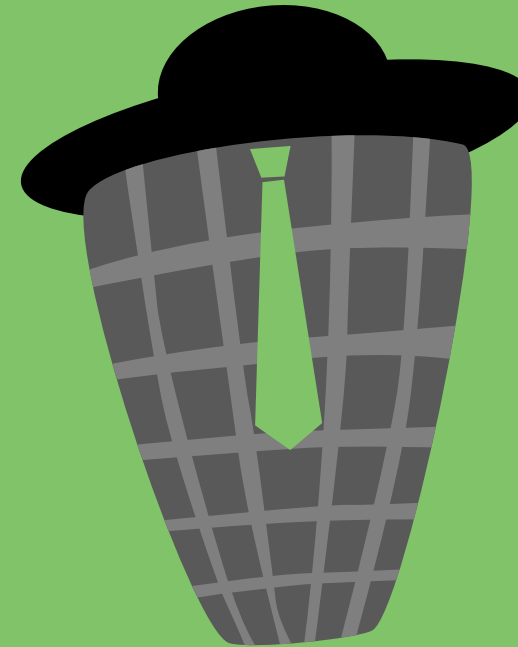


**Office Matters** is designed to ensure that when it comes to being greener, offices and workplaces do actually matter! The manual looks at the situation of waste in a range of offices and enables the user to understand and tackle various problems through effective and logical solutions. In order to make it easy to use, the manual examines the issues department wise, identifying what could work best in each one. It also suggests systems that can be evolved to ensure that any initiative is mainstreamed and long term.

Anyone who wants to find some way to make a greener office can use this manual, but it is an essential must-have for administrators and others dealing with Human Resource issues, because it ensures that even in everyday working, every office pollutes the planet less.

If you have an office success story to share with us, then let us know at Chintan-Bharti Waste Resource Centre. You can call us on 91+11+24314478 Or email us on [wrc@chintan-india.org](mailto:wrc@chintan-india.org)



# Office Matters!

A Handy Manual for Reducing Every Office's Ecological Footprint

Chintan-Bharti Waste Resource Centre

Supported by **Bharti Foundation**



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ENVIRONMENTAL  
RESEARCH  
AND  
ACTION GROUP

**bharti**

## About Chintan Environmental Research and Action Group

A registered, non-profit organization, Chintan works in the area of sustainable, equitable consumption through grass root work, research and outreach. We function in areas of the informal sector and recycling, waste management and toxics, environmental education and child environmental health.

The Chintan-Bharti Waste Resource Centre, run in collaboration with Bharti Foundation, offers information and hands-on solutions for a variety of problems related to solid waste. It aims to enable organizations and individuals to learn how to reduce the impact of their activities on the environment by better handling of the waste that is generated. We help build greater institutional knowledge about waste, its minimization, and building capacity to handle it in the best possible manner. We also offer practical assistance and link up organizations and individuals with similar needs.

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This manual and its contents are not copyrighted. We encourage you to reproduce them to spread the ideas contained further and implement a greener office. However, we request that you acknowledge the Chintan-Bharti Waste Resource Centre. This manual is also available as a soft copy. Please contact us for details.

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## Contents

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## Introduction

**Corporate Social Responsibility** (CSR) is packaged in many forms. In India, emerging trends suggest that this is perceived as how the organization engages with a specific cause that it believes to be the most important for the future of the country. In a sense, this is a continuation of the way most of us think. Given the poverty and inequality at our doorsteps, it is hard not to immediately reach out, individually and institutionally, to make a difference.

Yet, one of the most basic acts of responsibility lies in our consumption patterns. For everything that we consume, we take something away from the planet. When we spray pesticides on our plants and lawns, we are spreading this poison to the waterways that could eventually kill fish and other marine organisms. When people drive vehicles that

pollute, the poor air quality impacts our lungs. We're all linked up in a complex eco-system that scientists are still trying to make sense of. The more we consume, the more we damage the earth. This is not to say that we must straight away freeze and reconsider our every action. Instead, we should make an effort to understand the impact of our actions, especially in our own offices, where we spend a considerable part of our day.

This manual looks at waste, which is one of the biggest environmental issues that a number of offices face today. Waste is also a reflection of consumption. Fortunately, it's an area where much can be done to consume less and throw away an even lesser amount without becoming unproductive or sloppy. In India, we are particularly lucky because we still have several eco-friendly options even

for the most modern usage. On the other hand, it is extraordinary that while so many organizations elsewhere in the world are beginning to pay attention to the issue of greening their offices, we're still in the process of addressing the matter.

Educating ourselves to make an informed choice within the organization is also part of Social Corporate Responsibility. If anything, it serves as a role model for other organizations that we routinely interact with, thus spreading the message further.

We hope that this manual will enable a range of organizations to understand the impact of the materials and products that are consumed and wasted in their office and how these can be minimized. Our emphasis here has been to work on the principals of Zero Waste, an idea that suggests the possibility and practicality of creating the smallest mess possible. Of course, you may not actually be able to achieve a state of Zero Waste, but you can get very close by minimizing what is wasted, and finding sensible ways to handle the rest of the garbage. The principles of Zero Waste discourage burning and dumping useful materials into the municipal bin and use of toxic products. And yes, according to these principals, waste is not considered waste, but

discarded resources. We have combined this idea with that of the ecological footprint, which refers to the trail (or imprint) that one's consumption patterns leaves on the world's eco-system. Ideally, we should also continuously strive to reduce one's ecological footprint.

Most of the information in the manual is based upon the conditions prevalent in India, although we have used knowledge that has been generated elsewhere, when required.

No one disputes that it's always hard to break old habits. But when it concerns this beautiful, incredible planet that we are all a part of, it's worth a sincere effort.

### **Bharati Chaturvedi**

Director, Chintan Environmental Research and Action Group



## Section 1

# About THIS Manual

**Everyone of us** spends a considerable amount of time in our offices or work place, be it a small, large or home office, and are involved in a range of activities from preparing documents, office work (dispatching, faxing, printing, photocopying, etc) or procuring supplies. Larger offices which have the space for a garden or lawn, our activities could extend to even landscaping, watering and mowing. Nevertheless, each one of these activities has a clutch of environmental issues associated with it. This manual therefore attempts to provide you, the user, with opportunities to reduce the amount of waste that is generated.

In addition you will also find information about:

- The pattern of materials currently used in offices and their alternatives.
- How these changes suggested in the manual can be made.
- Names and addresses of the various

suppliers of alternatives you will come across.

### Purpose of this Manual

This manual will help you identify areas where waste minimization is possible. It will teach you about the 4Rs: Refuse (what you don't want), Reduce, Reuse and Recycle office waste. The information, presented in a simple and easy-to-follow style, will help you identify the different kinds of waste that various office departments generate. Practical information and examples of opportunities for office waste management, water and energy conservation are also provided. Divided into seven sections, each sub-section in the relevant main section is dedicated to a source of waste, the issues related to it and their possible solutions.

The manual is intended to provide a broad overview of office waste

management. More detailed information can be had from other sources or from the Chintan-Bharti Waste Resource Centre.

### Who Should Read this Manual?

This manual is written for anyone interested in making their office a greener space. However, in particular, the manual provides information that may be of use to:

- The HR Department
- Office managers
- Administrators
- Departmental Heads
- Office staff

It would also be handy if the CEO of the organization glanced through the manual as well.

### What is the Problem?

Of the total waste generated in urban Indian households, about 20% can be recycled. In offices, this figure can be as high as 59%! In households, over 60% of the waste is wet waste, or biodegradable waste, while a lesser amount of such waste is found in offices. In both cases, as much as 13% could consist of grit, or inert waste from sweeping and other cleaning activities. An army of waste-pickers sell the recyclable waste—paper, plastics and metals—to waste dealers to earn a living. The waste is finally sent to factories for reprocessing.

It has been observed that waste often reaches a bin that is overflowing because the municipality is unable to

clear it on time. Frequently, it is burned as a means of disposal by both the municipality and local communities. This leads to the environment being polluted in a number of ways: carbon particles that are released in the air cause respiratory distress, poisonous heavy metals like lead and cadmium present in the leftover ash can enter our food chain and bodies, and dioxins, which are amongst the world's most toxic chemicals, cause cancers and lead to developmental disorders in children.

However, in the event that the municipal trucks do pick up the waste, it reaches crude and rapidly shrinking landfills. This practice too damages the ecosystem since biodegradable waste putrefies and produces green house gases that lead to global warming. In fact, in terms of green house gases released, 2% of the carbon dioxide and 6% of the methane found in India is on account of waste disposal activities. Waste in landfills combines with dew and rain, creating a toxic soup called leachate, which contaminates the ground water.

It is clear that our waste pollutes one of the natural sources of water available to us, thereby adding to an already existing problem. We must realize that water is a precious resource that is limited, and if we fail to use it judiciously, it will soon be finished. Time and again, when tube wells are used to pump up water, the entire

area is impacted and locally the water table drops even lower, even this water could be polluted. Currently, there are several disputes over water—that are taking place both locally and at the national level. We should also bear in mind that not only is the availability of water crucial, its quality too is equally important. In India, contaminated water is a major killer of children under the age of five years. If we continue to show scant regard for water, our very survival could well be called into question.

Another area of concern is energy, a resource which is perhaps the least understood and taken for granted the most. Energy, in India, is generated largely from thermal power plants and dams. Only a modest amount is actually obtained from solar energy, despite the optimal conditions prevailing in many parts of the country. Thermal power plants not only pollute the air, they also produce fly ash, which is both toxic and difficult to dispose off. Increasingly, studies are also suggesting that India, because of its thermal power plants, is contributing extensively to global warming. Dams, in particular large ones, also cause a range of environmental and social problems. While we may not be able to address these problems directly and with any significant impact, it is important to at least minimize the use of electricity and stop wasting it. No office is too small to be a part of what is clearly a huge problem. By

finding ways to curtail waste and move towards a path of zero waste, the environment is impacted as well.

