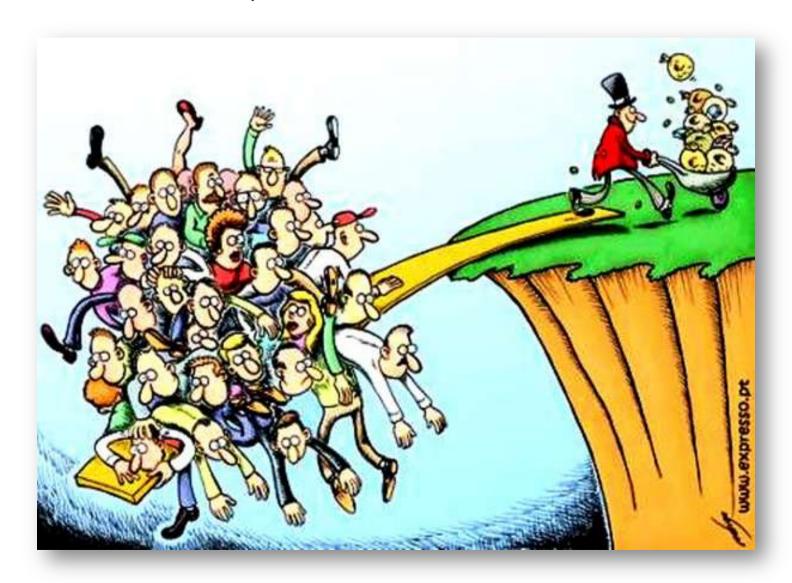


ECONOMIC COSTS





AN ISSUE OF INEQUALITY





Key-findings: An assessment of the dumpsites cost in Brazil!

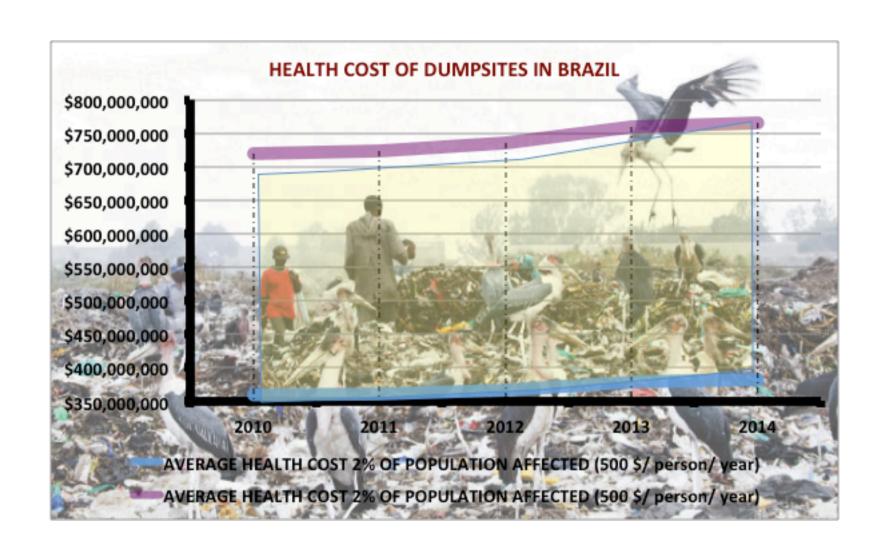
METHODOLOGY

- a. ABRELPE PANORAMA data as basis for calculations
- b. Assessment of environmental cost through externalities
- c. Assessment of health cost through benefits' losses
- d. Scientific evidence in key-documents of EU Commission, OECD reports etc.





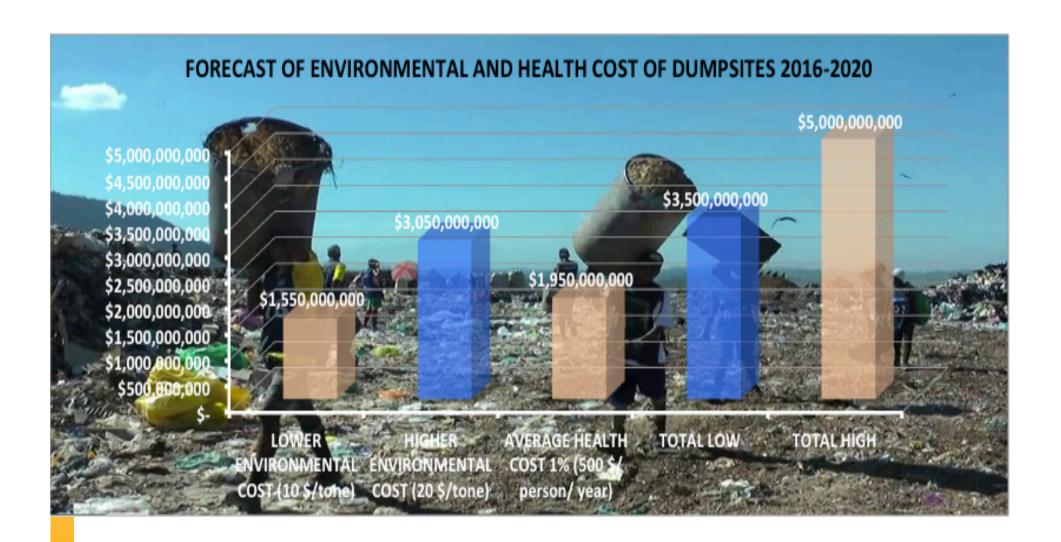














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Who and how pays this cost?

- Healthcare cost
- Cost for water purification
- Cost of soil degradation
- Cost of fires due to dumpsites
- Cost transferred to their closure and rehabilitation
- Cost of environmental degradation transferred to next generations



CONCLUSIONS - 1

Close the dumpsites

National Campaign

Develop local road maps and transit solutions



CONCLUSIONS - 2

Review of the legal, institutional and financial framework for advanced treatment schemes

Support measures for market development

Step by step guides for SW treatment plans

Decision-making seminar for MPs