**Assignment (4)**

1. **Exlain what municipal solid waste (MSW) mean**.

Municipal solid waste (MSW),commonly known as trash or garbage in United States and rubbish in Britain ,is a waste type consisting of everyday items that are discharged by public.Garbage can also refer specifically to food waste ,as in a garbage disposal.The two some time collected separately.In the European Union the ematic definition is mixed municipal waste, given waste code 2003 in the European waste catalog. Although the waste may originate from a number of sources that has nothing to with a municipality.The traditional role of municipalities in collecting and managing these kind of waste have produced the particular etymology. ,,municipal,,

The compositon of municipal solid waste varies greatly from a municipality to municipality and its change specifically with time.In municipalities which have a well developed waste recycling system,the waste stream mainly consist of intractable wastes such as plasticfilm and recyclable packaging materials.at the start of the 20th century,the majority of domestic waste 33 percent in the UK consisted of coah ash from open fire.In developed areas without significant recycling activity it predominatly included,food waste,plastic containersand product packaging materials and others miscellaneous solid wastes from residential,commercial,institutional and industrial sources.Most definition of municipal solid wastes,agricultural wastes,and medical wastes or sewageslunge.Waste collection is performed by the municipality within a given area.The term residual waste relates to waste left from household sources containing materials that have not been separated out or send for processing .waste can be classified in a several ways but the following list represented a typical classification,

* Bioegrrable waste:Food and kitchen waste,green waste,paper,most can be recycled although some difficult to compose plant materials may be excluded
* Recyclable materials :paper,cardboard,glass,bottle,Jars,tins cans,aluminium foil,mentals,certain plastics,fabric,clothes,tires,batteries ect
* Insert waste:consyruction and demolition waste,dirt,rocks,debris.
* Eletreical electoric waste(WEEE):electrical appliances,light bulbs,washing machines,TV,computers,screens,maobile phones,alarm clocks,watches.
* Composite waste:waste clothing,tetra packs ,waste plastic such as toys
* Hazardous waste including most paints,chemicals tires,batteries,lightbulbs,fluresent lamps,aerosol spray cans,and fertilizers.
* Toxic waste including pesticisides,herbicides,and fungicides.
* Biomedical waste,expired pharmacentical drugs ect

Component of solid waste management,municipal solid waste industry has four components:recycling,composing,disposal ,and wastetenegy via incineration.There is nosingle approach that can be applied to the management of all waste streams,therefore,the environmental protection agency,US federal government agency developd a hierarch ranking strategy for municipal solid waste.

The waste management hierarchy is made up of four levels odered from mos tperferred methods based on their environmental soundness:source reduction and reuse:recycling or composting,energy recovery,treatment and disposal. Collection,the functional element of collection including not only the gathering of solid wasteand recyclable materials,but also the transport of these materials after collection to the location where the collection vehicle is emptied. The location may be a materials processing facility,transfer station or landfills disposal sites. Waste handling and separation,storage and processing at the source waste handling and separation involves activities associated with waste management until the waste is placed in the storage containers for collection.Handling also encompasses the movement of loaded containers to the point of collection.separating different types of waste components is an important step in the handling and storage of solid waste at the source of collection.

**(2) Explain the importance of the following MSW properties insolid waste management or treatment**.

When people think about solid waste management, they likely associate it with garbage being dumped in landfills or incinerated ,while such activities comprise an important part of the process,a variety of elements is involved in the creation of an optimal intergrated solid waste management (ISWM) system eg treatment techniques act to reduce the volume and toxicity of solid waste.These steps can transform it into a more convient form for disposal.water treatment and disposal methods are selected and used based on the form ,composition,and quanity of waste materials.here are major waste treatment and disposal methods.Thermal treatment:Thermal waste treatment refers to the process that use heat to treat waste materials. Following are some of the most commonly used thermal waste treatment techniques:

