

Wastewor(l)d



Visit to Litterland

Wastewor(l)d Series

Visit to Litterland

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Stree Mukti Sanghatana



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Introduction

The booklet series Wastewor(l)d, is an effort to disseminate our knowhow in the field of solid waste management. Since 1975 Stree Mukti Sanghatana (SMS) is working towards the empowerment of women. With the objectives to realise the ideals of equality and social justice, SMS consciously began working amongst the waste pickers in Mumbai, from 1999. SMS's Parisar Vikas programme aims to address the problems of waste picking women who are engaged in the 'menial' tasks of 'cleaning waste'. Additionally, Parisar Vikas addresses the problem of waste management engulfing our urban existence. Prima facie waste management is an environmental and health issue but poverty, equity, power, caste, gender, human behaviour, political will and good governance are also associated with waste management. Following the principles of environmental justice is the key component in our work, as we strive towards zero waste. Therefore, our emphasis is to highlight the socio cultural dimensions of environmental issues. SMS has introduced these issues in each booklet of this series.

These books discuss many aspects of solid waste management, a few solutions and good practices. Publication of this series is possible with the support from European Union.

Looking forward to your feedback!

Foreword

Hello children,

You must have read about Alice, the little girl who enters wonderland. This is another land to which we have arranged a tour for you. Litterland – Is it a weird name? True. How can litter amuse anyone? Children like to read stories of fairies, of adventures, of animals. Waste or garbage seldom attracts anyone. But it is the reality that we are converting our world into a Wastewor(l)d. Can't we make the world better? What does environment friendly mean? These are the questions we have tried to answer in this book. Other books in this series are also dedicated to the same issue of waste. This book is meant for you. And we have tried to make it as interesting as possible. So set your wheels in motion and have a ride in Litterland. Happy Journey. If you develop an interest in the subject do visit our 'Story of waste' gallery in Navi Mumbai. You can come along with your parents, teachers or friends. Do write to us for such tour at smsmum@gmail.com.

Jyoti Mhapsekar

Waste – What does waste mean?

We buy things based on our needs but what happens when those things are no longer useful?

Let us take a pencil for example. It needs to be sharpened and sharpening reduces the length of the pencil. What happens to the pencil once it is so short that you can no longer hold it? Do you throw it away?



Similarly you need to peel the skin before eating a banana or an orange. What happens to that peel? Is it thrown away? You can certainly not eat it.



What do you do with your old, broken and outgrown toys? If you ask the same question about clothes, books, medicines, footwear, you'll find one common answer. I throw it away.

We throw away things that are unwanted and useless. They are termed as 'waste' At least that is what we call it. But is it really 'waste'?

What happens when a child can no longer fit in to clothes? They are passed on to a younger sibling or cousin. "Does this happen in your family" It is common that younger kids use clothes, books and toys of their older siblings. Then how can those things be 'waste'? Although they are no longer useful to one person someone else can use it.

So the definition of waste is Broader Things that are no longer useful to us and others can be defined as 'waste'.

In our day to day life, what can we define as 'waste'? Let's find out what is useful and what is not useful. Go to the next page. Classify the things in respective columns.



Fish bones, empty bottle, misfit clothes, leftover food, damaged umbrella, cut hair, irreparable radio, dead leaves, old books, worn wooden sheet, rusted iron nail, orange peel, cardboard box, wrapper, carcass, rubble, egg shells, vegetable stalks.

| Could be useful to someone else | Not useful to anyone |
|--|-----------------------------|
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Let us first look at edible goods like vegetables, fruits, meat and fish. We get them from nature. They are perishable. Once they rot or decay they lose their value as food. Then there is left over food.

