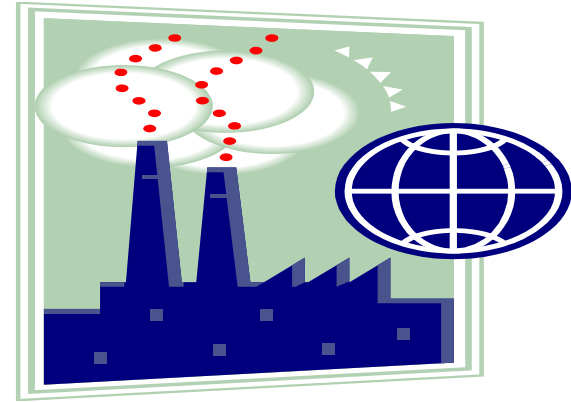


Subject: Building Services-I

Topic: Garbage

Presented by: Anika Singh

Solid Waste



INTRODUCTION

WHAT S WASTE ?

- WASTE IS ALSO KNOWN AS **RUBBISH, REFUSE, GARBAGE, JUNK.**
- IT IS DEFINED AS AN UNWANTED OR USELESS MATERIALS.
- IN BIOLOGY, WASTE IS DEFINED AS THE UNWANTED SUBSTANCES EXPELLED FROM LIVING ORGANISMS, METABOLIC WASTE SUCH AS UREA AND SWEAT.



• TYPES OF WASTE

- I. SOLID WASTE
- II. LIQUID WASTE
- III. BIO-DEGRADABLE
- IV. NON-BIODEGRADABLE
- V. HAZARDOUS WASTES
- VI. NON-HAZARDOUS



Kinds of Wastes

- **Solid wastes:** wastes in solid forms, domestic, commercial and industrial wastes examples: plastics , bottles, cans, papers, scrap iron, and other trash.
- **Liquid wastes:** wastes in liquid form examples: domestic washings, chemicals, oils, waste water from ponds, manufacturing industries and other sources.
- **Bio-degradable** :can be degraded (paper, wood, fruits and others).
- **Non-biodegradable** :cannot be degraded (plastics, bottles, old machines, cans, styrofoam containers and others)
- **Hazardous wastes:** substances unsafe to use commercially, industrially, agriculturally, or economically and have any of the following properties- ignitability, corrosivity, reactivity & toxicity.
- **Non-hazardous** : substances safe to use commercially, industrially, agriculturally, or economically and do not have any of those properties mentioned above. These substances usually create disposal problems.

CLASSIFICATION OF WASTES ACCORDING TO THEIR ORIGIN AND TYPE

- **Municipal solid wastes:** solid wastes that include household garbage, rubbish, construction & packaging materials, trade refuges etc. Are managed by any municipality.
- **Bio-medical wastes:** solid or liquid wastes including containers, products generated during diagnosis, treatment & research activities of medical sciences.
- **Industrial wastes:** liquid and solid wastes that are generated by manufacturing & processing units of various industries like chemical, petroleum, coal, metal gas, sanitary & paper etc.
- **Agricultural wastes:** wastes generated from farming activities.
- **Fishery wastes:** wastes generated due to fishery activities.
- **E-wastes:** electronic wastes generated from any modern establishments. They may be described as discarded electrical or electronic devices. Some electronic scrap components, such as crts, wires, circuits, mobile, computers etc.

