

SOLID WASTE MANAGEMENT



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# Amazing But True!

On a daily basis the average Egyptian living in urban centers generates 1.3 kg of trash as compared to rural areas that generate 0.3 kg per person.

Egypt generates on an annual basis:

14 million tons of municipal waste;

20 million tons of agriculture waste;

5 million tons of industrial waste;

77,000 tons of hazardous waste; and

20 million tons of sludge dredged from irrigation canals.

Greater Cairo generates 25% of Egypt's municipal waste and it includes:

51% organic matter;

19.5 % paper;

3.8% plastic;

3% glass;

2.4% clothes;

7.2% metal; and

13.1% other.

Egypt recycles around 29% of its used paper, while Italy recycles 27%, Canada recycles 20%, and Ireland recycles 3%!



# Where Does All This Waste Come From?

## Household Waste

One of the main sources of waste is our households. We are responsible for generating enormous amounts of waste every day, and we then have to think of ways to get rid of all this waste! Here are just a few examples of the things we throw away without even thinking twice!

- leftover food
- paper - newspapers, letters, paper wrapping and bags, packaging, magazines, advertisements
- plastic - plastic bags, food and drink containers, bottles, disposable pens, files
- tin cans and containers
- aluminum foil



- glass bottles and containers
- disposable razors
- disposable batteries
- equipment - radios, cassette players, television sets
- used clothes and shoes
- broken and old furniture
- cleaning materials such as soap, bleach, lye



The list is endless! And the other problem is that we seem to be extremely careless with throwing away dangerous and toxic materials. Some households use and throw away toxic materials in a way that industries and businesses would get into trouble. For example, we throw away paint, oil, solvents, cleaners, car engine oil and disposable batteries, to name only a few of the dangerous materials we get rid of without thinking of their effect on our environment!



## Industrial Waste

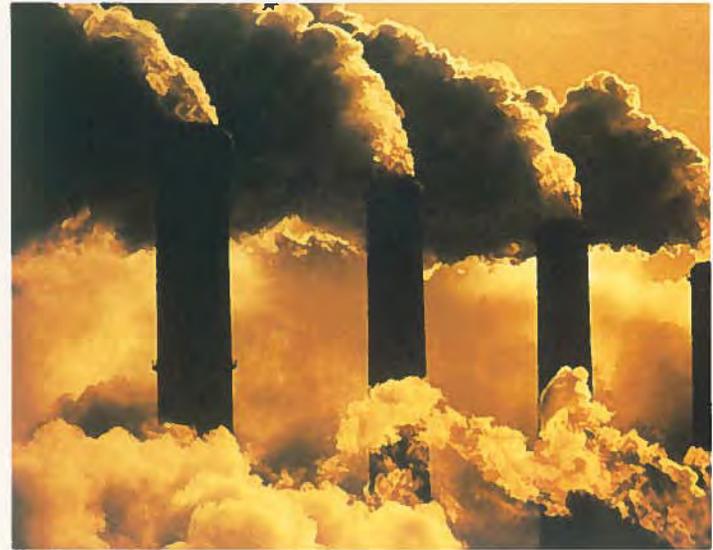
Another important source of waste is industry. Industry generates millions of tons of waste every year. Here are just a few examples of industrial waste:

- chemicals • paper and packaging -- cardboard and polystyrene
- rock, stones, brick, cement and other building materials
- scrap metal • plastic • rubber • wood

A lot of industrial waste is highly toxic. The largest product of industry is pollution. Over 350 million tons of hazardous industrial waste is generated every year. Ninety percent of this waste comes from industrial countries.

Many areas of the world are now considered areas of high environmental damage.