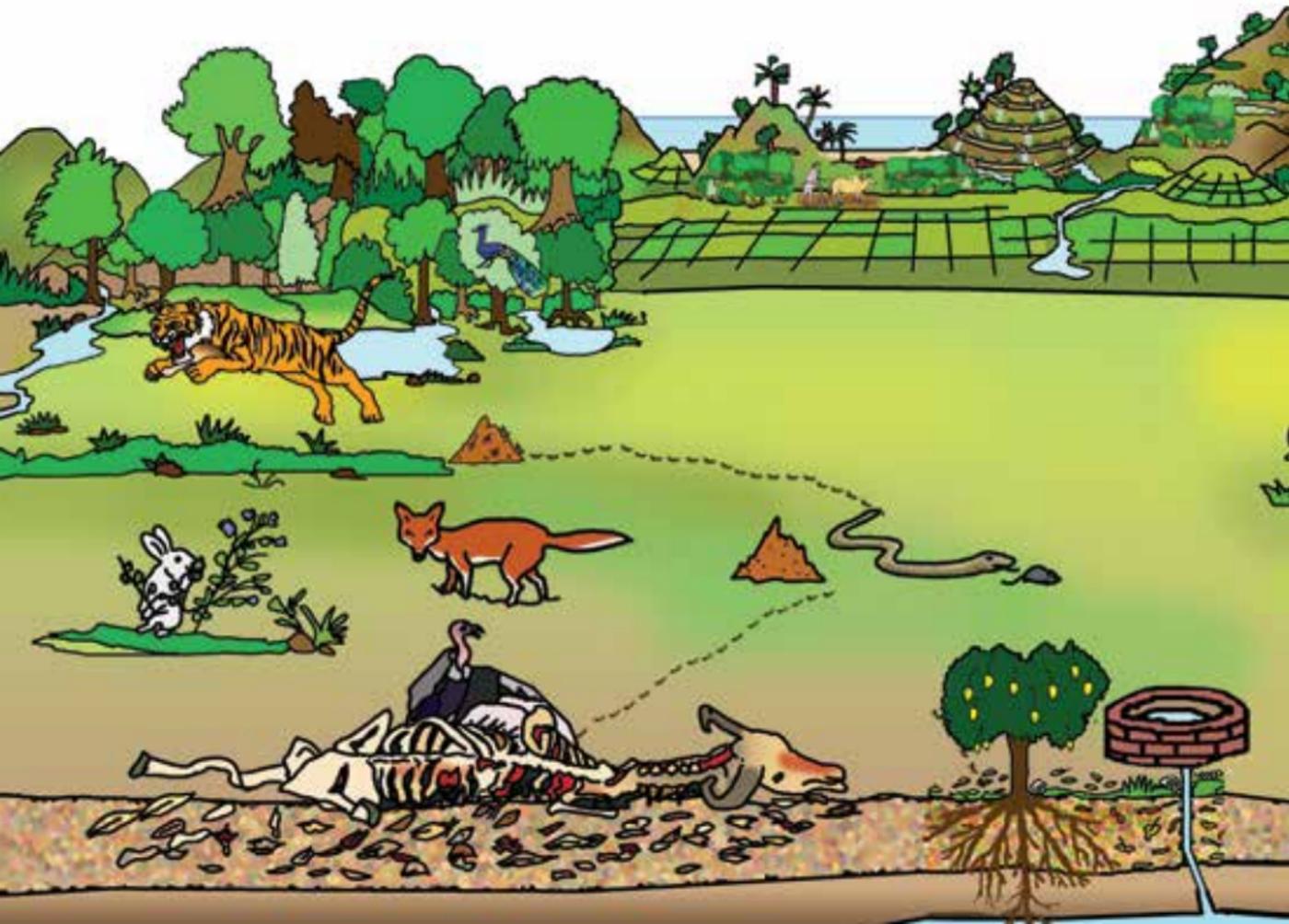


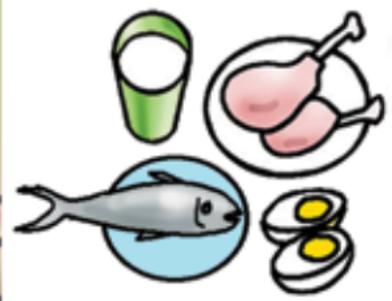
What happens with rotten or leftover food? You might think that it is waste, Sometimes it is not, because animals and birds eat it. Actually Mother Nature wants it back. She says, “give it to me and I will return it to you in a better form and quality.” Are you surprised? Let us understand with help of the illustration on next page. It is based on the concept of the food chain or the food pyramid. We all learn in our science books that one living organism depends on another for survival. It is the circle of life!