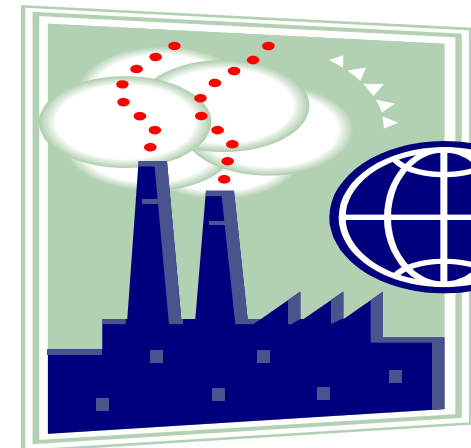
SOURCES OF WASTES



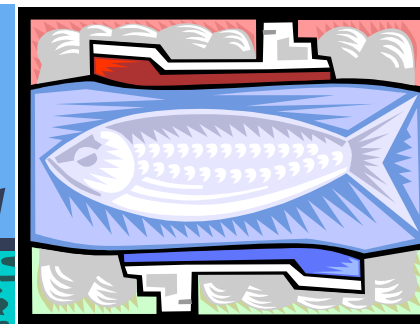
HOUSEHOLD



AGRICULTURE

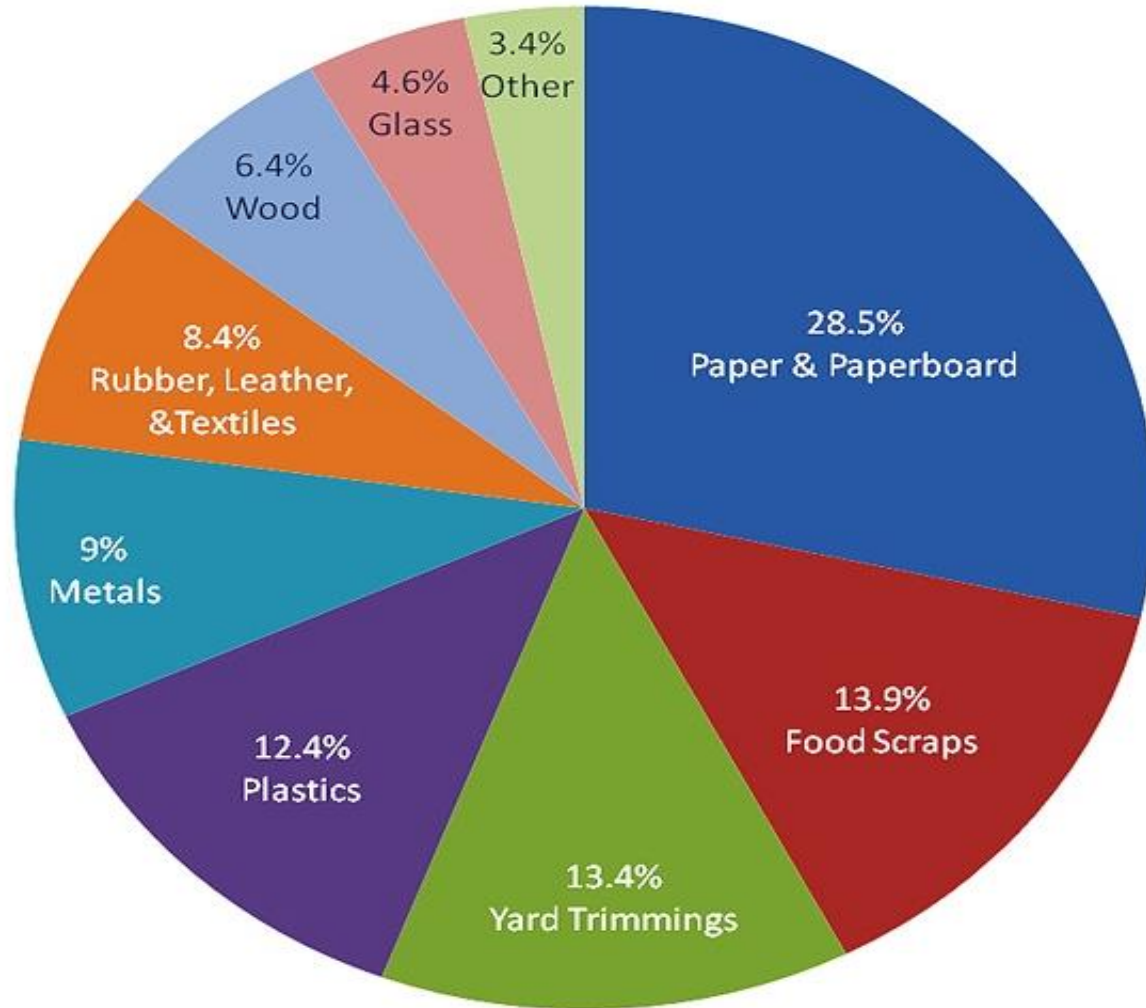


INDUSTRY



FISHERIES

SOURCES OF WASTES



■ Paper and Paperboard

■ Food Scraps

■ Yard trimmings

■ Plastics

■ Metals

■ Rubber, Leather, & Textiles

■ Wood

■ Glass

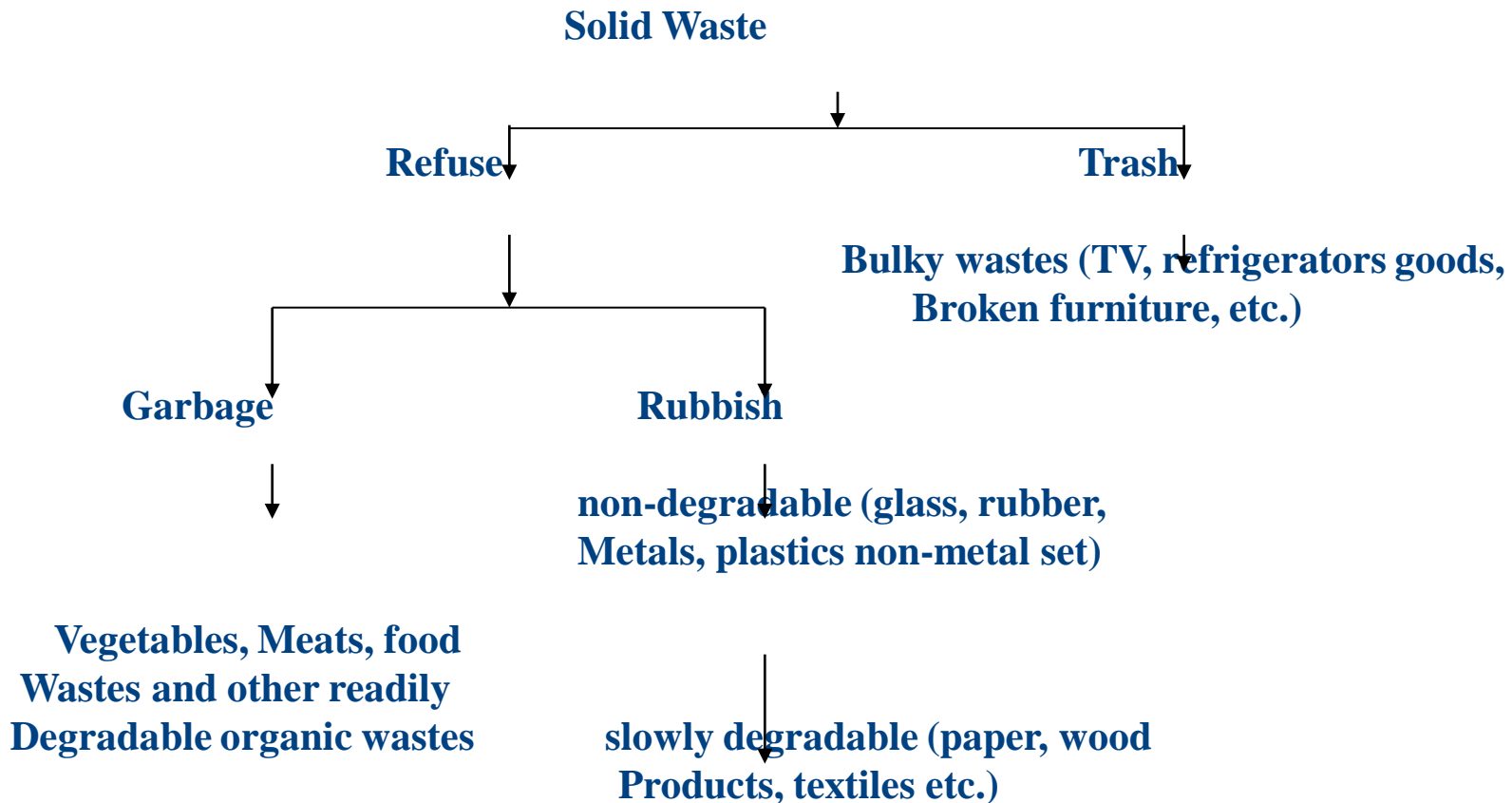
■ Other



The type of litter we generate and the approximate time it takes to degenerate

Type of litter	Approximate time it takes to degenerate the litter
Organic waste such as vegetable and fruit peels, leftover foodstuff, etc.	a week or two.
Paper	10–30 days
Cotton cloth	2–5 months
Wood	10–15 years
Woolen items	1 year
Tin, aluminium, and other metal items such as cans	100–500 years
Plastic bags	one million years?