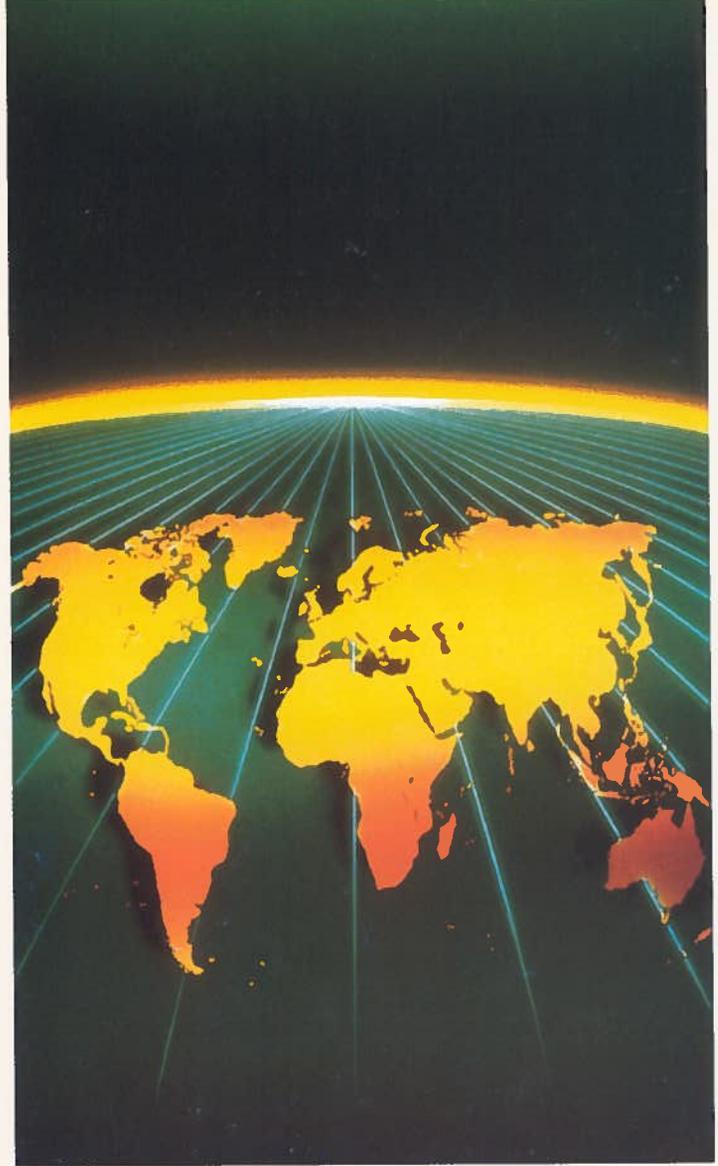
In the United States, the US Environmental Protection Agency has identified a top-priority list of over 5000 hazardous sites of industrial waste and these sites will cost billions of dollars to clean up. The former USSR (Soviet Republic in Russia) is an extreme example of an area with environmental damage that we will never be able to repair. This damage was primarily caused by industrial waste and pollution.





The world map is full of areas known as "blight zones", which suffer severely from the effects of industrial waste and pollution.

Many accidents happen during the manufacture and transport of hazardous industrial materials. For example, the explosion of gas tanks in Mexico in 1984, and the explosion of the nuclear power station in Chernobyl, the Ukraine, in 1986, are two extreme examples of industrial accidents that damaged the immediate environment and the whole geographical region.



# Getting Rid Of Waste

The waste generated by the rich and the poor is different. In industrial countries, glass, paper, plastic and metals form a much bigger share of rubbish than in developing countries. In developing regions the majority of the waste is organic in nature, such as leftover food and plant materials.

Differences in type and quantity are important when we think of how to dispose of this waste. Organic waste can be composted; a natural process of decomposition that changes organic waste into a natural form of soil and fertilizing substances that help the growth of plants and crops. This natural soil and fertilizer is especially safe to use because it does not contain any harmful chemicals. The disposal of non-organic waste is much more complicated and expensive. So what happens to all this waste that we generate? There are three main methods that have been used until now to dispose of waste. They serve an important purpose but they must be managed correctly so as not to contribute to our environmental problems.

## Landfills

Waste in many areas of the world is buried in waste pits or landfills. Landfill is expensive and needs large areas of land. However, countries are running out of space for landfills. Also, some existing landfills have been closed down because they are becoming a serious environmental hazard. This is because some of the waste that is buried in landfills does not decompose fast enough, or it contains toxic substances that find their way into the soil or surrounding water.



## Dumping

Another way to dispose of waste is to dump it in huge rubbish heaps. These again need large areas of land and rubbish heaps are a source of pollution and disease, especially in big cities and crowded areas. Some countries also dump their waste in seas and rivers. This pollutes the water and kills different forms of marine life. It causes a chain reaction: fish die, fisher folk go out of business and there is no food for people to eat. Polluted seas and rivers drive away tourism, a main source of national income in any country.



## Incineration: Burning Waste

A third method of waste disposal is incineration. Waste is burned in incinerators or huge furnaces. Incineration is one of the main causes of air pollution. It leaves behind ash that needs to be disposed of as waste. In 1994, USA scientists and experts decided that incinerator ash is a form of hazardous waste that must not be buried in landfills. Incinerators are expensive technological solutions for problems that we can eliminate altogether if we are a little more careful.