The illustration on the next page explains the links between plants, animals, micro organisms, agriculture and our food. **Find out these links.**

Here are some clues. The girl and the man, the food in their plate, the left over food. Plants, water body, herbivorous and carnivorous animals, soil, farming, farm produce. Did you know that left over food, dried leaves, excreta and carcass are disintegrated finally to enrich the quality of soil? Such enriched soil is good for agriculture.

Nature takes care of disposal of all natural things. This is called **recycling**.



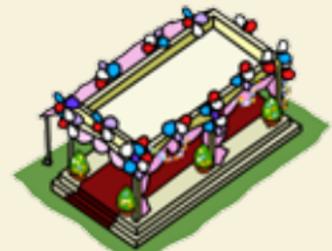


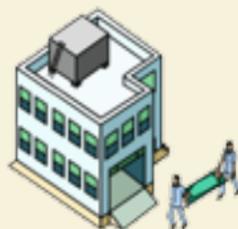
The water cycle is also similar. Heat evaporates water, clouds are formed, they condense and water returns back to earth in the form of rain. This is a perennial cycle. This shows that everything in nature is reused in some form or another. Nature does not 'waste' any of its resources. There is no 'waste' in nature.

Can we revisit our definition of 'waste' and reassess it?

Now let's see the places where waste is generated.

Here are some images which you will name by choosing appropriate word from the bracket given on page 9.





(Towers, Schools, Marriage halls, Houses, Markets, Malls and shops, Temple, Mosque, Construction site, Hospital, Factory, Garden, Offices)

Not only these but roads, colleges & other educational institutes, all kind of religious places, cinema halls, theatres, railway station, bus stand, restaurants, industrial estates, garages, open spaces. The list will go on & on.

You may have gathered that it is nearly impossible to find a place where waste is not generated. Once there is 'waste' it has to end up somewhere. Let us see how 'waste' travels. The journey begins with your garbage bag. You put it into a bin in your house. Someone collects it and puts it either in a container in your society /colony or on the street. Municipal corporation sends garbage truck to pick and transports it to a a specific place which is called a dumping ground.

Dumping ground is the place where our municipal corporation throws the waste collected from all over the town/city. Generally dumping grounds are situated on the outskirts of our city and nearby the adjacent village.

Let's see the journey of waste. You will see in the next image that waste-loaded trucks come to the dumping ground from different parts of the city and the waste is dumped on the ground creating a huge mountain.



Everyday not only in our city but all over the world tons & tons of garbage is generated and taken to the dumping grounds. This has been going on for many decades. So imagine the quantity of garbage accumulated. What do you think about it? What does this waste consist of? Does it lie there at the dumping ground? For how long does it remain there? What happens to it? Who clears it? Is it not harmful for the environment? All valid questions. And you have to seek answers for the same from your elders. And if you are not satisfied by the answers don't push the questions at the back of your mind and say 'out of sight out of mind'. This is very important issue for us. Let us go ahead and seek answers to these questions, one by one.

You may have come across many people who hide empty biscuit carton, banana peels, fruit pips and chocolate wrappers under their seats or just chuck them out of the window. Hope you don't do this. Hope you put all this in a dustbin. Then you are a good citizen!



Let's do a small project. Ask an adult to help you and observe the following: The amount of waste generated in your home. What are the total number of homes in your building? How much waste do these households generate daily? Please keep record at least for a week and then fill the chart below.

| Day | My family (No. of people) | Daily waste (In gms) | My building/colony (No. of Households) | Total waste Daily (In Kgs) |
|-----------|------------------------------|-------------------------|---|-------------------------------|
| Sunday | | | | |
| Monday | | | | |
| Tuesday | | | | |
| Wednesday | | | | |
| Thursday | | | | |
| Friday | | | | |
| Saturday | | | | |

What is the average waste per household? Ans: _____ gms.

How much will be the total of your colony? Ans: _____ Kg.

How much will be the total of your town/city? Ans: _____ Kg.

Is all this talk about waste unexciting? Here's something to make you smile.



When we walk, we leave our foot prints on the path. Can you identify the animal from these prints?

