CLEAN SCHOOLS PROGRAMME

By : MUNICIPAL CORPORATION, AMRITSAR

Create a Waste-Wise Society

How Much Waste Does Your School Generate ?

What is the Waste Segregation System in Your School ?

How Much Waste Does Your School Recycle ?

How Does Your School Dispose of Waste?

A Hand book for School Managements and students, to help them make their schools & their surroundings more clean.

WASTAGE WORRIES

Rubbish, garbage, litter, junk, scrap, trash. Waste is generated in various forms. Managing it is one of the essential services that municipal authorities are duty-bound to provide. Putting waste into a vehicle and unloading it at a dump seems to be a simple enough affair. Then why do so many cities and towns across the globe suffer from rotting refuse piled up in streets and drains–breeding flies and rats, and degrading urban environments?

Wait a minute. What is waste? According to the Oxford dictionary, waste is anything that has been discarded as no longer useful or required. So, let us relook at the definition 'discarded as no longer useful' would mean that the resource has lost its value to you, though not necessarily to the next person. After all, everything in this universe is made up of the basic 109 elements of the periodic table, or the five elements referred to in the Ancient scriptures. But what makes a material useful or waste is the way mankind blends these essential elements together. What you are calling waste today has one or the other of the elements which if recovered would no longer be called waste.

The human race doesn't consume everything it produces. Most of what is produced finds a place in dumping sites rather than being reduced, reused, recycled or recovered. Indian society wastes even things that can be very easily returned to nature. The most common example would be organic waste. It is waste only because few bother to make compost out of it. The prevailing attitude is just leave it aside, or better still, dump it on the waste-hills of your city and call it waste for another 30-40 years until a fancy rock garden is made over it. But the poor resource shall always be called waste!

WEIGHTY WASTE

As per official estimates, India produces 55 million tons of Municipal Solid Waste per year or 15,06,84,000 Kg./day The actual amount could be much more. Out of this our city Amritsar produces approx 2, 19, 000 Tons of MSW/Year or 600000 Kg. of MSW/Day. Sadly, at least 40 percent of the waste going to landfills is easily compostable, with kitchen waste accounting for 50 percent of household waste in the country. After years of experiments, the government has now revised rules and manuals to deal with the growing solid waste and incorporating a large army of rag pickers and waste dealers in the formal system in 2016 by notifying new Solid Waste Management rules.

There are only two ways we can deal with this growing mountain of filth: by reducing our waste by using less, and by separating the waste so that we can recycle, reuse and compost as much as possible.

According to the Central Pollution Control Board (CPCB), 70 per cent of the total solid waste in the country is collected and only 12 per cent is treated. Segregation at source, collection, storage, treatment and scientific disposal of waste are insufficient.

The rules now emphasize on segregation of waste into three categories at the source by the waste generator (refer to Diagram : Categories of waste). It asks the generator to store construction and demolition waste separately.

DIAGRAM : Categories of Waste

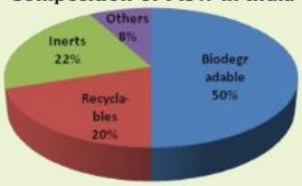
SPILT ABOUT

Segregation at the source of waste generation is the first essential step towards appropriate waste management. But in most urban areas, segregation of waste at source is not in practice.

Domestic/trade/institutional waste: Most households, shops and other establishments throw waste out on the street. Those who use community dustbins provided by local bodies often throw the junk around the bin rather than into it. Most of the trash remains on the roads and public spaces.

Construction and demolition (C&D) Waste : C&D waste contains mostly inert and non-biodegrable substances such as concrete, plaster, metal, wood and plastic. This waste is usually generated during construction or repairs. Most of it dumped along the roads.

Composition of MSW in India



Industrial Waste : Factories located within city limits produce large volumes of hazardous and non-hazardous wastes that are required to be disposed of by the industry, following standards laid down by Pollution Control Boards at designated sites. This does not happen in practice. Waste is dumped surreptitiously on open plots or roadsides or in water bodies, causing environmental pollution and sub-soil contamination.

RECYCLING REFUSE

People do salvage reusable or saleable material, such as newspaper, glass bottles, empty tins, plastic bags and old clothes from waste and sell it for a price. However, a lot of recyclable dry waste, such as waste paper, broken glass, metal and packaging material, is not segregated and is thrown on the streets along with a mixed load of trash.

LANDFILLING PRACTICES

In India, waste is mostly dumped without the principles of sanitary landfilling in view. As there is no segregation at source, all waste, including infectious medical waste and industrial refuse, finds its way to the disposal site. It is deposited in low-lying areas, quarry pits or roadsides and no prior testing is carried out to check soil permeability or lining. Waste is neither compacted nor properly covered. It remains exposed, emitting foul smell and fumes. Dump sites breed rats and flies and attract stray dogs and cattle. They also endanger underground-water resources as they cause subsoil water contamination through the leachate which is produced because of mixed waste.

