



**WASTE
CLASSIFICATION**
By
Mahtab Asari

The Main Objectives of This Session



This session provided some information about the:

Various kinds of waste and most applicable classification with focus on Basel convention.

Criteria involve in Waste's Classification

1. Generator;
2. Chemical and physical properties ;
3. Organic and inorganic;
4. Composition; and
5. Hazardous properties.



GENERATOR

- **Household**
- **Commercial**
- **Cafe and restaurant, hotels, food stalls**
- **School, universities, laboratories**
- **Retail operation (shops, supermarkets, warehouses, etc.)**
- **Markets**
- **Public facilities (sport grounds, street sweeping and cleaning)**
- **Hospitals and other health care facilities**
- **Mine and mineral processing facilities**
- **Agriculture and food processing facilities**
- **Fishing and fish processing facilities**
- **Forestry operations**
- **Building sites**
- **Manufacturing facilities**
- **Water treatment and swede treatment facilities**
- **Land transport facilities (truck depot, bus and train stations and terminals)**

CHEMICAL AND PHYSICAL PROPERTIES

It is important for treatment plants to have knowledge of the physical and chemical properties of the waste, so that they treat it properly. Some important properties are:

- 1. Calorific Value**
- 2. Moisture content**
- 3. Density/Specific weight**
- 4. Grain Size**
- 5.**
- 6.**

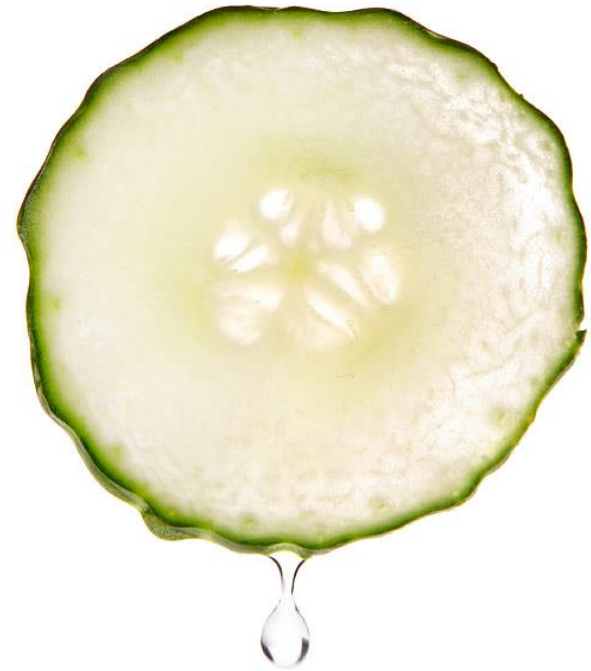
1. Calorific Value

- ❑ The amount of energy per kilogram of waste.
- ❑ Selling the waste as a fuel is usually more lucrative than having it recycled.



2. Moisture content

- ❑ Water content in percent.
- ❑ High water content usually means higher treatment costs, since the waste will be less useful as a fuel, and because in most cases it can be released to sewage or recipient.





3. Density/Specific weight

- ❑ The ratio between the mass and volume of the waste.
- ❑ This is important for the most aspects of handling and design of treatment plants.
- ❑ Light waste requires large storage volumes and more vehicles to transport it.

4. Grain Size

- ❑ Grain Size: is an important parameter for all aspects of handling.
- ❑ Small grains are more prone to be swept away by the wind and thus more difficult to keep in place.