Here are the options. (Man, Elephant, Polar Bear, Ostrich, Snake,)

I am sure you would like to be identified by your real footprints and not by the trash you leave behind.

Now we will find out the answers of the questions raised on page 12.

Q. 1 What does the waste consist of ? What is found in the waste?

It seems to be a silly question, because waste is waste! Earlier when we tried to define waste we said, any unwanted or useless thing was waste. It could be anything. Broken toys, vegetable stalks, fish bones, broken cups or footwear, empty cardboard boxes and expired medicines. Correct! This is all waste but none of these things are alike. Waste has categories. It is divided into different types. Each type has to be collected in a specific way. There are

rules on how to collect and dispose each type of waste. These rules are explained in another book in this series. Please read more if you are interested. Let us get to know the types of waste and it will be good to begin with our own house. Let us call the waste generated in our homes 'Domestic Waste'. This can be roughly divided into two types - **Dry** and **Wet**.



Wet Waste includes fallen leaves, vegetable stalk and peels, fruit peels and seeds, dried flowers, sawdust, fingernails, hair, leftover food, bones, fish bones, coconut shell, tender coconut etc. This is called organic waste, too.



Wet waste is generated every day. It is usually more in volume than any other type of waste. Now move on to another category i.e. **Dry waste**. **Paper, cardboard, plastic, cloth, leather shoes, Rexine, thermocol, rubber, glass** fall in this category.



Here is an important note to remember. If you find a wet paper will you call it wet or dry? Does 'wet' mean actually wet? Please do not mistake a wet plastic sheet or rubber cloth with wet waste. Wet waste comprises of organic things (living things). All non living things fall in the category of dry waste. No matter how wet they are. Mere application of water on outer /inner part of any such article does not make it wet waste or organic waste.

So wet bottle, wet rubber cloth, wet plastic sheet are 'dry' waste and **NOT** wet waste.

You must have purchased snacks packed in plastic bag, paper carton or thermacol tray. Ready to eat vegetable or fruit juice Tetra Pak we use are classic examples. The packaging is dry waste whereas the contents are organic waste. This type of article needs special care at the time of disposal. We should remove the food particles and droplets of the liquid from the pack, clean it well before handing over to a dry waste collector.

In addition, there are **needles, injections, expired medicines, diapers, sanitary pads, used cotton, battery cells, paint, household cleaning liquids or chemicals, soaps, etc.** which are called **domestic hazardous waste**.