#### Sensible waste handling in your office

Typically, about 20 different kinds of waste (dry and wet) are generated in an office. These include wet waste (food) dry waste (paper, cartons, cardboard boxes, envelopes, stationary, printer cartridges, plastic cups, broken electric fittings etc.)

An office benefits in several ways from reducing its waste:

#### Monetary Benefits

When you cut down the amount of water, energy and stuff that is consumed, there is a tidy saving in store for the organization.

#### Setting a Benchmark

An office that has visibly succeeded in reducing the amount of waste it generates sets a benchmark for other offices. It develops into a role model that can actually spread change beyond itself.

#### Implementing Corporate Social Responsibility (CSR)

CSR is not only about how an organization engages with wider, social issues but also, how it handles its own consumption patterns in a manner that reduces the environmental and health impact of its everyday functioning.

**So, let's begin RIGHT AWAY!**

## Section 2

# Implementing a ZERO Waste Plan

**This section** deals with the strategies that you can use to reduce the ecological footprint of your organization, using the practical ideas and information in the manual. The suggestions you will find here are only meant to guide you. Pick what works for your organization and innovate or improvise for the others.

### Get Started

Just before...

WAIT! Before you even start, undertake a random survey to determine what the employees know about the waste that is being generated, if they have any ideas at all or if any of them have already begun doing something. This will be the baseline that will help you to monitor your programme and identify ideas that informally exist in the organization. It will also generate interest in the programme.

You should also obtain a complete list of all the materials procured from the administration and procurement department. Over time, this will reveal whether there has been a change in your consumption patterns.

Getting started actually means getting organized. Here is what you must do:

- **Get a specialist** to undertake a detailed waste audit, if you haven't already done this. This will help you identify key areas that you need to work on. You might come across some startling results such as that it is not always just paper which is wasted in large quantities, but many other materials too.
- **Create a Zero Waste Team.** This group should represent various departments and levels, to the extent appropriate in your organization.
- **Share the result** of the waste audit with them and slot regular meetings to work out methods and procedures

to reduce waste, based on ideas from this manual.

The team should undertake the following work to get started:

- **Make a list**, priority wise, of the materials you wish to reduce. Make it as detailed as possible and do not put more than one material on the same priority level.
- **Remember to check** on various departments, big and small, and their waste outputs when you make this list.
- **Focus on the first priority.**
- **Hold a meeting** with everyone concerned and detail action points. If required, have more than one meeting so that there is a broad consensus on action points.
- **Make a road map** for your priority. This will include schedules and show which departments are linked with each other.
- **Meet each department head** and work out how this will be done. Make sure the linkages between departments are clear. For example, if one department can only begin its work when another one has finished, then this should be reflected, with time lines, on the map towards zero waste.
- **Once the strategy and action plan is finalized**, begin your communications. See the section on Communications for more information on how to do this.

- **Getting started** should involve both action and communication.
- **Don't forget** that you need more than inter-departmental integration. You also need to integrate people of different levels from across the organization. Involve All Levels.

### Monitor and Evaluate your Progress

You need to schedule a monitoring and evaluation timetable. Schedule the evaluation in advance, so that everyone is aware of it and will work with the date in mind. Follow these simple ideas for a quick and easy evaluation:

- **Convert the procurement list** you got in the beginning into a table with the base data and columns for updated data. This will show reductions, when they take place. The procurement department can also keep such a table to monitor and report any change. There should also be a space for noting shifts to more eco-friendly materials, even if the quantity is the same.
- **Send the same questionnaire to the same persons** as initially, to gauge any difference in perception and knowledge. Do not send it out more than once in 6 months, as people will get irritated.
- **Check on the waste being sold off to the kabari.** Has it reduced? Take your time to understand why the reduction may have taken place.

Could your colleagues be reusing paper? Could they be taking out fewer printouts?

- **Devise online forms** for each of these to make the exercise easier and simple to follow.

### Motivation

The most important person to motivate is YOU. Convince yourself first, you will then be able to persuade (or convert) others much better. The programme is based upon motivating people, not making your ideas a chore that everyone hates.

It is likely that the results of the questionnaire will be less than encouraging. This should not bother you, but only guide you to making priorities.

*Motivation is about acknowledging positive and innovative action and intention.* Here are some ways by which you can do this:

- **Create a reason** for people to participate. Share data, but finally, link it all up with the individual's life-style. For example, if we continue to use paper manufactured from wood pulp, then we're responsible for destroying entire forests. This is one of the primary reasons for deforestation, which in turn precipitates floods. Floods mean a substantial portion of our taxes are actually being used not to improve

infrastructure, but for relief in a situation that could have been prevented.

- **Recognize** those who take initiative.
- **Convince** the senior managers to take such steps that will help them to serve as role models.
- **Introduce** an inter-departmental competition. But don't forget to provide ample lead-time.
- **Circulate** any interesting data about the issue by email.
- **Share** information, especially if it shows the organization has improved.
- **Motivation can only last** if it can be channelled into something that is relatively easy to accomplish. Keep the processes as simple as possible.
- **If you like**, give each floor, department, unit or even an individual a large tray which will serve as a paper bank. This is where they can all see the amount of paper they can reuse and the team effort is at hand for everyone to see.
- **Create a buzz.** Ask your colleagues if they have done their good deed for the environment today? You could actually email such questions by 3 pm, so that anyone who wants to do anything has the time to do it before leaving for the day.

### Let the Results go Public

It is essential that the results, of success or less, are shared. Only then can there be a buzz about the work that the staff can feel proud of and take share beyond just the office.

**Obstacles**

Naturally, there will be obstacles. Here is what they will be like:

Obstacle No. 1

Possible Issue:

**I have to go out of the way.**

Potential Answer:

In the course of the day, a considerable amount of electricity and water among other things are consumed. This is the only gesture we make towards the environment. If we're unable to even do that, then what kind of future will we have?

Obstacle No. 2

Possible Issue:

**It takes up too much time.**

Potential Answer:

Review the system. Does it need readjustment? Do others also think so? Therefore, what is the solution?

Obstacle No. 3

Possible Issue:

**Everything is recycled in India, so why are we worried?**

Potential Answer:

Recycling is not the first priority. It's reducing. So let's begin by consuming less.

Obstacle No. 4

Possible Issue:

**It shouldn't cost anything extra.**

Potential Answer:

If it costs a bit more, it's only a small price to pay for being a responsible

organization. Besides have we ever tried to measure the cost of damage our rampant consumption causes?

Obstacle No. 5

Possible Issue:

**It's too small to really matter.**

Potential Answer:

Even a small amount of mercury in a single thermometer is enough to contaminate a medium sized lake for almost 50 years. Every action makes an impact. Without doing something, we would be indifferent.

## Section 3

**REDUCING Waste****Paper**

Do you feel like you will be buried under a mountain of paper every time you enter your office? If the answer is yes, you're not alone. Office workers generate tons of waste paper throughout the year. In most offices paper is the single largest type of waste generated. Whether it is recycled or simply thrown into the waste paper bin for waste-pickers to deal with, it costs money to buy and valuable resources go into creating it.

The key, therefore, is to use less and thereby reduce the amount of materials thrown out every day. The following tips are designed to reduce

**The US throws out enough office and writing paper annually to build a wall stretching from Los Angeles to New York City!**

the amount of office paper waste. By practicing some of the techniques mentioned in this manual, you and your organization can easily cut paper costs.

Let us first look at some general concerns regarding **PAPER RECYCLING IN INDIA**

**Poor waste paper recycling:**

India undertakes only a small amount of recycling, since not more than 40% of the paper is recycled. Countries like Japan recycle as much as 60 to 70% of their paper.<sup>1</sup> Although some of this can be explained by the amount of paper filed, the gap in general is due to other reasons.

**Lack of awareness and segregation:**

Paper cannot be recycled if it becomes damp. Unfortunately, a lot of waste paper becomes soggy as it is mixed with wet waste. This is because waste is not segregated in India at the user

level. Hence, lack of segregation impedes paper recycling.

### ENVIRONMENTAL ISSUES AND PAPER PRODUCTION

Paper production entails some environmental losses, which include:

- **Loss of natural habitats to intensive tree farming:** The main sources of hard pulp in India are bamboo and eucalyptus trees. Intensive plantation of these trees has resulted in the destruction of plant life indigenous to particular geographical areas, which has in turn disturbed the natural habitats of the flora and fauna in these areas. Additional raw materials come from supplementary sources such as fixed farm forestry, which plants a useful mixture of crops and uses agro waste, far less environmentally damaging.
- **Pollution from manufacturing:** Not only is paper manufacturing responsible for widespread deforestation, the pulp mills that bleach pulp with chlorine release dangerous organochlorines into water bodies. These harmful chemical compounds are in turn transmitted through the food chain and finally reach us. In humans beings and mammals chlorine accumulation hampers the development of the foetus, cause reproductive abnormalities and other problems.

- **Water consumption and waste disposal:** Bleaching pulp not only has the effects described above, but it also requires vast quantities of water. According to a study by the Centre for Science and Environment, (CSE), on an average, large-scale Indian mills still consume about 250-350 million cubic metres of water per tonne of paper produced. The paper and pulp industry in the country consumes 905.8 million cubic metres of water annually.<sup>ii</sup>

Even if we do import paper pulp, remember the environmental damage continues to take place in some other part of the world.

**Chintan was asked to carry out a study for an organization where 67 kg of paper was consumed every day. The study revealed that over 77% of the A4 size paper was discarded after only one side was used. This meant that for practical purposes, half this amount (25.8 kg) was simply being wasted without being used at all! So, a mind-boggling 6.19 tons of paper were being discarded annually, which meant approximately 111 trees were cut without really serving any purpose because of this practice!**

### Why waste paper recycling is environment friendly?

Consider this: one ton of recycled paper uses 64% less energy, 50% less water, causes 74% less air pollution, saves 17 trees than one ton of paper products from virgin wood pulp.<sup>iii</sup> Still need any more reasons?

### PAPER USAGE IN YOUR OFFICE

Let's face it, try as you might, it is impossible to maintain a paperless office. From the time computers were introduced with visions of a paperless office, to this day (in terms of paper conservation at least) we haven't come a long way. Yet, it is possible to be almost paperless.