# Effective Approaches To Waste Management

## The 3 Rs

### Reduce / Reuse / Recycle

#### Reduce

Waste reduction is the most effective approach to managing waste. It is also called pre-cycling, a new term that means making careful decisions about what we buy, and not buying unnecessary products we don't really need. Pre-cycling is effective because it reduces waste generation, and therefore solves the problem of waste before it is ever produced.

Before we buy a certain product, we need to ask ourselves these questions:

#### Is this something I really need?

This question encourages us to resist buying unnecessary items.

#### Does it have a long product life?

This ensures that we choose well-made items that will last a long time, and that can be repaired if necessary. It also encourages us to avoid buying disposable items.

#### Does it have minimum packaging?

This encourages us to buy in bulk or large quantities, and to avoid excess packaging in some products.

#### Is it biodegradable?

This ensures that we buy items that will decompose quickly and safely once we throw them away.

#### Does it have minimum toxicity and harmful chemical content?

This ensures that, when the time comes to throw the item away, it will not cause harm or even death to other living organisms.

We need to understand the positive effect that we, as consumers, can have on industry and businesses. We are free to buy certain products or refuse to buy them. If we refuse to buy a certain product, then demand for this product decreases. Then industries stop producing it, and businesses stop selling it.

In addition to us reducing waste, industries and businesses can also reduce waste by producing products with minimum packaging, high biodegradable content and low toxicity. Manufacturers can use recycled materials in their production, and make products that can be used, reused and then recycled.



## Reuse

Using products again and again can also reduce waste. We can reuse products by repairing them, reusing them for a different purpose, or giving them to poorer people who can find a good use for them. Reusing products is an effective method of managing waste because the product does not need to be re-processed before it can be used again.

### So How can we reuse?

- Buy durable items that you can use for a long time.
- Use cloth napkins instead of paper napkins at the dinner table.
- Refill soft drink bottles instead of buying disposable bottles and cans.
- Donate old magazines, books and equipment. Other people can still use them.



- Reuse boxes for storing your stationery, souvenirs and collections.
- Wash jars and use them to store spices, nails, screws and other household items.
- Buy refillable pens.
- Reuse plastic bags from your shopping as bin bags for your waste paper basket.
- Write on both sides of a sheet of paper.
- When you get things photocopied, make sure that they are photocopied on both sides.
- Give your old equipment to someone who can still use it. Your old radio, cassette player or camera can bring many hours of happiness to someone in need. That's a lot better than having your old equipment sit on a huge heap of rubbish!
- Donate your used clothes and shoes to others. Someone will enjoy the clothes you won't wear any more.



## Recycle

Recycling is one of the most important success stories of the 20th century. Recycling turns materials that would otherwise become waste into useful products and valuable resources. When waste is collected, different materials are sorted and sent to recycling facilities that can process them into new materials and products. In 1996, recycling took away 57 million tons of waste from landfills and incinerators, up from 34 million tons in 1990. This represents a 67% increase in just 6 years! In 1996, 27% of America's solid waste was successfully recycled.

Another form of recycling is composting. This is the controlled biological decomposition of organic waste into new soil. Composting is nature's way of recycling organic waste into new soil used to grow vegetables, flowers and other crops. The new soil is rich in natural fertilizers that help plants grow quickly without containing any harmful chemicals.

## What do we recycle?

Many materials are already successfully recycled in the world of industry. Of these, the following are the most common:

**Plastic:** milk, juice and water containers and bottles; plastic bags.



**Glass:** especially unbroken and uncolored glass from clear bottles, jars and other containers.



**Paper:** clean and dry newspapers, mixed paper from magazines, letters, old photocopies, boxes and telephone books.



**Metal:** cans, caps, containers, lids, tin foil, and scrap aluminum from window frames and old cooking pots.



**Laser and ink cartridges** from computer printers.



The following materials are difficult and sometimes dangerous to recycle, so try not to mix them with other recyclable materials in your rubbish.

- Ceramics



- Pyrex, broken windows, light bulbs and mirrors



- Rubber



- Spray cans



- Hazardous household materials such as paint and cleaners



- Batteries



- Lead



- Motor oil



- Stickers, laminated paper, wet or food-stained paper



- Metal attracted to magnets



## Where does the recycling go?

- Glass bottles and jars are crushed and mixed with sand, limestone and soda ash (originally used in making glass). The mixture is then heated and made into new bottles and jars.
- Recycled glass is also used in making fiberglass, glass beads for necklaces and decoration, and reflective paints.