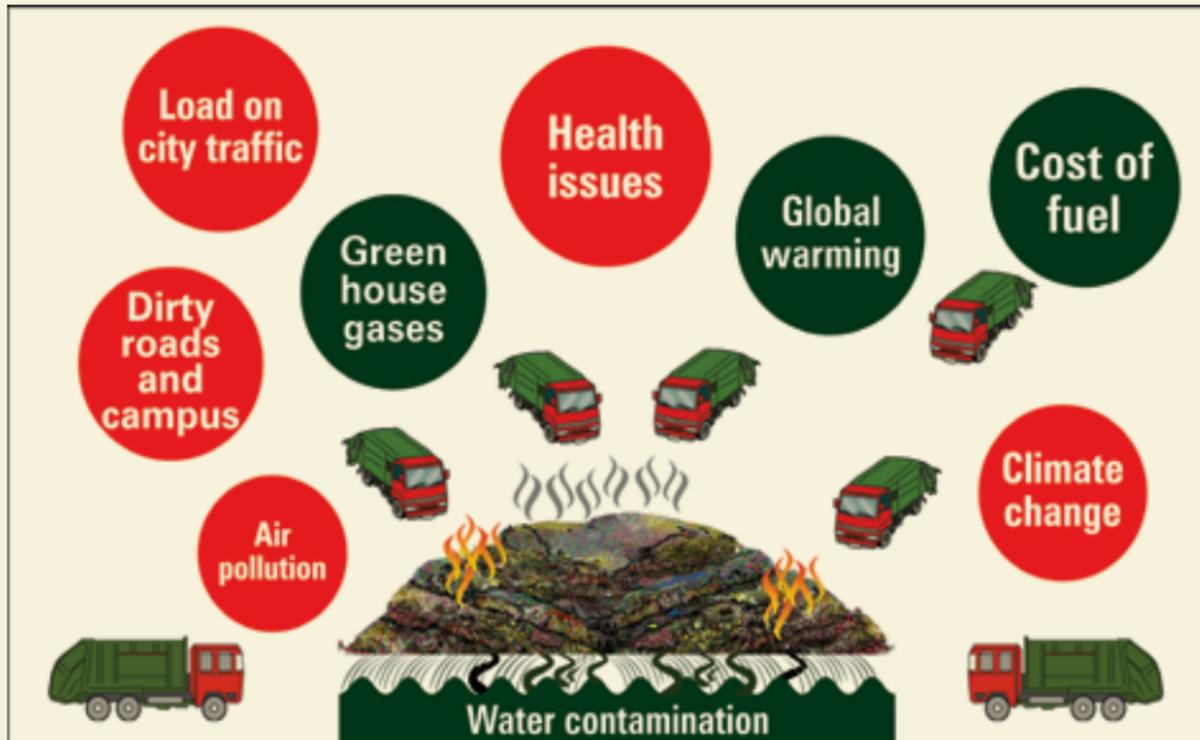


So we have learnt about three types of waste. **Wet, Dry** and **Hazardous**.

Q.2 What happens to the waste that is thrown on dumping ground?

As mentioned before if we don't keep the waste separately at its source and hand it over as mixed waste it leads to many problems. The volume of waste and the truck trips increase. The waste is thrown on the dumping ground. The organic contents in the waste rot. When mixed with rubber, paint and medicines it creates a terrible mixture. It starts stinking. When the mix waste on dumping ground starts to decay and rot, it creates heat and dangerous gases. One such important gas is called methane. These gases emit a revolting smell. If the heat in the waste increases, it could set fire to things like cloth, cotton, paper etc. This results in emission of carbon dioxide and adds to pollution. The chemicals from pesticides, medicines, paint get absorbed by the soil. Not only soil but underground water reservoirs also get polluted. We don't realize this as we cannot see it but it damages all the three natural elements – air, water and soil. You may worry after reading this. When it affects our health, it is natural to be alarmed. See the image on next page.

Centralized Waste Management



However, instead of just worrying let us learn how to take the right measures. We can overcome these issues by following a few simple measures. Let us see how –

First and foremost, we need to separate our waste into three categories - dry, wet and hazardous and dispose them off accordingly. Let's see how to do that.

Wet waste

We earlier read that wet waste is generated every day in our house in large quantity. So, obviously this must be the most challenging task, right? Well actually, this is not really waste. Once we make optimum use of natural thing, all we have to do this. But we need to learn how to give it back to nature. Just like we take fruits and vegetables from trees, the remaining waste (seeds, peels, skin) can be returned by putting it in a pit near the tree. Bones and fish pieces can also be thrown in this pit. The micro-organisms (some bacteria) in the soil will decompose them and add to the soil. Thus, the waste will be useful for the tree. Some of you may have a few questions regarding this. What

if there are no trees near my house? It is a concrete jungle. Are we allowed to throw waste near trees? Wouldn't it ruin the beauty of the surroundings? Do we even have enough trees to throw all the waste generated in the city?

You are smart that you raise all such valid questions. The answer is: We will not throw the wet waste as it is. We can create manure or compost from it after processing. This manure or compost is useful for the soil and trees. Thus, we take nutrition from the nature and return left over to the nature. Nature takes care of it and makes it reusable.

To learn more about how to make manure and compost, where to make it, who should make it, read the book titled *Not really waste* in this series. This is a simple and natural process where our role is restricted up to helping the natural microorganisms do their work of decomposing. All we need to do regulate a bit of heat, water and air. It is so simple that even young children like you can do it. So, observe, learn, try and make good manure or compost in just two months. You can use it in your own garden or gift it to somebody. This will reduce the waste considerably and in turn keep the city clean.

Besides compost, we have developed the technology to generate gas and electricity from organic waste. More information about this is available in the book titled *Indebted to nature*, in this series.



We convert wet waste into compost, gas, electricity, animal feed. Thus the problem of organic waste is minimized.