Break up the office into the following sections to handle what could otherwise seem like an impossible task.

### PRINTOUTS

Most documents are printed even before they are read, such as copies of letters, notes, sometimes even jokes and images from the internet are printed out. The problem with this is that paper is a valuable resource, and taking a printout is not germane to spreading information. Here are some of the major reasons why so many print outs are taken:

- **Failure** to understand the value of paper.

- **Impatience** with computers, since some may not immediately display that they are executing the print command.
- **Demands** for wider circulation and routine filing.
- **Poor quality** of print outs or jammed paper.

WHAT YOU NEED TO DO:

- **Load the printer** paper trays correctly to avoid paper jams. Train the office staff to shuffle paper so that the sheets are not stuck before being placed in the tray.
- **Learn to edit** on the computer before taking a printout, use print preview to make sure that there are no mistakes in your documents.
- **View the margins** and page settings before printing on letterheads.
- **Take printouts of only** the pages you need. Learn to use 'current page' or 'pages' options.
- **Ensure** that your printers are serviced periodically. This will reduce the chances of a paper jam.
- **Check** that the printer cartridge has enough ink because faded or uneven printouts mean taking another printout.
- **When buying** a laser printer, verify that it can be set to make double-sided copies. Remember, a single-sided, double-spaced document uses four times as much paper as a double-sided, single-spaced document.
- **Always try and use** single spacing for your documents, where possible; set margins narrower for drafts, and change margins to avoid pages with little text.

- **Rework** the organization's attitude to accept minor changes by hand and avoid taking another printout. Use whitening fluids where possible.
- **If you are** an office manager then you can play an important role by ensuring that your employees use emails internally, and that all drafts are accepted in soft copies. Encourage the printing of rough drafts and informal memos on the unused side of paper that would otherwise be thrown out.
- **Conduct** a short refresher training programme within the organization to explain how the computer can be used optimally to save paper.

See Appendix 1 for some paper saving machines available in the market.

### FAXES

How can sending or receiving a simple fax result in wasting paper?

Here's how:

- Faxes are usually paper-based. Paper is used to receive and send them.
- If you have fax machines that use thermal paper, then each fax must be photocopied before it fades.
- Sometimes faxes have to be sent several times because the transmissions are unclear.
- Faxes are sent with covering sheets, which usually have only a few lines on the entire page.

WHAT YOU NEED TO DO:

- **Reformat** faxes to omit covering

sheets. If you have to fax a formal document, then your covering sheet can be reformatted to take in the rest of the message.

- **Alternatively**, you can also install a program that allows you to fax directly from a computer so that you don't have to take printouts.
- **Make soft copies** of the fax available to everyone, if necessary. Scan incoming faxes for circulation if you need many copies.
- **Use email.**

**Managers can set an example and create a ripple effect by asking for fewer hard copies of documents and encouraging your team to submit soft copies.**

### PHOTOCOPIES

It is hard to imagine an office that manages to operate without a single photocopy. But it's easy to visualize one that takes care to save paper while photocopying. Wasteful photocopying takes place because:

- Only one side of the sheet is used.
- The size of the document that is to be photocopied is not reduced.
- A small amount of text is photocopied on each sheet, even if it is acceptable to photocopy many documents together.

WHAT YOU NEED TO DO:

- **Check** if the size of the material to be photocopied can be reduced.
- **Where possible** see if more than one document can be photocopied on the same sheet.
- **Can you use both** sides of a paper?
- **Can you use paper** that has been used on one-side only?
- **If your organization is acquiring** a new photocopying machine, buy a model that can copy on both sides. Alternatively, reset the existing machines to enable them to print on both sides.
- **If your organization is small enough**, consider sharing and circulating only a single copy of documents.

### USE THE COMPUTER TO YOUR ADVANTAGE

Many of us are unaccustomed to reading off the computer screen and frequently ask for a hard copy of every document, including emails. When reports and larger documents are downloaded or circulated, they are almost always printed out. In other words, more than a decade and a half after computers have become commonplace, the world is still in the process of getting used to them.

WHAT YOU NEED TO DO:

- **Treat** your computer as an ally in saving precious resources:
- **Take a liking** to your computer screen. Train yourself to read

documents and emails on screen, and not in the form of hard copies.

Software like Outlook Express lets you to read emails leisurely offline as well.

- **Instead of** taking printouts of all your documents consider using CDs and floppies to store your data.
- **Flat screen** TFT monitors, although expensive, are easier to read from than the regular CRT monitors. So, the next time monitors are being purchased, consider getting as many flat screens as possible.
- **Accept all** drafts as soft copies. Store soft copies of personnel forms such as allowance, conveyance, leave application and reimbursement forms etc. if this is not possible then reduce the size of these forms.

Although there is no way of definitely disposing off electronic wastes, such as printers and cartridges, you could actually use the services of HP's take back programme. See Appendix 8.

**An enterprising bureaucrat in the Ministry of Agriculture actually reduced paper consumption by posting all notices on the intranet. He laid the onus of reading and taking action on the officers themselves. He then disconnected all the computers that were directly hooked up to a printer, making it harder to shoot printouts.**

**FORMATTING DOCUMENTS** 

When you format a document with care, you actually save space, and hence, paper, if you need a print out.

**WHAT YOU NEED TO DO:**

- **Learn to use** Track Changes to make corrections to your documents. This feature actually encourages editing and makes it much easier to work online
- **Every time** you press enter for spacing you waste more space than when you use paragraph spcing.
- **Use 'Page Set-up'** to minimize the margins, space between lines and paragraphs to as little as you find aesthetically acceptable.
- **When formatting** documents, pay attention to the font size. Fonts such as Abadi MT Condensed and Ariel Narrow occupy less space. Also make sure that the font size in the main body (excluding headings etc.) does not exceed 11 points.

**CIRCULARS** 

Each time information is circulated in the form of a circular within the organization, one sheet of paper per employee is needlessly wasted.

**WHAT YOU NEED TO DO:**

- **Important information**, circulars or memos can be posted in central traffic areas such as the break room, beside photocopiers, or in rest rooms.
- **Depending on the size** of the organization, consider installing

intranet. Employees can then log on and read the necessary announcements, circulars, internal memos, reports etc.

- **Encourage employees** to read emails circulated within the office. Install pop-up mail software so that each time anyone receives a new mail he/ she is immediately informed.
- **Make staff announcements** during lunch and other breaks so that the information is disseminated immediately.

**WHAT DO YOU DO WITH WASTE PAPER?**

- Set up a paper bank so that draft and computer paper can be reused for notes and scrap paper. Similarly, an envelope bank can also be set up to recycle old/used envelopes, once everyone is taught how to open envelopes carefully.
- If confidential documents are to be destroyed put them through a shredder. Avoid burning paper at all costs. By doing so you will release numerous pollutants, including dioxins, into the air.

**SHOULD WE ALSO TAKE A CLOSE LOOK AT THE TYPE OF PAPER WE USE?**

Of course! Some types of paper are wood-based, while some others are produced from agro waste. Therefore, some are less harmful than others. See Appendix 2 for the full story on paper manufacturing. When you

buy one kind of paper over the other, the chances are that you are either promoting recycling or encouraging the destruction of forests.

It is also important to remember that not all recycled paper is handmade. However, all handmade paper is recycled paper. See Appendix 4 for the difference between recycled and handmade paper.

**WHAT YOU NEED TO DO:**

- **Use handmade paper** for niche purposes, such as visiting cards, gift-wrapping and stationary.
- **Choose the most eco-friendly**, non-handmade paper for taking print outs etc. If you already use paper of a particular brand (known for its 'green' guidelines) or discover some other brands later, then, by all means carry on doing so. Alternatively, Appendix 2 contains a list of environmentally friendly brands for you to select from. Follow this principle even if you use very little paper.

**Office Stationery**

Office stationery includes visiting cards, files, paper clips, office trays, pins, pens, pencils, transparencies for presentations and so on. Most of these items are obtainable in metal as well as in plastic-coated metals. Often, the plastic-coated variety is available in bright and cheerful colours, which people prefer to the bland metal ones.

**Take a closer look at your stationary and you may notice a couple of things:**

1. **A lot of it is made of plastics.**
2. **You may be using more stationary than you actually require.**

*The question is not that you're using a harmless little plastic paperclip. The point is that by using such materials, you are participating in consuming finite resource for short-term use. In fact, you are endorsing it.*

**Since cheaper and greener alternatives** exist for the almost all-plastic stationary that we use, we owe it to ourselves to steer clear of plastic. It is important that we all consciously make an effort to reduce its use because:

**Plastics are based upon** an unsustainable and finite resource—petroleum. Four percent of the world's petroleum goes into manufacturing it.

**Plastic cannot be strictly recycled**, it can only be down-cycled into substandard plastic. This means that there will always be a demand for fresh, high quality plastics since the recycled material cannot be used for the same purpose.

**A number of plastics are not only non-biodegradable;** they are also a cocktail of toxic additives.

ASK YOURSELF:

1. Do I really need it?
2. Can I minimize its use?
3. Is it made of plastic?
4. If it is, are there options made of metals or other materials?

If your answer to all but the second question is yes, you are already on the path towards making a change.

### VISITING CARDS

Visiting cards or business cards are an essential accessory of our working lives. They serve as polished letters of introduction. However, does your card introduce you as an environmentally friendly person?

Here are some facts you should know about visiting cards:

- Increasingly, visiting cards currently in circulation are laminated.
- LDPE (Low Density Poly Ethylene) is used for plastic-coated cards, which is non-bio degradable.
- Laminated cards, with single colour printing costs about one rupee per card.
- Paper cards cost the same and have significant environmental benefits.
- Many plastics have a polluting life-cycle, from start to finish.

WHAT YOU NEED TO DO:

- **Avoid** using laminated visiting cards. Explore alternatives such as recycled paper, or regular paper. Since the costs are almost similar why not switch to a more eco-friendly option.