- Aluminum cans and foil are shredded and then melted down into large bars. These are rolled into sheets and new cans are formed.
- Plastics are ground and melted, then the material is used to make new products. For example, coffee cups and packaging become trays and video and audio cassettes.
- Plastic bottles become polyester clothing, life jackets, car bumpers and other car body parts for famous sports cars.
- Paper is de-inked and processed to make newspapers, tissue, and paper napkins. Recycled paper is also used in making very high quality printer paper. The finer grain of this recycled printer paper gives a better print quality than virgin paper.
- Food and other organic materials are placed in special bins to decompose and form compost for gardening and agriculture.



# Why Recycle?

**So why should we bother with recycling?**

**Take a few moments to think about the following facts.**

Recycling:

- Prevents the emission of harmful gases and water pollutants.
- Saves energy.
- Supplies valuable raw materials for industry.
- Conserves resources for future generations.
- Creates jobs.
- Encourages the development of environment-friendly industries and technologies.
- Making new paper from recycled paper uses 30-50% less energy than making paper from trees.

- Energy saved from recycling one glass bottle will light a 100 watt bulb for 4 hours.
- Energy saved from one recycled aluminum can will operate a TV set for 3 hours.
- Takes 95% less energy to make aluminum from scrap than from virgin materials.
- Because glass takes so long to decompose, the bottle you throw away today may still be littering the landscape in the year 3000.

Composting:

- Provides valuable nutrients to the soil.
- Prevents certain plant diseases.
- Reduces the need for chemical fertilizers and pesticides.
- Reduces contribution to air pollution by 95%.

## ARE YOU CONVINCED?



# Success Stories

## Reducing waste and recycling

The 3Rs represent the main approach that the Olympic Coordination Authority (OCA) in Australia takes to waste management. The OCA encourages recycling and waste reduction at all Olympic facilities. Recycled building materials are used during the construction of Olympic stadiums. Color-coded bins and waste-holding stations are used widely to encourage proper waste disposal, sorting and recycling. Extensive recycling characterizes the construction of the Sydney International Regatta Centre. Waste was minimized through careful ordering of materials. The opening of this Centre in 1996 marked the first stage of a comprehensive plan to save the environment in this area. The area was a former sand and gravel quarry, and was then transformed into a prime Olympic site. Large quantities of clay were removed from the area to make space for the Centre. The clay was shaped and replaced along the lakeshore to protect it from erosion.



## Successful Cleanups

Also in Australia, Homebush Bay has a history as a salt works area, a brickwork facility, an arms depot and a landfill dump. In the 1990s, soil studies there showed 9 million cubic meters of contaminated waste both in water and land. Domestic and industrial waste covered 160 square kilometers of the 760 square kilometers of the entire area.



The OCA decided to consolidate this waste into four areas known as containment areas. Waste was consolidated under a one-meter layer of clay. Contaminated seepage that flows through these containment areas is now collected by special drains. This contaminated fluid is now collected by special drains. This contaminated fluid is pumped into tankers and taken to liquid waste treatment plants, where it is carefully treated before it is discharged into the sewage system. The area is now the site of the famous Golf Driving Range. The cleanup was so successful that it earned the 1994 Vision for Australia Award from the Keep Australia Beautiful Council.



A similar success story exists in the cleanup of the waste dump outside Alexandria, Egypt. The dumping area was successfully transformed into an international garden and park that offers the public an attractive opportunity to find entertainment in nature. The park also has great value in contributing to the cleanliness of the air in the area.

**Success stories like these show us that it is never too late to think seriously about how we can save the nature we have destroyed!**



# So What Can We Do About It?

**Practise the 3Rs on a daily basis.**

Buy durable products that you will not need to throw away soon.

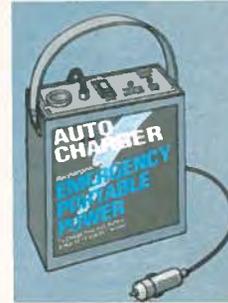


Don't buy products with lots of packaging.



When you go shopping, take a cloth shopping bag with you. This means you won't need disposable plastic bags for all the things you buy.

Don't take a plastic bag at a shop when you have only bought a few things.



Buy refillable pens and rechargeable batteries. Avoid all disposable products.



Buy your soft drinks in refillable bottles.



Buy only what you need.



Don't throw away that box ... that envelope ... that jar ... think of one more thing you can do with each item you're about to throw away. And when you run out of ideas, think of someone somewhere who might need the item you want to throw away.

Encourage recycling by buying recycled products. Check product labels and choose recycled products such as recycled paper.



Make sure you don't put hazardous or toxic materials in the rubbish. Your rubbish is a valuable source of recyclable materials!