Let us now deal with dry waste. We have already seen different types of dry waste. But do you know that a lot of these things thrown by us are used as raw material by factories? This process is called recycling. But we should not send all dry waste in a mixed manner to the factories. We need to segregate. For example, glass makers require only glass, paper makers need old papers, plastic industry needs plastic only. So segregation is very important.

You may have sold old newspapers to the vendors. Have you ever seen women with huge bags near waste containers? Or have you seen people collecting and stacking old papers, cardboards, boxes on the footpath? You may have also noticed people carrying old broken things, what we call scrap.

You might have heard that people name wet waste as organic waste or biodegradable waste. Now a days a new term is used compostable... Know more about this on page 35.



These people collect items like glass, plastic, cardboards and metal from the waste and sell them to scrap vendors. Vendors sell it to factories. These waste pickers, scrap vendors are important links in the recycling process. We dispose of all our waste material in a mixed manner but these people segregate glass, paper, plastic etc and keep them ready for the factories.

If you think these waste collectors, scrap vendors engage in this activity in order to earn a livelihood. You are right in a way. But in this process, they help in cleaning the region and protecting environment which also saves tax payer's money. To know more, read the book title *Know your waste* in this series.

See the images on page 15. Did you notice the different colours of the containers ? We must put wet/ organic waste in green container and dry waste in blue.

The image on page 29 shows the pyramid of Solid waste management. Note that the waste picker is at the bottom of this pyramid and recycling factory on the top. Do you know other people who earn their livelihood from waste? Have you ever noticed them around you? This is the time to recognize their labour. These people contribute in protecting our environment. This is called green employment.

Dry Waste

Iron
objects, machine parts
sheets, pins, lids
magnets

Aluminium
vessels, pipes, lids
foil, electrical fittings
toothpaste, medicine tubes

Steel
vessels, drums, pipes

Brass
vessels etc.

Copper
vessels, drums
electric wires

cold drink and soda bottles
bottles & jars of sauce, jam,
pickles, juices, beer, wine
medicine, perfume bottles
glasses, mugs, crockery
other glass articles
all types of glass

raggs
rubber
tyres
footwear

Other waste

Paper

notebooks, books
magazines, newspapers
plain, white & brown paper
coloured posters
computer paper
answer sheets
cardboard
paper cups, plates
packaging for various
products and boxes

Glass

Plastic

Polypropylene

Nylon

Polystyrene (Thermocool)

LDPE

LDPE

PET

PET

Details of dry waste

Paper:

- Colorful posters, Plain paper, Cardboard, Wrappers of cigarettes, soaps, beauty products etc. , Books, Magazines, Newspapers , White paper used for computer printing and examination, Brown paper, Paper plates, Paper cups, Notebooks

Plastic: There are different types of plastics

Thin bags to carry fruits and vegetables

- Thick Bags (the ones we get in clothes shops), Milk and oil bags, Water bottles , Pipes (P.V.C.), Nylon brushes, Wires, Nets, Injection syringe, Glucose bottles, Tiffin boxes, Cold drink bottles, X-Ray/ Scan films, Furniture like Tables, Chairs, Suitcases, Handbags, Toys, Artificial jewelry, Cup and Saucer, Dinner set, Household pots for plants, Stationery

There are specific names for these different types of plastic. Such as PET,

LDP, HDP, Polypropylene, Polystyrene, Nylon etc. All of them have different characteristics which determine the process of recycling and the products made thereafter.

Similarly, there are various types of rubbers and metals.

Metals:

- Iron items, machine parts, Iron tin, pins, lids, Magnets, Aluminum- vessels, lids, pipes, File, electric fitting parts, Toothpaste or medicine tubes, Steel pots and pipes, Brass items, Copper utensils, pipes, Metal used in wires

Now what do you think? Are you surprised? Have some patience we have not yet looked at different types of rubber, glass and cloth. But you are still young and may not enjoy learning about them in detail. Hence, the information is not given in this book. If you are interested, do read the other books in this series.

Q.3 Why segregation and recycling?