**Consider reducing the size of your card. It will surely not make any difference to the information printed on it.**

### Curb the Correction Fluid Habit!

**Did you know that street children abuse whitening correction fluids with serious consequences to their health? It is therefore our responsibility to be extremely careful while disposing off correction fluids. Encourage employees to destroy the bottles it comes in, before disposing. The cleaning staff too must be entrusted with this job.**

### FILES

Filing documents in order to maintain records for future reference or otherwise is a universal activity undertaken in every office. Offices often use plastic files for storing records, as they are attractive and durable. But the fact remains that plastic is a non-biodegradable material.

So, why use plastic files when other, more eco-friendly options are to be had?

WHAT YOU NEED TO DO:

So the next time you have to undertake some serious filing, make sure you buy cardboard files rather than plastic ones. Think of the savings you will have by making this switch because cardboard files are a lot cheaper than their plastic counterparts.

Cardboard is manufactured from low grade paper and cartons which cannot be recycled into any other superior quality product. If we do not use cardboard files, there will be fewer reasons for manufacturers to continue to recycle these low grade products. If using plastic files is inevitable, then make sure that they are limited in number and are properly re-used.

### PRESENTATIONS

We have several alternatives for making business presentations, yet, many of us continue to prepare them on transparent sheets of plastic.

WHAT YOU NEED TO DO:

- **The perfect solution** is to make presentations with software like Microsoft's PowerPoint; Linux users can work on Kpresent or MagicPoint. Not only will you spend far less time preparing your presentations, you will also have a number of design options to make them look smarter.
- **Use** compact discs to store your presentations.

**Avoid getting your documents and papers spiral-bound because it involves the use of a plastic sheet (for the cover) and a plastic spine to hold the pages together. Instead use a thick sheet of paper for the cover, and bind the pages with a metal wire. The best thing to do would be to simply get your material hardbound for future use.**

### THERMOCOL

Thermocol is extensively and often indiscriminately used in offices to make partition boards, makeshift bulletin boards, placards etc. in most offices.

Thermocol is basically E-PS or extended polystyrene (which is a type of plastic called polystyrene). Styrene, a petroleum by-product, is the primary raw material from which polystyrene is made. Other raw materials that are used include benzene, ethylene and butadiene. When styrene is produced, known carcinogens like benzene are also present. Workers in these factories have developed allergies, dizziness and severe kidney and liver ailments. How healthy does that make it for us?

WHAT YOU NEED TO DO:

- **Use** boards made out cork and other natural material instead of thermocol

for bulletins and cut outs.

- **Ask** your own office colleagues for ideas on more alternatives to various thermocol things that you use in your office.

### Pantry and Canteen

Almost every office, large or small, maintains a pantry or a canteen where a considerable amount of waste is generated during lunch and coffee breaks. This waste includes food leftovers, rotted food, egg shells, fruit and vegetable scraps, coffee grinds, tea bags and food packaging like cling-wrap, aluminium foil, tissue paper etc. This refuse can be broadly classified into wet (food waste) and dry waste (packaging)—much of which is dumped in to rapidly shrinking landfills.

**A lot of your office waste comes from the pantry and canteen. This includes dry waste such as aluminium foils, chips and biscuit wrappers (BOPP), cling wrap, PET bottles, plastic cups and stirrers and tissue paper. Your wet waste includes: egg shells, left over food, fruits and vegetables, tea bags etc.**

#### WET WASTE

Our aim should therefore be to prevent this waste from reaching the landfill in the first place, because, food and other wet waste cause considerable

damage to the ecosystem since it putrefies and produces green house gases that lead to global warming. In addition, there is a growing concern about hazardous and toxic substances that leach from landfills and contaminate the soil and water.

#### WHAT YOU NEED TO DO:

One simple approach to the waste segregation and recycling process is to **segregate waste at the source:** As per the Municipal Solid Waste (Management and Handling) Rules, 2000, all the waste, whether at home or at office, should be segregated as wet and dry waste in two separate bins: Blue and Green. Deposit dry waste in the blue and wet waste in the green bin respectively.

#### Compost your food waste

Composting is a form of recycling that converts wet waste into a topsoil enhancer! It is a simple procedure that requires minimum effort. You can have an indoor or outdoor compost system. A well-operated composting system can divert a significant quantity of waste from landfills and save you money on having to purchase chemical fertilizers for horticultural purposes. See Appendix 11 for more details on composting.

#### DRY WASTE

As mentioned earlier, dry waste includes a variety of packaging material like cling-wrap, aluminium

foil, Tetra Pak packages etc. Let us look at each of these items and see how their use may be reduced.

#### CLING WRAP

- Cling-wrap is a plastic use that often escapes our notice. Many of us use cling-wrap to pack our sandwiches and lunch. However, this material is in fact potentially damaging to our health. Laboratory tests conducted by the Consumers Union, in the US, found high levels of the Phthalate, Diethylhexyl Adipate (DEHA) in stored samples of cheese that was wrapped in PVC films. DEHA is considered a possible human carcinogen.
- **Even safer cling wraps are a waste** of precious resources and involve the use of plastics for a very short period only.

#### WHAT YOU NEED TO DO:

The biggest threat of food contamination, especially of food that is served in canteens is not while it is being handled at the counter, but even as it is being cooked. Consequently, if the food has been hygienically prepared, then using cling wrap provides almost negligible protection. On the other hand, if it is cooked in an unhealthy environment, then no amount of cling wrap will ever make it safe.

If your lunch from home is cling-wrapped, consider carrying your food in paper packets, insulated or even tough, steel lunch boxes, which are now considered trendy.

**Hand over Dry Waste!**  
Waste-pickers play a vital role in recycling dry waste. By permitting them to help dispose off your office dry waste, you are indeed adopting an eco-friendly approach because the waste-picker will sell it to the kabariwala, who in turn will send it on to various recycling units. So all that waste, which would have otherwise have been dumped in a landfill, is instead now being recycled or down cycled.

#### PET BOTTLES

The clear plastic or PET (Poly Ethylene Terephthalate) bottles that we often use to store water, fruit juices etc. are neither as hygienic nor safe as they may appear. Using PET has a number of drawbacks, some of which are:

- After a period of time PET releases acetaldehyde into the various products that may be stored in it such as fruit juices, alcohol, pickles and cooking oil.
- PET is poorly recyclable. India only has a handful of recycling facilities to recycle this material.

#### WHAT YOU NEED TO DO:

- **Glass is the ideal** packaging material for edibles. It is clean,

environment-friendly and can be recycled. Use glass in your pantry or fridge instead of plastic or PET bottles.

### **BOPP (Biaxially Oriented Polypropylene) PACKAGES**

This material is derived from a versatile plastic called Polypropylene (PP). Your bag of chips, packet of biscuits and other snack/food packets are all packed in BOPP. Even though manufacturers claim that the material is ideal for packaging because it keeps the contents fresh and crisp, this material cannot be recycled.

WHAT YOU NEED TO DO:

- **Offices should buy** products like milk powder, tea, coffee, sugar etc. in bulk or bigger packets. This will reduce the amount of BOPP waste that will have to be disposed off.
- **Many of these materials** are available in other suitable packaging, such as bottles and tins. Try them.

### **OTHER PLASTICS**

Other plastic items that are often used in canteens are thermocol cups, stirrers etc. The styrene that is used to manufacture them leaches out of the plastic and seeps into the substance, which could be your coffee.

The National Institute of Health Science in Japan has reported that they have found hormone disrupting toxins in polystyrene containers.

WHAT YOU NEED TO DO:

- **Switch to** using permanent dishes

and cutlery rather than disposable ones.

- **Give your staff their own** mugs, printed with the company's logo and a message to promote a clean and healthy environment. Make extra mugs available for visitors.
- **Consider implementing** a (almost) garbage-less lunch in your office. Encourage employees to bring their lunch in reusable containers. Share this idea with the contractor and work with him to ensure that the entire chain of supply begins to generate less waste.

#### **A Curdled Affair!**

**Chintan carried out a waste audit for an organization that bought pre-packed curd for its employees' lunch everyday. A little of research revealed that the curd from a sweet shop was cheaper than pre-packed curd. However, when they began to prepare curd in-house it not only reduced the amount of money that was being spent, but it also cut down the number of plastic cups, approximately 36,000 annually, that were being disposed off.**

### **PAPER NAPKINS**

Have you ever noticed how paper napkins are randomly used while serving food or drinks? Take for example the napkin that is placed

under a glass of water; or the one that is placed between the plate and the spoon; the napkin your snacks are wrapped in; or the one that is used to wrap the glass in which the other napkins are kept!

ASK YOURSELF:

- Does your sandwich really need the napkin?
- Can a coaster not replace the napkin under the glass of water?
- Are the office plates and spoons so unhygienic that we need to place a napkin between them?

*If your answers to these questions are in the negative, then inform the canteen contractor and office staff and discontinue this irrational usage as soon as possible.*

WHAT YOU NEED TO DO:

- **Consider installing** hand driers in your office. It will definitely turn out to be a good investment in the long run.
- **Offer both** cloth towels and paper ones in kitchens and restrooms. Request the canteen contractor to make less paper napkins available at a time.
- **Provide cloth napkins** in the canteen.

### **ALUMINIUM FOIL**

Aluminium foil is commonly used to keep food warm. Sometimes, it is also used to cover glasses of water.

**Disposal of pantry waste is a major concern today. This includes both biodegradable and non-biodegradable waste, all of which ends up in the landfills. During the monsoons the garbage leaches toxins. As a result, the ground water is severely contaminated. These wastes also release greenhouse gases like methane, which leads to global warming.**

What's wrong with that?

- Aluminium is mined from bauxite, which is an extremely energy intensive process.
- While aluminium foil can be recycled, manufacturing the foil consumes such large amounts of energy that discarding it after a short duration is actually an unjustifiable waste.

WHAT YOU NEED TO DO:

- **Use insulated** lunch boxes that will keep your food warm.
- **Avoid wrapping** your food in aluminium foil or cling wraps or cellophane paper. Instead consider wrapping your sandwiches or rotis in cloth napkins or simply reuse your bread packets.
- **Don't fill** glasses of water and cover them with foil, serve water as and when required. This will save both foil and water.