TABLE : Types and examples of waste :

Types of waste	Examples of Waste
Garden Waste/horticultural Waste	Leaves, shrubs, trees, twigs, slit, oil
e-Waste	Electronic and computer consumables, batteries, tube lights, CFL bulbs
Other	Wood, glass, metal, classroom furniture
Plastic	Bisleri bottles: plastic bags; aluminum foils
Paper	Used notebooks, used examination sheets, subscription newspaper and magazines text books
Biomedical Waste, including sanitary waste	Waste from school clinic (bandages, band-aid, bloody cotton, needles, syringe) used sanitary napkins/cloth
C&D (construction and demolition) waste	Building and construction, debris waste
Hazardous Waste	Chemicals from labs, paints from art room, oils, diesel fuel

E- Waste

E-waste is one of the fastest growing waste streams in India, with a growth rate of 10 percent per annum. The generation of e-waste is increasing exponentially every year. The growth can be attributed to globalization of the economy that makes electronic products an integral part of our lives. Also, India's low manufacturing costs, skilled labour, raw materials, availability of engineering skills and opportunity to meet demand in the populous Indian market have contributed significantly to facilitate the growth of the electronics industry. Thus, e-waste management has become an immediate as well as long-term concern as its unregulated accumulation and recycling can lead to major environmental problems endangering human health.

WHY THE MESS ?

It is obligatory for urban local bodies, under the laws that/ in the under areas their administration, they have to arrange for street sweeping and disposal of solid wastes. The Municipal Solid Waste Management rules, 2016 put the onus of waste Management on the generator as well as the local bodies. Whereas the Municipal Corporation of Amritsar has deployed a fleet of machinery for collection and transportation of Municipal Solid Waste, it is now for the waste generators to play their part to make the city clean. **Co-ordinated efforts of Municipal Corporation, Amritsar and the citizens of Amritsar is the need of the hour to make Amritsar a litter free zone.**

The management of solid waste has remained neglected in the country since Independence. It has never caught the attention of decision makers. Institutional arrangements for solid waste management are haphazard and at best ad hoc. Now, with the push from the government, importance is being given to the waste management of the cities but public participation is minimal, which has to increase

SO WHAT DO WE DO?

Collection and processing of waste need not be the exclusive domain of the local government. The order of the day is clearly a more comprehensive partnership between the community and local governments, where each waste producer has a role to play towards waste minimization, recycling and disposal.

- Schools can provide excellent educational opportunities for creating awareness about waste and its management.
- Waste reduction initiatives save natural resources, energy and landfill space.
- Reducing, reusing, recycling the waste material will improve the economic and environmental performance of the school.
- The school's waste management programme has the potential to transform the school environment into a laboratory for learning.
- It also provides numerous opportunities for the students to understand this issue and its implications on the local environment.
- There is nothing that should be known as waste—waste is just a misplaced resource. Ideally, your school should not generate any waste. But there is waste, as most human activities result in some waste. Wastes are of many types, such as biodegradable and non-biodegradable, hazardous and non-hazardous, etc. Each of these categories has to be handled carefully. Please wear gloves and masks while handling waste. E-waste should be handled by adults.

WHAT WE CAN DO?

SEGREGATION :

The Value chain of effective waste management starts at the source with proper segregation of waste. It refers to separation of wet waste & dry waste, the purpose is to recycle dry waste easily and to use wet waste as compost. The different coloured bins should be placed in your school campus for segregation of waste. Green bins should be used for organic wet waste, blue or recyclable waste and Red Coloured bins for hazardous waste.

COMPOSTING!

Turn your spoils into soil. How? Read on to figure out.

Growing concerns relating to waste generation and its quantity have rekindled the school community's interest in organic recycling practices like composting. The potential of composting to turn on-campus waste materials into a school resource makes it an attractive proposition. It offers many benefits to school campuses, such as improved soil fertility and soil health, thus increasing productivity and improving soil biodiversity—and contributing to a better environment.

Even though the practice is popular, schools in many parts of the country, to their loss, do not make the best use of organic recycling. This may be due to inadequate knowledge, the idea that composting is labour and time-intensive and the economical aspects involved.

PIT COMPOSTING

This popular method of composting was developed by Howard and Wad in 1931. The following are the major steps and operations:

Step 1: A 9-foot long (L) x 5-foot wide (W) x 3 foot high (H) pit is prepared (1 foot = 30 cm). The pit is partitioned into three equal parts of which two parts are filled and third part is left empty for turning.

Step 2: Inputs include dry and green agricultural waste, grasses, etc., soaked with water and cattle-dung slurry followed by cattle dung, and soil is spread in a 1- to 2-inch thick layer. In case cattle dung is not available, the input may include kitchen waste comprising vegetable peels, egg shells, scraps and horticultural waste. The mixture is mixed daily so that it doesn't become aerobic.