Let us understand the importance of segregating and recycling the waste. Human society needs many many things for various kinds of consumption

such as paper, plastic, rubber, glass, metals. Where does this raw material come from? Some of them are found in the earth's belly (mines) and some are taken from trees. This means, in order to acquire rarer material, we need to keep digging more mines, and cutting more trees. We know that crude oil is necessary for vehicles. But do you know that it is also necessary for production of plastic and rubber? So, for more crude oil we continue digging the earth. We can protect our dear earth by recycling used paper, plastic, metal etc. and reduce the cutting of trees, digging of mines, contamination of water, air and soil.

By doing so, we will protect nature and successfully deal with garbage. And we will be following the nature's law of reuse and recycle.

Recycling
of



Ton paper

Saves

17



Do you know that countries all over the world, their governments and scholars are debating and trying to find solutions to the deteriorating environment and imbalances in nature?

Some have to face extreme weather conditions while some are worried about the wildlife. People's lives are destroyed by floods while many others are battling with extreme pollution. In some countries, people are exposed to dangerous UV rays. In some countries, ground water and rivers are drying up. Your textbooks mention some of the reasons for such problems, such as – deforestation, pollution from industries and vehicles etc. Remember that bad management of waste is also an important reason for the above mentioned problems.

Recent research has proved that we do not dispose the waste in scientific manner. 'We' includes All of us! You, me, parents, neighbours, teachers as well as film stars, sportspersons, leaders, industrialists, municipal corporations and governments. All of us must learn and practise the right methods of waste disposal.

3 R Triangle

The triangle in this illustration is called a 3 R triangle. What are these 3 'R's? Reduce, Reuse and Recycle. This is the master key to save our earth and the environment.

Our elders scold us about indiscriminate littering. "Don't throw this here, pick up the paper, keep your things in place etc." Parents correct us all the time, isn't it? But

do we take similar care in public places? If you habitually litter public spaces, you must stop it right now. **Remember, waste should be thrown only in the allocated bins. Dispose wet and dry waste separately.**

This small but significant change in habit will be a boon to our nation. Our right attitude will express our love for mother earth, preserve its natural resources and benefit all living beings. Don't you agree?

You may wonder how one person like you, following the rules will make any difference. But don't forget tiny drops of water create the mighty ocean. So



every effort counts! Your small positive action will help save this Earth! Be consistent. Don't give up!

Now on to the third type of waste. It is named as **Hazardous waste**. Some of it is found in our homes, too.

For example - **used medical cotton, broken bulbs and tube lights, pesticides, insecticides, paints, acids, cleaning chemicals**, etc.

Such waste should be kept separately. We should wrap diapers and sanitary pads in paper and plastics and keep them separate. Remember to label them clearly so that no one has to handle or open the packet.

There is difference between bio-degradable and compostable

Everything is bio-degradable but many things such as plastics, metal take hundreds and hundreds years to disintegrate completely. Compostable means anything that is capable of disintegrating into natural elements, leaving no toxicity in the soil. This typically must occur in about 90 days.

Another increasing type of waste is e-waste. We generally throw it in dry waste but e-waste needs separate disposal. Do you know e-waste?

E-waste means electronic and electric waste. Medical or domestic electric appliances, computers, cds, mobiles, etc are included in this.

Electronic items such as mobile phones, fridge, oven, mixer-grinder, geyser as well as battery cells, radio, transistor, tape recorders, cables, all types of computers (desktop, laptop, tablets, headphones, wires, cartridge, printer) and their attachments. Spread of technology and the constant improvements in technology fill the market with new goods every day. As a result, instead of repairing old parts or items, people throw them in waste. These are USE and THROW things! If this waste lies around mixed with normal waste, their harmful chemicals might mix with soil and pollute ground water, making it toxic. If we burn such waste, it causes air pollution. And so e-waste must be treated scientifically.

We should give e-waste to only those who have the means to dispose it scientifically. If we throw these items in the waste bin or sell them in scrap,

such items might be burnt in order to remove all the metal in it. If it is burnt, it will surely lead to various kind of ailments. Any action that damages the environment is considered illegal and prohibited by the law. People are either unaware of the law or they just don't care. Therefore children your age must be educated about the laws. Because children can and do make a difference in the surroundings.