* Incinteraion is one of the most common waste treatment,this approach involves the combustion ofwaste matrials in the presence of oxygen.This thermal treatment method is commonly used as a means of recovering energy for electricity or heating.this approach has several advantages.it quickly reduces waste volum,lessens transportation cost and decrease harmful greenhouse gas emissions.
* Gasification and phyrolysis are two similar methods, both of which decompose organic waste materials by exposing waste tolow amount of oxygen and very high temperature.phyrolsis uses absolutely nooxygen while gasification allows a very low amount of oxygen process.gasificationis more advantangeous as it allows the burning process to recover energy without causing air pollution.
* Opening burning is a legacy thermal waste treatment that is environmentally harmful.The incinteraions used in such process have no pollutioncontrol devices.
* Therelease substances such as herachlorobenzen ,dioxins,carbon monoxide,particulate matter,volatile organic compounds,polcyclic aronmatic compounds,and ash.cinfortunatlly,this method is still practiced by many local authorities internationally,as offers inexpensive solution to solid waste.Dump and landfills: Sanitary landfills provide the most commonly used waste disposal solution.These landfills are desired to eliminate or reduce the risk of environmental or public health hazards due to waste disposal.These sites are situated where handfeatures work as naturalbuffers between the environment and the landfills.For instance,the landfills area can be comprised of clay soil which is uite resistance to hazardeous wastes or is characterized by an absence of surface water bodies or a low water table,prevating the risk of water pollution.The use of sanitary landfills present the least health and environmental risk but the core of establishing such landfills is comparatively higher than other waste disposal metods.Controlled dumps are more or less the same as sanitary landfills.The dumps comply with many of the requirement for being a sanitry landfills but, may lack one or two such dumps may have no cell.planning there may be no or practical gas management basic record keeping or regular cover. Bioreactor landfills are the result or recent technological reseach.These landfills use superior microbiological processes to speed up waste decomposition.The controlling feature is the continuos addition of liquid to sustain optimal moisture for microbial digestion.The liquid is added by recirculating the landfills leachat when amount of leachate is not adequate,liquid waste such as sewage sludge is used.Biologica lwaste treatment compostion is an other most frequently used waste disposal or treatment method which is the controlled aerobic decomposition or organic waste materials by the action of small invertebrate and miroganism.The most common composing tecniques include static pile composing vermin compositing,windrow composting and invessel compositing.
* Solid waste refer to the range of garbage arising from animals and human activities that are discharded as unwanted and useless.Solid waste generated from industrial,residential and commercial activities in a given area,and may be handled in avariety ways.As such, landfills are typically classified as sanitary,municipal,construction and demolition or industrial waste sites.Regardless of the origin,conent or hazard aotentical,solid waste must be managed systemically to ensure environmental best practices.As solid waste management is a critical aspect of environmentally hygiene,it needs to be incoperate intoenvironmental planning.Solid waste management is defined as the displine associated with control of generation,storage ,collection ,transport or transfer,processing and disposal of solid waste materials in a way that best addresses the range of public health,conservation economics,esthetic,engineering and other environmental consideration. In it scope ,solid waste management includes,planning,administrative,financial,engineering and legal functions.Solution might include complex interdiaplinary relations among fields such as public health ,city and regional planning,political science,geography,sociology,economics communication and conservation,demography,engineering. Objectives of waste management.The primary goal of solid waste management is reducing and eliminating adverse impacts of waste materials on human health and environment to support economic development and superior uality of life.

**Six elements of waste management systems:There are six functional components outline below,**

1. Waste generation:refer to activities involved in identifying materials which are nolonger usable and are either gathered for systematic disposal or thrown away.
2. Onsite handling ,storage ,and processing;are the activities at the point of waste generation facilitate easier collection,eg,waste bin are placed at the sites which generate sufficient waste.
3. Waste collection,a crucial phase of waste management,include activities such as placing waste collection bris,collecting waste from those brins and accumulating trash in the location where the collectionvehicle are emptied.

(3**) Outline the advantages and disadvantages of sources separation of MSW**

1. **Advantanges or Benefits:**waste management involves the collection and disposal of both hazardeous and non—hazardeous wastes from all the sectors of society. We shall now looked into details the advantages of waste management or benefit of proper garbage disposal.

* This practice is highly lucractive:The jounal of waste management say that revenue generated by the waste management would top by and 60 million by 2018 but,there are only a few people who sincerely considered this as an industries varous facets of waste management like recycling and reap the benefits
* Keep the environment clean and fresh:perhaps,the greatest advantange of waste management is keeping the environment fresh and neat.These disposal units also makes disposed and taken care of more number of waste disposal unite can be placed in all the tier-1 and tier -2 cities,so that the waste disposal process can be prepared up
* Save and conserves enegy:This characteristic of the waste management includes specifically the recycling aspect .As a recycling of waste helps in reducing the cutting down trees.This cutting of trees is mainly done for the production of papers,by using method,we can use recycled waste to make uality papers rather than recycling on trees.also,recycling needs only minimal amount of energy for unitilzation and complete processing.the resultant product we obtain is renewable source of energy and is eco-friendly.
* Reduces environmental pollutions:As explain above,waste management is done in a proper manner not only eliminates the sourrounding waste but also will reduce intensity of the greenhouse gases like methane,carbon monoxide which is emitted from the waste accumulated.The depth of exising landfills and incineration will be curbed ,thereby cutting down the harmful factors that affect the environment
* Waste management will help you earn money:can you believe if I say what I have said above is absolutely true? Yes,waste management earn you a few extra bucks every month.Actually,there are many companies will pay you for your waste ,right from old and used bottles cans to tins and e-waste s,all kinds of waste are collected and paid.These wastes arenthen segregated according to the extent of pollution they cause to the environment and these waste are recycled accordingly for varous purposes

There are also crash causes available which will aid you to reuse your trash.Above all,by following this method ,you can create an awareness to your fellow people by earning money,which is a win win concept.

* Creates employment:Again,this aspect too is unbelieveable for you right.you may even ask how come this is possible ?But in all the facets of waste management , ahuge amount of labour is needed.Right from the collection to the final step of segregation ,every phase needs manpower and ultimately a large number of employment opportunities get opened up.This claim is evident from the labour statistics provided by the US government according to which around 3-1 million new jobs produced due to the waste management factor.