Step 3: Only two parts of the pit is filled layer by layer up to the height of 4 feet, keeping the third part empty for turning. After filling, the tank is sealed with a 3-inch-thick layer of soil covered with cow dung and mud plaster. The process of composting is accelerated by turnings, whereby aeration, mixing of composting materials and moistening is done (if necessary).

This results in almost total decomposition of the matter, yielding brown homogeneous compost in about three months. The average nutrient content of compost prepared by this method is 0.8 percent nitrogen (N), 0.3-0.5 per cent phosphorus pentoxide (P2O5)and 1-1.5 per cent potassium oxide (K2O). This method of composting, however, demands considerable labour in building up the heap/pit to a proper shape as well as periodical turnings, rendering it impractical and expensive where large quantities of materials have to be processed. A major disadvantage of this process is the heavy losses of organic matter and nitrogen (40-50 per cent of the initial).

PLEASE NOTE :

- Try to compost horticultural waste first.
- Do NOT add cooked food into the pit. Also, avoid bones, dairy products, and meats that may attract pests and rodents.
- Add vegetable and fruit peel only.
- Do NOT add newspapers and other printed waste.
- Limited amounts of citrus can be added.
- Do not add any chemicals: no metals, plastics, glass, soaps.
- Grinding or blending the food waste in a food processor speeds the composting time considerably.

CHOMP! Your textbooks

Trash them not. How? Read on to figure out.

It's no secret that to make paper, trees are cut. Industries in India source their raw material for paper (i.e. wood) from farmers as opposed to commercial forest plantations in other countries. Did you know that paper has a high carbon footprint owing to the use of fossil fuels during the manufacturing process? It takes about 324 litres of water to make one kilogramme of paper. Paper which is made using recycled paper has been found to be less resource intensive. Recycling is thus central to water conservation. Here's what the paper police found.

Burn, Dump Or Recycle?

Given an option, what would you like to do with paper?

- Burning it will only generate excessive energy and add to air emissions, making us choke further. And what will we do with the ash after burning?
- How about trashing it in a landfill? It will cost us space and burden transportation.

We'd say recycle your paper instead by sharing it with the local kabadiwallas. The impact you'll make? Recycling 1 tonne of paper (907 kg) saves about 17 mature trees, 26,500 litres of water, 3 cubic yards of landfill space, 2 barrels of oil and 4,100 kilowatt hours of electricity!

Implementing a textbook-reuse policy would be ideal for reducing paper usage, avoiding waste collection, transportation and disposal costs of paper. But there are a lot of other ways to reduce paper usage in schools.

You could try the following paper-wise options too:

- Borrow books from the school library instead of buying new ones.
- Purchase paper products that consist of a percentage of post-consumer content (used and recycled for reuse in another consumer product).
- Make sure that the pages are printed double-sided.
- Use computers to make presentations if possible, instead of poster paper