## Washroom and Miscellaneous Toxics

Many cleaning products contain hazardous chemicals. Although the amounts in question are small, the combined effect of these substances on the environment and your health can be significant. Take the washroom for example, which is used by yourself and the visitors to the office. Did you know that every time you use the office bathroom you might be unwittingly exposing yourself to hazardous substances such as phenyl, mothballs, acids and other harmful chemicals?

*Your cleaning agents are not so clean themselves!*

### NAPHTHALENE

The US Environmental Protection Agency (EPA) has classified naphthalene as a Group C chemical—a possible human carcinogen.

Long exposure to naphthalene balls can possibly lead to diseases such as hemolytic anemia, and damage the liver and nervous system.

Hemolytic anemia has been reported in infants born to mothers who may have suffered prolonged exposure during pregnancy.

Cataracts have been reported among cleaning staff who have been severely exposed, due to inhalation and ingestion, to naphthalene.

**The World Bank Headquarters in Washington D.C has replaced liquid soap with liquid soap foam, which is diluted liquid soap, to reduce the amount of soap used in washrooms, thereby conserving materials.**

### PHENYLE

Phenyl is the brand name of a toxic chemical, which is essentially a composite mixture of aromatic compounds of the phenol group. Prolonged exposure causes non-allergic wheezing, erosion of nasal cell lining, and triggers an inflammation in the lungs. Consumption of a small amount causes vomiting in adults; among children, in addition to the constricting of gastric sphincters and respiratory failure, if consumed in a dose larger than 7 gram per kg of a child's body weight it can lead to death.

### ACIDS

Acids are extensively used in cleaning products, most commonly hydrochloric and phosphoric acids. These substances are extremely hazardous and can lead to serious burns if it comes in contact with your skin. Acid fumes can cause severe respiratory burns as well.

### AIR FRESHENERS

It is a common misconception that fresh air stands for perfumed air. Nothing can be further from the truth. We must realize that clean or fresh air is odourless—it is the absence of any kind of smell, whether good or bad.

- There are two kinds of deodorizers - the spray type that is available in non-recyclable aerosol cans or plastic packages (which add to unnecessary solid waste) and the ones with wicks that spread their fumes continuously.

- Air fresheners do nothing to improve air quality, on the contrary they release toxic pollutants.

### The PRICE OF "FRESH AIR"!<sup>iv</sup>

- Air fresheners contain chemicals like formaldehyde that can damage our sense of smell, irritate the respiratory process, and can even cause cancer. Individuals with asthma, lung infections, or similar ailments are often severely affected by it.

- Air fresheners contain a number of ingredients that can cause irritation of the nose and lungs that can lead to serious health problems.

### WHAT YOU NEED TO DO:

- **Find out** if the use of chemicals for cleaning can be minimized; if this cannot be prevented or reduced, and then definitely avoid using a cocktail of toxic substances. Always use any

one chemical only once. Do not purchase disposable products and aerosols. Instead, eco-friendly EM (Effective Micro-organisms solution) can be used to clean washroom floors.

- **Ensure** that the washrooms, especially in the corners, are cleaned regularly and thoroughly.
- **Seal or repair** any cracks and leaks.
- **Make certain** that the washroom is well ventilated at all times.
- **Dispose** empty containers, to prevent the possibility of water stagnating.
- **Ensure** that the drainage system and the drains are cleaned regularly.

### TRAIN YOUR CLEANING STAFF

- **Encourage** the maintenance staff to learn about these chemicals and instruct them to use the substances carefully and in smaller quantities, if at all.

### MANAGE CONTAINERS

- **Ensure** that a container that may have held any strong chemical is disposed off only after it has been completely emptied.
- **Educate** the janitors about why this is important.
- **In the case of** open-mouthed containers, any residual substances should be drained into a sink, to prevent any injury or harm to the waste handler.

- Broken Glass and other sharp objects, broadly called 'sharps', should be stored in a hard plastic container and handed over to the waste handler after informing him about its contents.

**THE QUIETEST TOXICS  
IN YOUR OFFICE**

Certain toxic materials are not as discernible, since they don't visibly drip potentially harmful chemicals that not only damage our health, but also contaminate the environment either very quietly or far away from our office premises.

**Strong adhesives such as Quickfix and Dendrite cause dizziness and nausea if inhaled during usage. Either avoid using them entirely. Or consider reducing their use to a bare minimum.**

**BATTERIES** 

The battery in your UPS and inverters needs to be replaced periodically. Since they contain large amounts of lead and acid, the batteries need to be passed on to lead recyclers and should never be merely handed over to the nearest mechanic. Legally, these batteries can only be sold to registered recyclers. This is to prevent illegal lead smelting units from severely polluting the air, soil and water.

You may or may not know this, but lead severely hampers the intelligence level of a child and the neurological system of an adult. Poor recycling releases large quantities of lead into the environment.

**WHAT YOU NEED TO DO:**

- **Make sure** that your batteries are sent to the registered recyclers approved by the Central Pollution Control Board. If the used batteries are not given to a government recognized recycler the chances are that they may be poorly recycled and return to poison our environment. See Appendix 7 for a list of registered lead recyclers.
- **Follow the same procedure** to dispose off used batteries from office cars. Encourage staff to adhere to this practice too.
- **Everyone** working in the organization should be made aware of registered lead recyclers. So that they too can hand over their batteries for recycling, legally.
- **However, remember that** the only real solution to the problem is to phase out lead from batteries altogether. Efforts are already underway in this direction, but these are still at the laboratory stage.

**TUBE LIGHTS** 

If broken, tube lights need to be handled with extreme care and caution because of the mercury that they contain. Mercury is an extremely potent poison that affects the nervous system and was responsible for the dreadful Minamata disease in Japan. Worse still, because of its low vaporization point, it can reach us even from garbage being burned in a dustbin. Never touch mercury that

has been spilt (say, from a thermometer) with your bare hands: it can get into your system. Even in small amounts, mercury is highly toxic.

**WHAT YOU NEED TO DO:**

Currently, India neither has a 'take back' policy in place, nor is safe recycling of tube lights possible, although it is being done in Europe and the United States. In this relatively helpless situation, what you can do is to avoid breaking or damaging them. Instead hand them over to a junk dealer so s/he can sell them ahead for the metal. This is a predicament we will have to overcome in the near future by demanding such recycling facilities.

**INDOOR AIR POLLUTION** 

An astonishing number of products that we use every day in the office contain toxic chemicals that can be injurious to our health, especially if they are not handled and disposed off with care.

**SOURCES OF AIRBORNE  
POLLUTION IN YOUR OFFICE** 

Common sources of indoor air pollution include tobacco smoke, biological organisms, building materials, furnishings, cleaning agents, copy machines and pesticides, carpets and flame retardant chemicals.

Here are some more toxic pollutants found in your office:

Toxic substance: **Formaldehyde**  
Source: Foam insulation, plywood and particleboard, carpeting, furniture, paper tissues and cleaning agents.

Toxic substance: **Benzene**  
Source: Tobacco smoke, petrol, synthetic fibers, plastics, inks, rubber and detergents.

Toxic substance: **Trichloroethylene**  
Source: Inks, adhesives, varnishes, lacquers and paints.

**Inadequate ventilation raises indoor pollutant levels, since the emissions from indoor sources are neither diluted nor flushed out because of the lack of fresh air.**

**Further, high temperature and humidity levels can also increase concentrations of certain pollutants.**

Indoor air pollution is now globally recognized for its health impacts on workers inside office buildings. This could be the result of many everyday materials that we use.

While the problem of office sickness is a complex one, it can be minimized if attention is paid to certain issues.

**WHAT YOU NEED TO DO<sup>V</sup>:**

- **Avoid** using room fresheners or plastic decorations that could release harmful or undesirable odours or contaminants.
- **Keep your office** clean and use exhaust fans to provide for good ventilation.
- **Keep air vents and grilles** free of any kind of blockage.
- **Declare** your office a no-smoking zone.
- **Remove** the cause of any offending smell: whether by drying and cleaning off mould, clearing lunch plates and emptying the trash regularly.
- **Let in** as much natural light, as possible.
- **Avoid** plastic blinds on windows.
- **Steer clear** of synthetic materials for furnishings, particularly those with flame retardants.
- **Do not** polish furniture often.
- **Avoid floor** carpeting.
- **Store** food properly.
- **Take proper care** of your office plants. Water them regularly. See Appendix 9 for a list of plants that can combat indoor air pollution.

**VENTILATION AND AIR QUALITY IN OFFICES** 

Ventilation is crucial for maintaining good air quality. It basically involves circulation of air within a building. The quality of indoor air may deteriorate if the air is not allowed

to circulate. For example, carbon dioxide may accumulate in building spaces if a sufficient amount of outdoor air is not circulated throughout the building.

The office setting should guarantee air circulation, temperature control, and pollutant removal functions of heating and ventilation. Designate an Indoor Air Quality Representative (IAQ), who can be contacted for indoor environment issues. The IAQ representative should be accountable for the quality of the indoor environment and must have the authority, knowledge, and training to oversee or carry out the following steps as part of a good indoor air quality management plan:

1. **Assess** the current condition of the indoor air in the building.
2. **Address** any existing and potential indoor air quality problems.
3. **Educate** building staff about indoor air quality management.
4. **Manage** potential sources of pollution such as:
  - a. Smoking.
  - b. Remodelling and renovation materials and furnishings.
  - c. Housekeeping and pest control products.

Notify your building or facility manager immediately if you suspect an IAQ problem.

**Office and Decor**

If you were to analyse the furniture in your office, chances are that your findings would raise some serious environmental concerns: indoor air pollution caused because the wood has been treated with formaldehyde and varnish; toxic flame-retardant chemicals that foam cushions (which cannot be recycled) are doused in, and upholstery dyed with carcinogenic dyes and fixed with toxic glues.