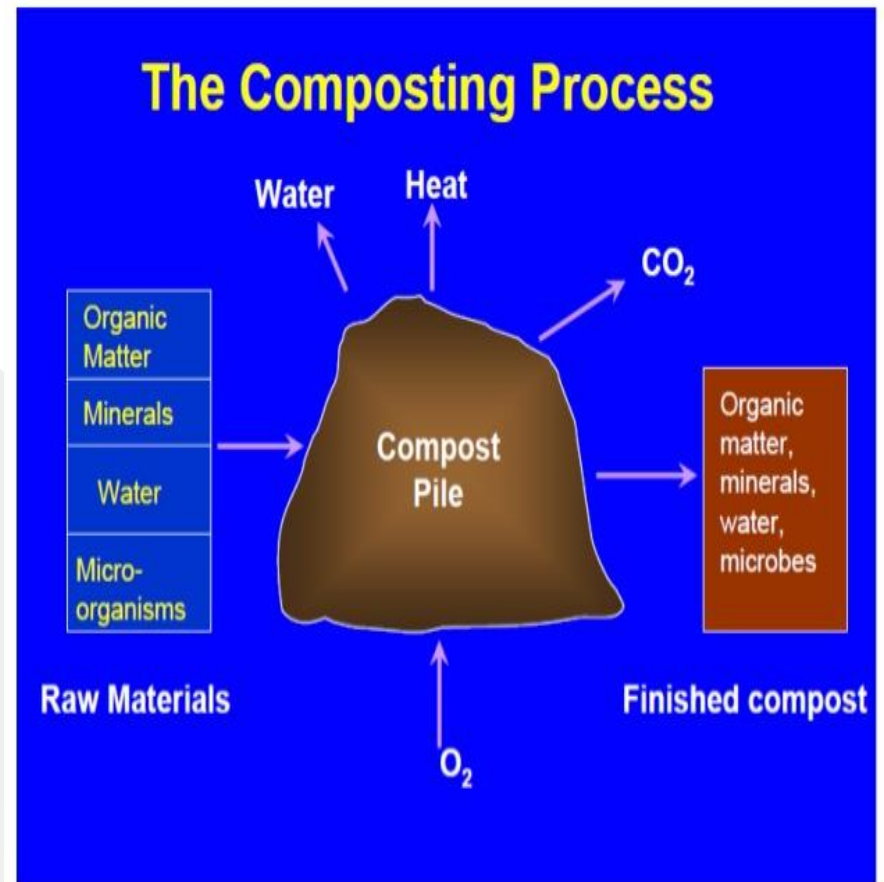
Feature	Organic	Inorganic
Major constituent	Carbon	Metals are common
Chemical complexity	Varies from quite simple to highly complex	Usually simple(with the exception of silicate mineral)
Energy content	Usually high (with the exception of water).	Usually low, but can be reactive.
flammability	Flammable	Not Flammable
Type of Treatment	Incineration	Physical or Chemical Treatment

III. Composition

composition is a description of contents of the waste.

Waste composition means finding out how much paper, glass, food waste, etc.

Waste composition information helps in planning how to reduce waste, set up recycling programs, and conserve money and resources.

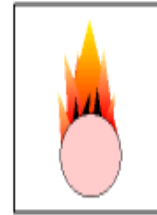


IV. Hazardous and Non Hazardous Waste

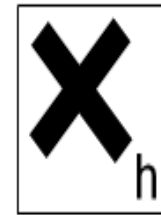
Hazardous waste is solid, liquid, or gaseous material because of some characteristics such as:

- Flammable,
- Oxidizing,
- Poisonous,
- Infectious,
- Corrosive,.....

may pose a hazard to human health or the environment.