Glass bottles	undetermined

STRUCTURE OF SOLID WASTE



RATES OF SOME ASIAN COUNTRIES

Country	GNI ^a	Waste generation [kg/capita day]	Reference
Nepal	240	0.2 - 0.5	(UNEP, 2001)
Cambodia	260	1.0	(Yem, 2001)
Lao PDR	290	0.7	(Hoorweg, 1999)
Bangladesh	370	0.5	(Hoorweg, 1999)
Vietnam	390	0.55	(Hoorweg, 1999)
Pakistan	440	0.6 - 0.8	(World Wildlife Fund, 2001)
India	450	0.3 - 0.6	(Ahmed, 2000; Akolkar, 2001)
Indonesia	570	0.8 - 1.0	(Mukawi, 2001)
China	840	0.8	(Hoorweg, 1999)
Sri Lanka	850	0.2 - 0.9	(Jayatilake, 2001; Hoorweg, 1999)
Philippines	1040	0.3 - 0.7	(World Bank, 2001)
Thailand	2000	1.1	(Hoorweg, 1999)

RATES WHICH ARE APPLIED ON SOME OF THE ASIAN COUNTRIES
AR AS FOLLOWS

MSW GENERATION FROM THE METROPOLITANS OF INDIA

<i>State/Union Territory</i>	<i>City</i>	<i>Urban Population in Lakhs (2001)</i>	<i>MSW generated (MT/day)</i>
Andhra Pradesh	Hyderabad	3829753	957
Andhra Pradesh	Visakhapatnam	982904	246
Bihar	Patna	1961532	588
Delhi	New Delhi	350000	272
Delhi	Delhi	13363471	6000
Gujarat	Ahmedabad	4215497	1265
Gujarat	Surat City	2433835	730
Gujarat	Vadodara	1491045	447
Karnataka	Bangalore	1304008	326
Kerala	Kochi	275225	69
Maharashtra	Mumbai	11914398	7500
Maharashtra	Nagpur	2040175	700
Maharashtra	Pune	2540000	1000
Madhya Pradesh	Bhopal	1482718	445
Madhya Pradesh	Indore	1550880	465
Punjab	Ludhiana	1429709	500
Rajasthan	Jaipur	1870771	561
Tamil Nadu	Chennai	4343645	1086
Tamil Nadu	Coimbatore	1501373	375
Tamil Nadu	Madurai	1233083	308
Uttar Pradesh	Kanpur	2725207	954
Uttar Pradesh	Lucknow	2262369	792
Uttar Pradesh	Varanasi	1250039	438
West Bengal	Kolkata	4572876	1143
Grand Total	-	70924513	27167