**Increasingly, plastics, even when they can be recycled down-cycled, are being dumped into oceans and waterways, thus playing havoc with the environment. The biggest plastic dumps today are found in the world's oceans.**

**Meet the Culprits:**

Take a quick look around your office and you will find plastic chairs, tables, Venetian blinds, flooring and even plastic plants.

**POLYVINYL CHLORIDE (PVC)** is a widely used plastic in offices....

Globally, over 50% of the PVC that is manufactured is used in construction. PVC is used for making drainage pipes, Venetian blinds, flooring, panelling and window frames. Many of these are used in offices as they afford a contemporary look and in some cases

may actually be cheaper. Vinyl flooring is also used commonly. Many pipes, including water pipes, are made of rigid PVC.

**...but it is dangerous**

In terms of revenue generated, not only is PVC one of the most valuable products of the chemical industry, it has also been classified as one of the most toxic plastics known to us.

- It is a brittle plastic and hence requires several additives (called plasticizers) such as lead and phthalates to provide it with flexibility among other attributes. Since PVC is unstable in the presence of ultraviolet light, it must be stabilized for outdoor use, usually with cadmium-based stabilizers. Unfortunately, these are loosely bonded with the plastic and leach out.

- Cadmium, a nephrotoxin, poisons the kidneys.
- Phthalates poison the reproductive system that leads to reproductive disorders.
- PVC flooring releases particularly high concentrations of plasticizers and contributes to the 'sick building syndrome' i.e., when office workers inside buildings begin to feel tired and ill on an ongoing basis for no obvious reason. This has been frequently reported in modern office blocks.

- Other vinyl products also initially release chemical gases into the air. Studies indicate that this outgassing of additives may contribute to health complications.

- In 2004, a joint Swedish-Danish research team found a strong link between allergies in children and the phthalates DEHP and BBzP, commonly used in PVC. Moreover, PVC flooring (also called vinyl tile flooring) is also linked with an increase in asthma in children.

**In the event of a fire, PVC smoulders and releases hydrochloric acid, apart from dioxins, which cause severe burns in the respiratory system. It was found that fires which occurred in buildings where PVC was used, the damage caused by PVC was a lot more serious than the fire itself, since the victims experienced its lethal impact well before the fire actually reached them.**

- Recycling PVC is plagued with disastrous consequences, because of the dioxins that are released. Dioxins cause cancer, impair the reproductive system, and disrupt the proper functioning of the endocrine and immune systems. Dioxins are included in the global list of the dirty dozen chemicals, to be phased out as soon as possible.

#### WHAT YOU NEED TO DO:

- **Seek alternatives** to PVC furniture, furnishings and fittings. India has a wealth of alternatives that range from wood, cane, stone to cement and metal.
- **Brief** your building contractor about what materials to avoid.
- **Involve** yourself with renovations and décor from the very beginning.

#### ASBESTOS

Asbestos is a mineral fibre that is frequently used in a variety of building construction materials for insulation and as a fire retardant. Offices use asbestos in the form of resilient floor tiles, floor tile adhesives and roofing. Asbestos releases small, almost invisible fibres, which are extremely dangerous. The fibres become airborne and once inhaled can remain and accumulate in the lungs. This increases the risk of lung cancers, such as Mesothelioma (a cancer of the chest and abdominal linings) and Asbestosis (irreversible lung scarring that proves fatal). The symptoms of these diseases do not come to light until many years after exposure takes place.

Some Safer Alternatives are:

- Steel sheets
- Polyvinyl alcohol
- Aroid
- Cellulose
- Glass and Carbon fibres
- Cotton
- Organic fibre
- Man-made mineral fibres
- Particulate mineral fibres

#### Lawns and Greens

Large offices that can afford the space prefer to have lawns to add to the aesthetic value of the property. While this is a good practice, it is important to train your gardener or maali to maintain the lawn with minimum wastage, and prevent the use of toxic chemicals that can potentially harm both you and the environment.

#### WHAT YOU NEED TO DO:

- **Mow the grass** to about 2 inches above the surface. This will facilitate moisture retention. Ensure that the blades of the mower are sharp at all times.
- **If there are** no water restrictions in your office area, the lawn could be soaked once every week for 2-4 hours. Also consider watering the lawn late in the evening or at night to lower evaporation.
- **During the summer** months leave the grass cuttings on the lawn to help retain soil moisture, it acts as mulch and reduces the need for water.
- **Consider** using bio-pesticides where possible and ensure that the lawn is sprinkled with compost twice a year. See Appendix 10 for details on how to control pests in your lawns.
- **Ensure** that fertilizers are used sensibly because excessive usage can result in the lawns becoming susceptible to disease. Besides, twice the amount of water will be required to support the rapid growth that will

**Never burn fallen dead leaves and other waste from your lawn. When burned dead leaves emit particulate matter and polyaromatic hydrocarbons that contain toxic carcinogenic compounds and carbon monoxide. These trigger respiratory problems and asthma as the particles reach our lungs and stay there for years. The ash that is left behind creates respiratory and other ailments, since most of it comprises carbon articles, laden with heavy metals such as mercury and lead.**

follow. It is best to use compost instead of chemical fertilizers or even manure procured from unknown sources.

When preparing to lay the lawn choose hardy, disease-resistant plants that are less likely to need replacing. You can use plants that require little water such as cactus and various succulents.

#### Gifts and Parties

All of us look forward to the festive season, because come Diwali, Christmas and New Year organizations, individuals—basically everyone goes into a gift-buying and giving frenzy. Crores of rupees are spent during this time of the year. What this chapter attempts to do is briefly suggest ways by which your concern about the

environment can be reflected in the gifts your organization gives.

While the main focus here is on alternatives to gift-wrapping paper, specifically, decorative plastic sheets, which most organizations use, we also suggest how to plan what to wrap inside.

**Choose a green gift!**  
**The next time you select a corporate gift, ask yourself the following:**  
**Does it encourage the recipient to contribute to the environment?**  
**Is it made of environmentally friendly materials?**  
**Does it have a long life or will it be thrown away after one-time use?**  
**Does it contain an experience (such as a meal) instead of an object?**

More importantly, let all the employees know about the organization's gift wrapping policy. They should understand that this is a message from all of them as part of the organization to the recipients of the gift. Both parties and sending out gifts are occasions when each and every member of the staff can see first hand how it is possible to make these changes and can be a part of it.

## **GIFT WRAPPING**

*Is your gift choking the city?*

- If you use a shiny, 'metalized' sheet, often with silver or gold, that is harder to tear than paper, it's certainly not paper you're using to wrap the gift. It's plastic.
- It is a type of plastic known as BOPP—Biaxially Oriented Polypropylene, which cannot be recycled.
- Since recycling it is impossible, it finds its way to the landfill. So, BOPP not only occupies valuable space, it also pollutes the soil.
- Further, since it is very light, it becomes airborne and tends to choke drains and water bodies.
- One simple yet effective step that all of us can take is to say NO to shiny, metallic gift-wrappers.
- Avoid using cellophane and thermocol bubbles, since both are plastics and are rarely ever recycled.

Here are some alternatives:

1. Paper of various kinds
2. Fancy, reusable gift bags, usually made of cloth.
3. Block-painted Newspaper
4. A simple ribbon

**The Central Pollution Control Board, New Delhi, points out that in the last 50 years the area needed for landfills has increased by 20,000%!**

## **PARTIES**

The section on parties briefly highlights what an office party should avoid doing in order to be eco-friendly. However, none of the ideas you will find here are party-poopers.

### **Join a green party!**

Throw parties with a positive attitude. Office parties can be great fun, but in the process must they harm the environment? We use all kinds of materials at a party that ultimately winds up in the garbage bin and finally reaches the landfills after being used just once. These include anything from Styrofoam plates and cups to metallic streamers and decorations. Remember, office parties can be hugely entertaining without any of these things. All you have to do is think logically and rationally.

### **WHAT YOU NEED TO DO:**

- **Keep away** from using Styrofoam plates or cups at all costs. Instead try recyclable disposables. See Appendix 5 for the list of vendors you can get these from.
- **Do not use** metallic paper decorations. Ideally, do not decorate

the party venue, even with paper streamers or lights. Instead, try using colourful cloth tied across the ceiling to make the place look lively. Ask your local tent-contractor for help.

- **Thermocol cut outs** are often used at the venue. But you already know that thermocol is plastic and it cannot be recycled. So simply say no.
- **Do not pre-plate** food since this often leads to food wastage.
- **Minimize** the use of cling wrap, aluminium foil, and other material that are thrown away after a single use.
- **Avoid using** tissue paper. At least, minimize it.
- **Serve beverages** in small glasses. Second helpings are always better than wasting.

A little responsibility on the part of everyone will make parties that much more enjoyable, without harming the environment in the process.

## Section 4

# CONSERVING Water

**Of all the earth's** renewable resources, water is perhaps the most precious. Sadly, unrestrained water consumption and wastage has wrought havoc in many parts of the world. Only when our taps run dry, are we, city-dwellers, reminded about how critical access to water is to all aspects of life. In the thousands of villages around the country, millions of people need no such reminder. They often have to walk for miles each day to find the water they need and carry it home.

Therefore, if we want to protect our water supply and ensure that we have enough clean water for the future, we must act now to conserve this most precious of resources. All too often we turn to conservation only in times of drought or emergency water shortages, while the idea should always be to incorporate it into our lives every day.

At the workplace it is important to make the staff aware of the need for

saving water. If the employees are actively involved in water conservation efforts, your organization will successfully reduce water consumption. Establish an effective staff-training programme in all departments about water conservation. It is worth it, because water is going to become increasingly expensive.

Here are some practical steps you can take to get an effective water management programme underway in your office:

### PANTRY

A lot of water is wasted in the pantry.

**WHAT YOU NEED TO DO:**

- **Serve water only when** it is requested for. Avoid filling glasses of water and leaving them around the cafeteria.
- **Consider** serving your visitors water in smaller glasses.
- **Encourage** staff members to have their cups and glasses washed only once during the course of the day.