Oxidising



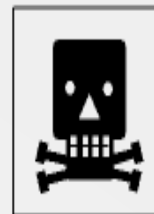
Harmful



Highly
Flammable



Corrosive



Toxic



Irritant

Various Kinds of Hazardous Waste

1. Chemical waste
2. Clinical waste
3. Radioactive waste

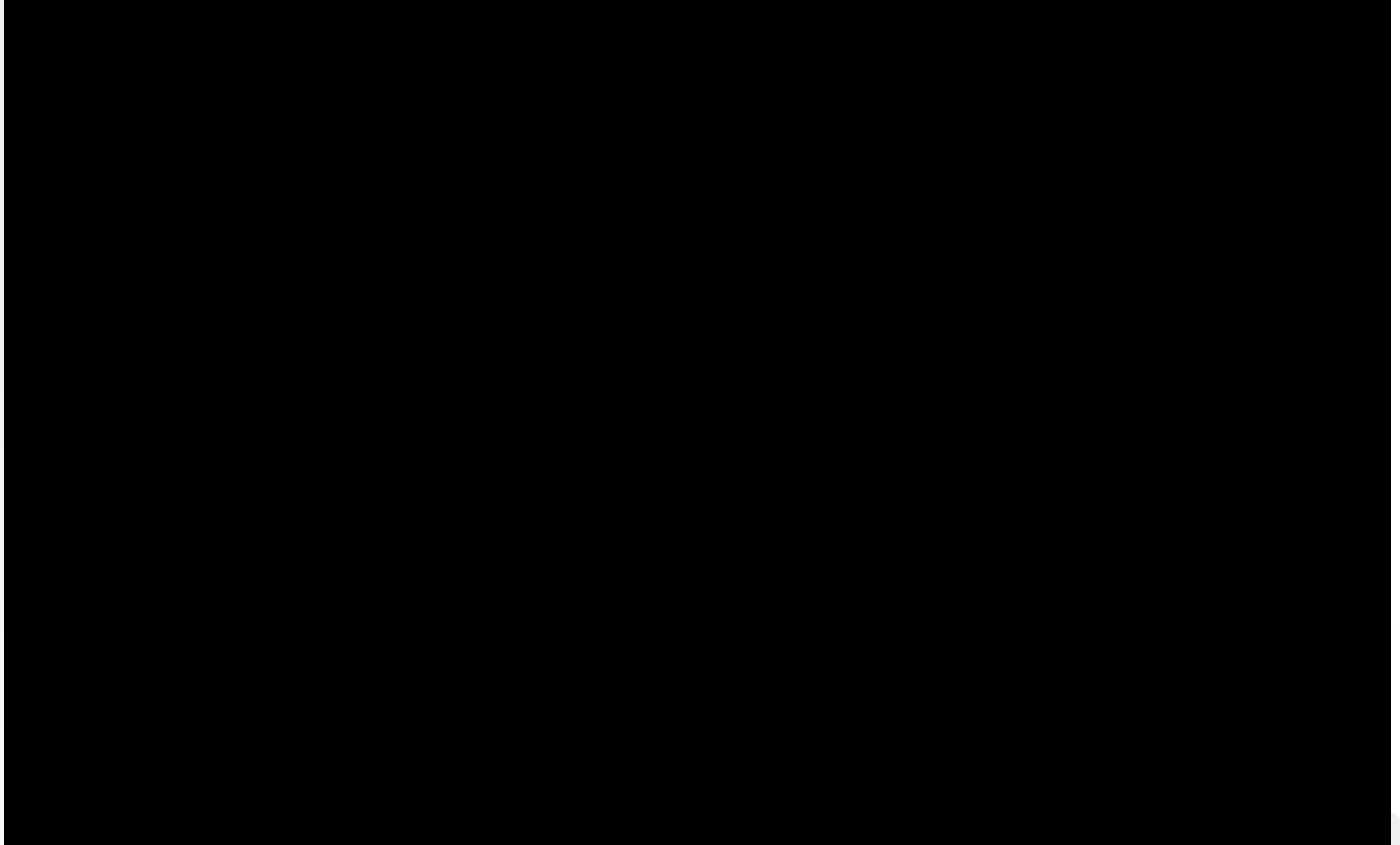


1.CHEMICAL WASTE



- This is an inaccurate term that is most often used to describe the hazardous fraction of industrial waste.
- Such waste needs special handling to avoid dispersal of the waste.
- One good example is an ordinary household fire extinguisher.

CHEMICAL WASTE EXISTED IN HOME





2. Health-Care Waste

Categories of health care waste

1. Sharps
2. Infectious
3. Phatological
4. Chemical
5. Radioactive



1.Sharps

e.g. hypodermic, intravenous or other needles; auto-disable syringes; syringes with attached needles; infusion sets; scalpels; pipettes; knives; blades; and broken glass.



III. Infectious:

- Infectious waste is material suspected to contain pathogens (bacteria, viruses, parasites or fungi) in sufficient concentration or quantity to cause disease in susceptible hosts.
- This category includes: waste contaminated with blood or other body fluids, cultures and stocks of infectious agents from laboratory work,



I V. Pathological

This category combined human tissues, organs or fluids; body parts; and unused blood products.