LEARN NOT TO
BURN



Let's
explore
with

Re

fuse _____

tain _____

pair _____

cover _____

claim _____

STEPS FOR ZERO WASTE SOCIETY

| Dos | Don'ts |
|---|---|
| Think about utility before buying any item. | Do not get carried away with trend or fashion. |
| Re-use the items. | Avoid ' Use & Throw' articles as far as possible. |
| Learn about different types of waste. Identify them correctly. | Do not overlook the issue of waste. |
| Segregate waste into - Dry, Wet, Hazardous. | Do not keep or throw waste in a mixed manner. |
| Place a paper inside the wet waste bin before throwing in the waste. | Do not throw wet waste in plastic bags. |
| Use plastic bags thicker than 50 microns. | Do not use plastic bags below 50 microns. |
| Give or sell E-waste to only those who hold license for scientific disposal of E-waste. | Do not sell e-waste to anyone other than licensed vendor. |

| | |
|---|---|
| Carry a cloth bag when you go shopping. | Do not ask for plastic bags. |
| Know the consequences of your actions. | Do not litter around. |
| Clean the used diapers and sanitary pads, wrap them in paper and plastic and throw them separately. | Do not mix diapers or sanitary pads with dry or wet waste. Don't throw or stuff them in toilets or bathrooms. |

Observe the Reuse - Recycle - Reduce triangle again. What does it say? It says 'live life in a way that would reduce waste. Use and reuse everything you buy. Once you are done using, segregate the items and send the waste for recycling .

Waste is directly related to the survival of the earth. Once you grasp the importance of the issue, you can create awareness about waste management around you and lead by example.

So go ahead, now you are ready to practise this. Remember the magic mantra of

Reuse, Recycle, Reduce



From now on add one more R

Responsibility

Keep learning more and practise what you learn.

GET SET GO

Garbage gallery at Koperkhairne, Navi Mumbai



Posters: Waste to Wealth



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with valuable inputs by Alka Pawangadkar, Meenal Joshi, Rucha Chandwankar

Other booklets in the Wastewor(l)d series on Solid Waste Management -

- KYW (Know Your Waste)
- Not Really Waste
- Indebted to Nature - Nisargaruna
- Social Entitlements for Waste Pickers
- Waste to Wealth (Miniature Posters)



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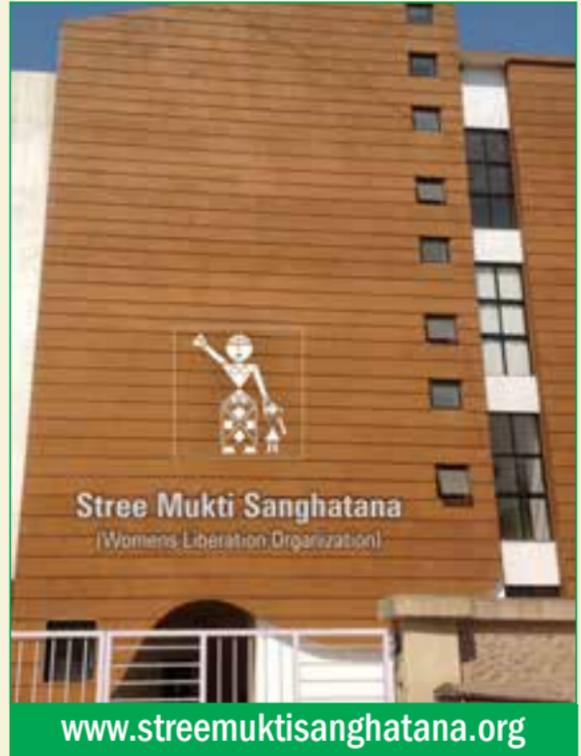
● email - wasteworld@streemuktisanghatana.org

SMS Activities

- Cultural Troupe: Theatre & Songs
- Publication and Resource Material
- Family Counselling Centres
- Jidnyasa - Adolescent Sensitization Programme
- Parisar Vikas Programme for Waste-Pickers
- Day Care Centres

Our Federations & Co-operatives provide

- Magic Baskets
- Plants & Culture
- Magic Powder
- Awareness Programmes
- Compost Pits
- Maintenance of Bio-gas Plants
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