### WASHROOMS

Whether your office is big or small, washrooms are an area where water is wasted and often goes unnoticed.

**WHAT YOU NEED TO DO:**

- **Install low-flow taps** and cisterns in the washroom.
- **Use** brooms, brushes, vacuums, squeegees and scrapers for cleaning, instead of washing the entire floor.
- **Clean** floors with mops or sponges instead of hosing it down with water.
- **Ensure** that the plumbing is inspected every six months to prevent future problems. Also check periodically for leaks and worn out gaskets.
- **The maintenance** and cleaning staff should be trained to check for leakages and to repair them in case of emergencies.
- **The cleaning staff** should also be instructed to look out for taps that may have mistakenly been left running.
- **Repair** dripping taps and leaking pipes. A loss of one drop of water per second wastes 2,400 gallons [9,000 litres] of water annually.
- **Consider** installing infrared or ultrasonic sensors that activate water flow only in the presence of one's hands. These sensors automatically shut off the water valve when your hands are removed.

### HORTICULTURE

If your office has a lawn, then it probably requires considerable quantities of water to maintain it.

**WHAT YOU NEED TO DO:**

- **Use** treated water for gardening.
- **Cluster** plants with similar water needs.
- **If they are not already** doing it, you could instruct the lawn maintenance staff to cover outdoor plants with dried leaves to minimize water evaporation.
- **Consider rainwater harvesting.** A simple system could cost your organization only a few thousand rupees. See Appendix 12 for details of assistance with rainwater harvesting.

**By 2025, India's population is expected to exceed 1.4 billion. The chronic water scarcity that already plagues many regions of the country is all but certain to intensify long before this date. Your office won't be spared either.**

**SOME WATER CONSERVATION TECHNIQUES:**

- Conduct an audit of present water consumption patterns, identify the areas of wastage and make suitable recommendations for a water conservation programme.
- Install water-flow meters at different sections to monitor water consumption.
- Water conservation is a must in offices. Hence it's everybody's responsibility to jointly make an effort. Do not hesitate to take steps, however small they may appear, to reduce water wastage and unnecessary consumption.

## Section 5

# HARNESSING Energy

**It has been discovered** that there is a link between substandard building maintenance, wasteful energy utilization and poor indoor environment. Dry eyes and lack of fresh air are among the primary symptoms of an inefficient office space.

Typically, energy is up to 5% of the total costs of running an organization. If this seems too little, look at it this way: if your company has more than 20 staff, that 5% represents somebody's entire salary. In other words, your building could be threatening your livelihood!

Conversely, efficient energy use not only increases productivity and economic competitiveness it also lowers greenhouse gas emissions as well.

It is therefore high time that we all realize the need for energy conservation. **And start TODAY.**

## OFFICE LIGHTING

The key sins of inefficient lighting are:  
(a) lights being left on in empty rooms  
(b) too much light because of poor design and planning  
(c) unclean or dirty light fittings  
(d) incandescent bulbs and flickering tubes.

### ASK YOURSELF:

1. Whether you switch off lights when they are not in use?
2. Whether you think you can conserve energy?

If the answer to both questions is 'yes' you are on the right track to cutting down on your energy bills, but you still need to know what else you can do.

### WHAT YOU NEED TO DO:

- **Switch off lights** whenever not in use. In some cases, it can imply

saving upto 60% of the total energy consumption.<sup>viii</sup>

- **Use compact fluorescent lights** (CFLs), since they consume much less energy than incandescent bulbs and do not have to be replaced often, thus making them a cost-effective choice. Seventy percent of energy used as light is wasted by using **incandescent bulbs**.<sup>1</sup>

- You can reduce 66% of your energy consumption, if you replace fluorescent lamps with newer, more energy efficient electronic ballast and tubes.<sup>2</sup>

- **Lighting controls** such as photo-sensors, occupancy sensors and timers can save energy by turning lights off when they are not needed. This approach is particularly effective for lighting in rooms that are used occasionally. Dimmers also save energy by allowing building occupants to adjust the light output to suit their needs.<sup>3</sup>

- **Replace** regular spotlights with reflectorized halogen bulbs, which provide a narrow white beam of light, and saves 20 to 40% energy. Replace floodlights with reflectorized compact fluorescents, which cut energy consumption by 75%.<sup>4</sup>

- **Make sure** that the fittings are cleaned with a dry cloth periodically.<sup>5</sup>

- **Open the windows** and let in natural light—it is great to work in and it's *absolutely free*.<sup>6</sup>

- **Procure** energy efficient computers, fax machines, printers, and copiers designed to power down, when not in use, should be installed in offices.<sup>7</sup>

- **Share** Printers this will reduce the energy demands of printers standing idle.<sup>8</sup>

- **Fix** cut off dates for using air-conditioners in your office. For example, if your office is located in New Delhi, then earmark the first week of October for when your organization will turn off the air conditioners and use fans instead. Thus, signalling that the summer is over and it is possible to work without additional cooling. In a number of countries, this period is tided over by using pedestal fans, if there are no ceiling fans.<sup>9</sup>

### ADD THESE ENERGY SAVERS IN YOUR OFFICE:

- **Window films** help block the radiant heat gains and losses. In the summer, this can prevent 60 to 80% of incoming solar radiation from coming in, and in winter they reduce heat loss by 20 to 44%. Pulling down the shades during the daytime in summer and vice versa in winter helps as well.<sup>10</sup>

- **Locate glass ventilators** below the windows, to reflect light to the roof level.
- **Paint the walls and furniture** of the office in lighter shades. This will reflect light and make your workplace look better.

**Electricity burnouts and blackouts are a way of life in many parts of the country.**

**India faces an electricity shortage conservatively estimated at 11% and as high as 18% during peak demand periods.**

**How is your office demonstrating its concern about this country-wide shortage?**

Source:  
[www.csforum.org/press\\_india.htm](http://www.csforum.org/press_india.htm)

- **Install reflectors** that redirect light. The result is that you can remove half the bulbs and ballasts and still get the same amount of light. Install reflectors in overhead fluorescent fixtures. Experts suggest that you install electronic ballasts and new bulbs at the same time you

put in reflectors. This provides maximum savings and allows you to do everything in one operation.

- **Explore the option of solar photovoltaics.** Even if you have a built up office, you could trap solar energy. Use solar Photovoltaics for your office energy requirements. See Appendix 13 for more details.

## Section 6

# COMMUNICATIONS

### Be Heard!

People are often reluctant to change or modify their habits unless they see some sense in it. This can range from the 'adjustment' or 'modification' making economic sense or leading to a general concern for the environment. In order to enable your colleagues to realize the value of making certain changes at the workplace, it is vital to communicate with them.

Here is how you can launch a communication strategy within your organization:

### Include Everyone

You may be talking about something as simple as saving paper, which the office peon hardly uses. But don't make the mistake of leaving him out. Remember, even a security guard now uses enough paper to need your help: go to any office now—you'll find the guards making entries into registers or sending notes to employees

about visitors—there is indeed lots of paper used. Ensure that the information gets to him as well, whether he is an active or passive player. Make sure that absolutely everybody in the organization is informed.

### Use Multiple Channels

Some people react to emails, others to posters and yet others to verbal discussions. So, before sending out a message, plan how it can be communicated through posters, emails, routine meetings and briefings.

### Make an Information Plan

Often, it is difficult to disseminate information to everyone within the organization at the same time. In such situations, it is imperative that you draw up an information plan, as shown below:

- **Make a list** of the issues (prioritise them) you think need the most attention.

- **Deal with one issue at a time.** For each, make a note of the current trends, highlight the main facts and provide solutions or alternatives. For example, in this manual look at the section on gift-wrapping, you may wish to make a note of the current trend of using plastic sheets, plastic strings and plastic ribbons. You could then inform your colleagues about what is wrong with using plastic and suggest a few alternatives.

- **Along with this, list three simple things** that can be done to reduce the waste from your first priority. You should be able to use this information many times innovatively.

- **You may perhaps require only one poster** to demonstrate the evils of plastic packaging. In other cases, you may need to 'unveil information' by asking questions, posing riddles or by revealing one fact per week. This of course depends on the size of your organization, your colleagues' interest in the issue and their ability to appreciate and understand environmental issues.

- **The smaller the office, the quicker the unveiling of information,** because your employees are inclined to discuss it with one another, thus creating a buzz.

- **Each info-plan must take into account** how the information will be translated into action.

- **Draw up detailed action plans,** clearly identifying the department or individual responsible.

- **From the very beginning ensure that each plan is shared** with the department responsible for implementing it.

- **Avoid moving onto any new aspect** of waste handling or reduction until you have achieved at least 70% of the action targets for the previous one.

- **Ensure that the information is presented** in a comprehensible and simple manner so that the employees are able to understand it clearly. You could also encourage them to take the message back home to their families, especially children, who could perhaps use it for their school projects etc.

### Sharpen Information

Be precise. Use this manual, besides the several resources on the internet to collect all the information you may require about the subject. The information should be accurate and to the point. Then write it down in clear, short sentences. Remember to include numbers.

### Use an Occasion

Instead of simply offering macro examples, howsoever interesting, use examples from everyday life. These are even more striking when they are linked with an occasion. For example, corporate gift-wrapping ideas make more sense just before and during the festival season. Even if you have already tackled the issue, you could use the occasion as a reminder.

### Mainstream Communications

Even if only a handful of your colleagues are interested in environmental issues, you should aim to mainstream the communication channels within the office. Work in collaboration with the communications and production departments. Your ideas must be reflected in the material you produce.

### Make the overall Vision and Plan Clear

Write out the overall plan, with a road map and share it with everyone, so that they realize the organization is not undertaking a one-off campaign. Besides, making the entire idea more participatory, it will also, hopefully, generate both excitement and ideas.