Keep old newspapers dry and clean. Tie them in neat stacks and give them to your bin man. He will take them to paper recycling facilities.

Every little thing you do counts. Every little step you take is a step towards a cleaner and safer environment.

**Can you think of other things you can do?**

**Add to the list and boast the longest list to your friends!**



# Personality Quiz

## What Kind Of Waste Manager Are You?

For each item in the following questionnaire, choose the answer that is true about yourself. Your answers will show you how you can be the best waste manager!

**How many canned soft drinks do you have per day?**

- a) One or less
- b) Two
- c) Three or more



**How many snacks do you have per day (including potato crisps, candy and chocolate bars)?**

- a) One or less
- b) Two
- c) Three or more



**How many times per week do you have junk food and deliveries?**

- a) Once or less
- b) Twice
- c) Three times or more



**How many pens do you buy per month?**

- a) One or less
- b) Two
- c) Three or more



**How many used boxes or jars do you have in your room for storing things?**

- a) None
- b) Four or less
- c) Five or more



**How many times have you given away old newspapers, magazines or books in the last year?**

- a) Once or less
- b) Twice
- c) Three times or more



**How many times have you donated clothes to poor people and charities in the last year?**

- a) Once or less
- b) Twice
- c) Three times or more



**How many articles, pamphlets, booklets and/or books have you read about waste management (printed or on computer)?**

- a) One
- b) Between two and four
- c) Five or more



**How many items, on average, do you throw away every day (including leftover food, packaging)?**

- a) Five or less
- b) Between six and ten
- c) Eleven or more



**What do the 3Rs stand for?**

- a) Rubbish reduction rights
- b) Reduce, reuse and recycle
- c) Recycling and reduction regulations



**How many recycled items have you bought this week?**

- a) I don't know
- b) Two or less
- c) Three or more



**What is the toxic trade?**

- a) Trading in poisons
- b) Trading in chemical weapons
- c) Trading in dangerous waste materials



Now give yourself points for each question according to the scoring table on this page. Add up your total score.

What does it tell you about your waste management style?

### SCORING TABLE

<b>Questions</b> →	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
<b>Options</b> ↓												
<b>a</b>	5	5	5	5	0	1	1	5	0	1	0	0
<b>b</b>	3	3	3	3	3	3	3	3	3	3	5	0
<b>c</b>	1	1	1	1	5	5	5	1	5	5	0	5



# What Does It All Mean? Interpret Your Score.

## From 40-60 points

You are an excellent waste manager. You generate a minimum amount of waste, and you reuse items several times before you throw them away. You are very creative at thinking of ways for reusing products. You are also generous to people and the environment since you give used items to people in need and you encourage recycling. Think of ways to reduce waste even more and get an even higher score! Also, think of ways to encourage your family, friends, neighbors and classmates to follow your example. What can you do to spread the word?

## From 20-39 points

You are on the right track to becoming an excellent waste manager. You are trying to reduce the amount of waste you generate, and you reuse products whenever possible. You are also aware of the

importance of recycling. Keep up the good work and think of ways to increase your score on each question. Follow the 3Rs as often as you can.

## From 0-19 points

You have only just become aware of the problem of waste. You are starting to become familiar with the concepts of waste reduction and management. You need to find out more about the 3Rs: reduce, reuse and recycle. You need to think of creative ways to apply the 3Rs in your daily life.



# Glossary Of Solid Waste Words You Now Know

You have read the following words several times in this booklet. Can you remember what each one is about?

accident	cans	crop	dumping
accumulation	ceramics	crush	durable
agriculture	challenge	decompose	emission
ash	charity	demand	environmental damage
aware	community	discharge	erosion
ban	compost	disease	explosion
bin man	concept	disposable	facility
biodegradable	consolidate	disposal	fertilizer
bleach	consumer	domestic	fiberglass
blight zones	contaminate	donate	foil
bumper	creative	drainpipe	furnace



generate	litter	pre-cycling	sewage
generous	magnet	Pyrex	shipment
grain	manufacture	raw materials	shipping
hazardous	marine	recycle	solvent
illegal	nuclear power station	reduce	sort
incineration	nutrient	reduction	stack
incinerator	operate	repair	starve
label	organic	reprocess	tankers
laminated	organism	resources	tissue
landfill sites	packaging	reuse	toxic
landscape	pesticide	rubbish heap	transport
leftover food	pollutant	scrap metal	treatment
limestone	pollution	seepage	virgin paper
			waste pit





**Tourism Development Authority  
Egypt Environmental Policy Program/GreenCom  
U.S. Agency for International Development**

Cairo, Egypt  
2000