**(B) Disadvangtages MSW**

The process is not always cost-effective : Yes,though it may pay cash to the contrbutors,thr truth is the process needs a lot of money ,time and land to set up a plant and run.As the amount of waste that is being contributed to the waste product units increase soare the number of plants that process these resources setting up a huge factory obviously needs a lot of money and this management will start fetching yield only in the long run.

* The resultant product has a short life: This is also true since the rsulting recycled product can not be expected to have adurable quality.As a product itself it has it origin from the remains of the other trashed waste products and heaps of partially used ones.The recycled product ,though,is ecofriendly is expected the intented original one.

* The sites are often dangerous:As a waste management sites included the landfills to recycling units under its aegis ,these sites are highly susceptible to fungal and backterials growth thereby leading to various diseases.even the debris formation will be accelerated by such bacterial growth which makes it tatally unsafe for the workers who work there.it also causes widespread pollutions and releases chemical.These chemicals,when mixed withdrinking water or other consumable item pose a high amount of danger to human health.
* The practices are not done uniformly : still,a large scale of these waste management practices are done only as a small scale process and is mostly confined to residential homes,schools,and colleges and is not practiced in a uniform manner in large industries and conglomerates.it is not evenpracticed globally ,as the global level consists of curbing oil spills,ocean disposals and decreasing the treefilling.
* Waste management can cause more problems:Though waste management creates employment,it only has the ability to product low –uality jobs.These jobs include right from sorting the garbage collectors to the intensive and laborious jobs that are needed in the factories and outlets.dailly basis collection of garbages will make the street look unpleasant and unhygieneic leaving excess debris on the streets to notup.even after the successful completion of the final stage,many chemical stews will be left behind which needs to properly and completely disposed otherwise ,they will also pose a threate to the environment which makes theultimate purpose of waste management go redundant.also,in the area where these management units are present,it is noticed that the ground water gets affected .So,it too causes a considerable extent of water pollution and land pollution.

(**4) Discuss the challenges faced in disease surveillance**: High quality surveillance for some diseases,The best surveillance system have been established to support international compaigns aimed at eradicating or eliminating certain diseases,including polio and guinea worm,and at protecting the global community against influenza,a disease that has the potential to inflict global pandemic.

* Lack of qualified people and equipment:Several disease experts ,we met with observed that health care systems typically emphasized the care and treatment of sick people and that support system such as surveillance.Surveillance are generally assigned a lower priority and recive comperatively few human and materials resources.
* Weak infrasture exacerbates surveillance difficulties in developing countries.Weaknessess in transportation and communication and infrastructure in developing countries substantially impair surveillance in these countries.many people in developing countries live in remote areas that are not served by organized health care facilities.
* Surveillance activities are poorly coordinated.Global disease surveillance is also constrained by poor coordination of surveillance activities .Multiple reporting system ,unclear line of authority in the even of an outbreak,poor integration of laboratoric into public health systemsnonparticipation among private health care providers have combined to further hamper surveillance efforts
* Uncertain linkages between surveillance and response surveillance is further constrained by uncertain linkages between data collection,analysis,and response e.g in United states,physicians are often unware of the need to gather information necessary for surveillance efforts and may not had any education regarding the criteria used to launch a public health investingation.
* Weaknessess in developing country systens impair all facets of global surveillance weaknesses in developing country systems reduce the ability of public health authorities at every level to understand and control infectious diseases threat. These short coming limit the success of ambitious international programs such as polio eradication efforts,and impair the routine surveillance of other diseases and identification and control of outbreak newly emerging diseases and antimicrobial resistance.

**(5) Explain five diseases that can be prevented by observing proper sanitation**.

1-**Trachoma** can be prevented by improving sanitation ,reducing the breeding sits of flies and teching children to wash their faces with clean water .trachoma caused by microscopic chlamydia trachomatic remains the leading cause of preventable blindness with an estimated 6million people suffering loss of sight and 146 acute cases worldwide.

2-**Cholera** is one form of acute ,watery diarrh,a symptom that can be caused by any number of bacteria,viruses,and parasites,cholera is caused by a bacterium,vibrio cholerate.It is one of the most rapidly lethal infectios disease,however ,with prompt and appropriate treatment ,mortality canbe kept extremely low further more,though a combination of intervention in water ,sanitation ,hygiene and health sectors,cholera outbreak can be prevented.

3-**Diarrh**:is defined as loose ,watery stools that occur more than three times a day.acute diarrhlast for about 2-3 days.

4-**Typhoid fever**:is constracted by drinking or eating the bacteria in contaminated food or water.people with acute illness can contaminate the surrounding water supply through stool,which contain a high concentration of the bacteria.Contamination of water supply can turn,train the food supply.

5**-Dysentry**:is an inflammatory disease of the intestineespecially of the colon,which always result s in sever diarrhea and abdominal pain.others symptoms may include fever and feeling of incomplete defecation-is caused by several types of infectious pathogen such as bacteria,viruses and parasites.