VI. Chemical:

Waste containing chemical substances

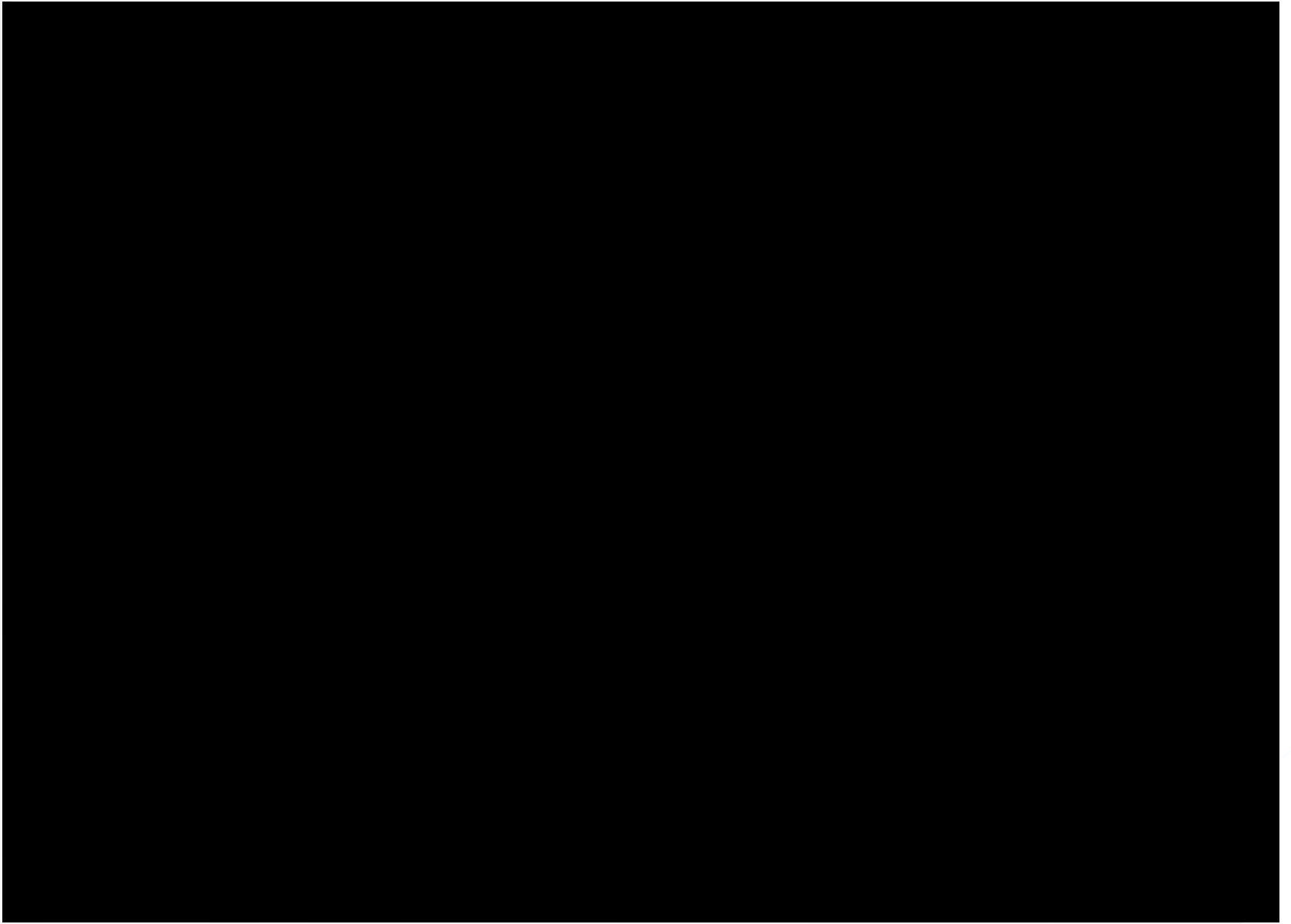
(e.g. laboratory reagents; film developer; solvents; waste with high content of heavy metals, e.g. batteries; broken thermometers and blood pressure)

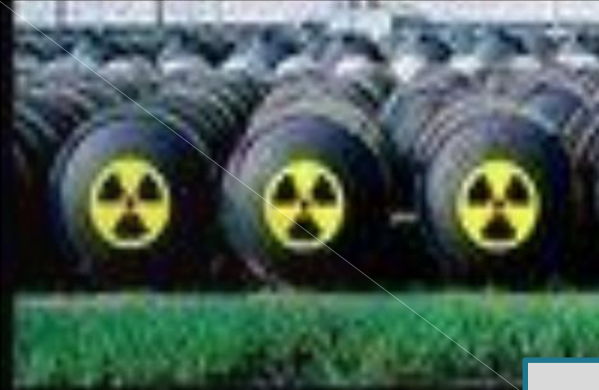


VII. Radioactive:

❑ Waste containing radioactive substances (e.g. unused liquids from radiotherapy or laboratory research; contaminated glassware, packages, or absorbent paper; urine and excreta from patients treated or tested with unsealed radionuclides; sealed sources)







3 . Radioactivity





❑ Recently nuclear power has entered many discussion as world energy need rise and oil reserves diminish.....

❑ Nuclear waste is any form of byproduct or end product released radioactivity.

❑ How to safely dispose of nuclear waste is pivotal for the continued operation of nuclear power plants, safety of people living around dump sites, and prevention of proliferation of nuclear material to non nuclear states.

Nuclear Waste Management

- ❑ Typically kept separate from actual plants and buried far below ground.

- ❑ First used in 1999 in the US.



Yucca Mountain Site

1. Which kinds of waste produced more in your home town? Does it relate to special time?

2. Does this issue lead to some sort of temporary problems?

3. Are there any special waste in your home town which not mentioned here?



THANKS FOR YOUR ATTENTION