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ACTIVITIES FOR STUDENTS

TOPIC & KEY CONCEPTS	BEFORE THE ACTIVITY	DURING THE ACTIVITY	AFTER THE ACTIVITY
1. Why No Waste? - Nothing is waste in nature. Key Concepts: The natural cycles and micro-organisms break down the matter and it returns to the soil.	Make 2 Groups - Forest and 'Village/Town/City' and work within your groups and list different kinds of waste generated in these two places, Now think - In a forest, what happens to the leaves, flowers, fruits and seeds of trees and plants? - What happens when an animal dies in the forest? -Whereas in a city, village or town, where does the plastic, old clothes, kitchen waste and waste produced in the factories go?	Make a list of waste items generated because of various human activities and think where it will reach after getting discarded like a local waste landfill, river or a water body nearby, ragpicker collects it for recycling and others. The list of waste items may include: used plastic bottles, peels of vegetables and fruits, used batteries, old bulbs, old clothes, used polybags old newspaper and books, factory waste water/contaminated water, pesticide cans, empty chips and biscuit packets, empty tin cans, old tyres etc.	You will find how in nature, nothing is a waste, as part of the cycle of nature, living things die, decay and ultimately become part of the soil again, Everything becomes a resource for the other. Plants and plant matter naturally rot and decays. This process is called biodegradation-Degradation means decay and bio means that the decay is carried out by living organisms such as bacteria, fungi, insects, worms, etc. that eat dead material and recycle in into new forms.
2. Packaging Waste - How Many Layers? Key-Concepts: Used and wasted non-biodegradable packaging material adds to the problem of waste	Now you think of the things that you buy which come in different kinds of packaging. Bring empty packets of any daily use item from your home, It Can be: -An item of daily use – toothpaste, soap, shamppo, detergent -An item used in cooking-oil, ghee, masala, tea coffee, dal rice -An Item used for snacks-toffee, biscuits, chips, chocolate, fruit, juice, soft drink, ice cream.	Now, carefully look at the packet, that you brought to the class and note the following 1. what is the item that is packaged? 2. What is it made of? (e.g. plastic, cellophane, cardboard, paper, glass, metal, any other) 3. How many layers of packaging did it have? 4. Where did you throw/dispose the packaging?	You will find, packaging of various household items has become popular in the modern times because of the convenience of transportation over long distances, However, these do not degrade naturally and when disposed or thrown, they pale up and lead to a problem of waste.
3. Biodegradable and Non-bioolegradable Waste - Where Goes What? Key Concepts: Biodegradable and Non-Biodegradable Waste	Again think of 2 Scenarios - a natural Forest and a human settlement, and discuss why is there a difference in the Waste situation between the two? It is shared that the waste that degrades or disintegrates naturally are biodegradable wastes, while the waste articles that do not degrade or disintegrate naturally are non-biodegradable These waste articles continue to accumulate and hence contaminate the environment.	Get a list of different kinds of waste found around us, categorise the waste items by putting them into the container to which it belongs; Non-Biodegradable or Biodegradable The list includes: Banana peel, Leather belt, Empty tetra pack of juice, Styrofoam cup, Toothbrush, Styroform cup, Toothbrush, Used toothpaste tube, Newspaper, Battery, Glass Bangle, Dry leaves Apple, Chips foil packet, Dead insect, Roti, Plastic pen, Flowers, Green leaves, Potato, Old notebook, Soft Drink can, Cotton rag, Light bulb, Cooked food, Plastic bag, Broken glass bottle.	Yow will find why it is important to know the degradability of different materials (crucial for waste management) Even biodegradable waste can cause problems because people generate this at a rate and in quantities that are too huge for the process of degeneration to take place properly, It is like overloading nature's decomposing machinery-

Material Courtesy for Activities : Dr. Meenal Arora, P.hd. (Edu.)

4.Garbage Survey - Different Kinds of Waste Key Concepts: Waste can be segregated depending on its characteristics. Un-segragated waste dumped in the open is hazardous.	Different categories of waste needs to be treated and managed in different ways for a safe disposal.	Try to closely observe the garbage in your locality and collect the required information in proper a worksheet Talk to people, if required. The worksheet is to help you get an idea about the nature of waste generated and how it is managed in your area.	Discussion in the class on the findings of the survey. Ask Yourself Have they ever observed these things before? Were you surprised with your findings? Further the following points can be discussed, that how un-segregated garbage dumped in the open is hazardous for human health as well as the health of the environment. -Garbage breeds flies and rats that carry diseases. -When it rains the toxins from hazardous waste are carried with the water and contaminate soil and water sources. -Burning of unsegregated waste that may include plastics can be extremely harmful as the smoke may contain toxic dioxins that cause air pollution.
5. School Waste Map Key Concepts: Identification of an issue related to waste and finding an effective solution	Thinking about different areas of the school campus like classrooms, corridors, assembly place, staff room, canteen/mess, ground, toilets, etc., please recall and note down, where and what kind of waste/litter you have seen or found.	Take a walk around the school at the end of the lunch break or the school day (when waste is likely to be maximum), and note down the kinds of waste that is found in different areas of the school, and think of possible arrangements for waste disposal.	The findings of your survey should be are discussed and based on it you should to create a waste map by marking the locations and kind of waste that were found, like Paper waste with Blue Dot Food waste with Green Dot Plastic waste/wrappers with Red Dot, Dustbins with Brown Dot Draw III for places where a dustbin is needed. Draw *** for a place compost pit can be set up.
6. Clean School Campaign - Creating Awareness Key Concepts: Communication is an important medium to share environmental messages. Posters and slogans are effective ways of communication	Imagine you are in charge of the Clean School Campaign, and you need to find creative ways of spreading your messages so that the whole school becomes a part of the movement to keep the school clean and healthy.	Work in pairs and create slogans/pledge to spread their message to reduce waste through recycle, reuse and refuse of objects that harm the environment, reminder to use dustbins, say no to plastic, or any other related issues. The following criterion for slogan/pledge should be adopted -An appeal that inspires people for double actions. -Should focus on solution. -The message should be clear and simple to understand.	After preparing the slogans/posters you should carry out a signature campaign. Get signatures from as many members of their community (students, teachers, parents, neighbours, etc) and have them take the pledge.After running the campaign for a week, the following questions Should be discussed. -What was the common reaction to the pledge? -Did you get any other constructive suggestions from the community? -Did people resist taking the pledge? If yes, what was their concern? -Describe a challenge you faced and how did you overcome it?






Material Courtesy : A Manual to assess the green performance of your school, published by Centre for Science and Environment, New Delhi