Section 7

## Greening Office POLICY

**Often**, it is difficult for even the most enthusiastic staff in an office to implement their ideas, because of the absence of an office policy that encourages waste minimization. This also impedes the procurement of more environmentally friendly materials or products, because they may cost slightly more. While it is possible for every organization to determine how to inject sensitivity towards the environment in their policies, here are a few guidelines:

- **Review procurement lists** annually and include greener products.
- **Review each item** on the list individually, and compare the expenditure of its current consumption levels (within the organization) to the cost if a greener version were purchased. Wherever possible, reduce

the amount to be bought, but pay for greener products.

- **Make additional budgets** available for renovation that will save water and electricity, and treat this additional expenditure as an investment in finite resources and cost savings.
- **Draw up guidelines** (for the various contractors) for party catering, canteen and renovations as per the suggestions you will find in the manual.
- **All capital costs**, even on items as small as chairs, should be only made for the greenest product on the market.
- **Make a list of products** that should not be procured. These should include pesticides, plastic file dividers and small sized mineral water bottles.

- **Offer incentives** within the existing structure of perks for both individuals and departments saving any resource substantially.

- **Disseminate your idea.** Redesign all stationary, gifts etc. to state your zero waste goal either by its look or by a motto.

- **Retrain workers to use computers**, scanners and photocopying machines with a view to saving paper.

- **Make it a policy** to train and motivate newly recruited persons to follow systems for resource reduction.

## Making the RIGHT Choice

**This section attempts to** instruct you about how to make decisions concerning the material used in your office so that waste can be minimized, and how to optimize its use thereby making it less wasteful. It will offer you enough simple tools to make the most sensible decision.

### Thinking Materials

When you are confronted with a wide range of materials, you are bound to be confused about what to do. Here are some priorities that could help you pick up materials and also guide the procurement policy.

#### Priority 1

Action: Avoid creating waste in the first place. Refuse whatever you don't need.

Example of Possible Action: Buy stuff in bulk to minimize packaging.

#### Priority 2

Action: Choose the best materials for every identified use in the office,

beginning with the existing procurement list. Minimize the use of plastics.

Example of Possible Action: Draw up and establish a procurement policy to ensure that this becomes a practice.

#### Priority 3

Action: For each material or item, check its re-usability, both in terms of design and size.

Example of Possible Action: Buy large bottles that can be reused for storing water, instead of smaller ones.

#### Priority 4

Action: If you must use plastics, then make sure that they are not laminated, metalized or of the shiny variety since these cannot be recycled and find their way to the landfill.

Example of Possible Action: Avoid all shiny gift wrapping.

### The Index of Materials

It is quite likely that you may still be confused about certain materials, such

as gift wrapping paper, or the advantage of glass over plastic, when both are non bio-degradable. You may ask: Which one do I choose from? Which one should I purchase? Here are some pointers:

#### Biodegradable > Non-biodegradable

When you have a choice, make sure you select materials that are biodegradable. However, for a number of office uses, it is important that the product is examined from many other perspectives as well, that will enable you to make a decision in favour of one material over another less sensible one. These include, in order of priority: the sustainability of the product and the material it is manufactured from, its reusability and whether it can be recycled or not.

#### Bio Degradable Materials:

- Food waste
- Fruit Peels
- Flowers

#### Non-Biodegradable materials:

- Plastic
- Metals
- Glass

#### Glass > Paper > Plastic

Of the three, glasses is perhaps the most eco-friendly, since it is made from the most sustainable raw materials when compared to the other two and it is easily recycled. This is one important reason that it should be chosen over paper, which comes from forests or other agro-based materials, thereby causing severe pollution since its manufacturing includes bleaching. However, it can be recycled without too much trouble, which is an advantage, because the recycling process often uses materials which would otherwise have been wasted. Plastic is the least desirable material of all. It should therefore be absolutely the last option.

In order to understand this better, take for example, a glass of water in your office and look at the various options: glass, paper and paper.

After what you have just learnt, can you confidently choose glass?

## APPENDIXES

### Appendix 1 : Paper Saving Machines

Type of Duplex Machine:  
Duplex printer

Model: **HP 5662**  
Manufacturer: HP  
Cost (INR): 9,000

Advantages: Saves paper as it prints  
on both sides of the paper

Type of Duplex Machine:  
Multipurpose machine

Model: **HPPSC 2410**  
Manufacturer: HP  
Cost (INR): 14,990

Advantages: Scans, Prints, and Faxes

Type of Duplex Machine:  
Multipurpose machine

Model: **SCX-4016**  
Manufacturer: Samsung  
Cost (INR): 16,995

Advantages: Scans, Prints, and Faxes

Type of Duplex Machine:  
Multipurpose machine

Model: **PE16e**  
Manufacturer: Modi Xerox  
Cost (INR): 37,000

Advantages: Scans, Prints, Faxes and  
photocopies

For more information about what  
machine would best suit your needs  
contact:

#### 1. HP India Pvt. Ltd.

Tower D, 6th Floor, Global Business  
Park, Gurgaon-122002

Phone no.: 0124-2566111

(Monday – Friday) 9am to 6pm.

Customer care service number:  
1600444999

Website: [www.hpindia.com](http://www.hpindia.com)

#### 2. Duplex Photocopy Machines

**Modi Xerox** Phone numbers:  
011-264552907, 011-26472300

### Appendix 2 : Beyond A Sheet of Paper

Paper could be made either of wood pulp, agro waste (like bagasse from sugarcane) or waste paper. The wood pulp that most factories use usually comes from farm forestry or plantations. Farm forestry is considered a better alternative because it combines the planting of multiple crops that are useful to the farmer, such as food, along with the main cash crop.

Did you know that India does not generate adequate waste paper domestically to meet the needs of the paper manufacturing industry? Hence, India imports waste paper from other countries, especially North America. This import has been rising by 5-6% annually. The current per capita consumption of paper in India is 6 kg, of which only 1 kg of paper is saved in the form of educational books, files etc. The rest of the 5 kg is discarded. If you happen to live in a metro city, this figure goes up to 20 kgs per annum.

#### Types of paper and their annual production in India:<sup>x</sup>

Writing and printing paper:  
20,00,000 tonnes  
News print: 70,0000 tonnes  
Container board: 1,276 tonnes  
Carton board: 55,000 tonnes  
Specialty papers and others:  
2,25,000 tonnes

#### PAPER MILLS

India has both large scale mills and small scale mills. The latter rely heavily on waste paper and bagasse. The data below will give you an idea about the distribution of mills based upon their source.

#### Types and Number of Mills in India (According to Raw Materials used):<sup>x</sup>

Wood and Bamboo-based: 27

Agro waste-based: 132

Waste paper-based: 362

Total : 521

#### Source-Based Presentation of some Mills in India:

##### J.K Paper Mills

93 % Hardwood

7 % Pulp

##### Hindustan News Print Ltd.

34 % Bamboo

56 % Hardwood

##### South India Viscose

100 % Hardwood

##### Rama Newsprint

97 % Waste Paper

##### Amrit Paper Mills

2 % Waste paper

10 % Bagasse

49 % Wheat Straw

4 % Other

**Mukerian Paper Mills**

2 % Waste Paper  
94 % Wheat Straw  
4 % Other

**Nath Paper and Pulp Mills Ltd.**

21 % Waste paper  
79 % Bagasse

**Sinar Mass Pulp and Paper**

100 % Hardwood

**Appendix 3 : Choose your Brand**

Of the various sources of paper available, some are made of raw materials which are slightly less damaging. Increasingly, a number of paper mills have begun using raw materials derived from other sources, such as agro waste and discarded paper. Some have even turned to farm forestry which is less damaging to the environment. This also provides the farmer with the flexibility of being able to grow other crops. Here is a list of brands that are making these changes.

**Brand: Sunshine Copier**

Raw Materials: Waste paper  
Specific Use: Writing. Can be used for printing.  
Disadvantages: None  
Cost (INR) (500 Sheets/packet): 80 per packet

**Brand: Century**

Raw Materials: Agro Waste  
Specific Use: Writing. Can be used for printing.  
Disadvantages: None  
Cost (INR) (500 Sheets/packet): 120 per packet

**Brand: ITC**

Raw Materials: Partial use of waste paper  
Specific Use: Writing. Can be used for printing.  
Disadvantages: None  
Cost (INR) (500 Sheets/packet): 120 per packet

**Brand: JK Mills**

Raw Materials: Farm Forestry  
Specific Use: Writing. Can be used for printing.  
Disadvantages: None  
Cost (INR) (500 Sheets/packet): 120 per packet

**Brand: Ashoka**

Raw Materials: Waste paper  
Specific Use: Writing. Can be used for printing.  
Disadvantages: Thin and cannot be used in printers.  
Cost (INR) (500 Sheets/packet): 75 per packet

**Appendix 4 : Recycled Paper vs. Handmade Paper**

All handmade paper is recycled paper, but all recycled paper does not have to be handmade paper. The latter involves a lengthy, traditional, labour-intensive process. It not only requires the use of paper, but also old cloth, clay, agro waste, flower petals and in some cases even tinsel. The end product is often uneven and varies from batch to batch, thereby giving it its especially artistic quality. It is usually much more expensive than other types of recycled paper.

Recycled paper can look like regular bond paper, since it is made from old paper or agro waste. The process is undertaken by machines, thus the batches of paper have a uniform quality. A substantial amount of waste paper and old files sold to the kabari ends up being recycled in this form.

**Appendix 5 : Greener Procurement**

This is a list of vendors you could consider purchasing greener products from. While it is not a comprehensive list, it does have a fair representation.

**1. PAPER**

a. RECYCLED (BUT NOT HANDMADE) PAPER

**ABC Papers (Amrit Banaspati Company)**

Saila Khurd, Hoshiarpur, Punjab

Phone: 01884-230241, 230242, and 9814004377.

01884 – 230 244

Email: naathn@yahoo.co.in

**BILT Asthi**

Tehsil, Chamorsi  
Village: Ullur  
Gadchiroli 422 707 Maharashtra  
Ph: 07135 – 244143/244248, 244147  
Email: msingh@bilt.com

**Coastal Paper Mills**

Near Kadium Railway Station  
Madhav Rayudu Palem – 533126  
E.G. District  
Ph: 0883 – 2454848, 2454651/55, 453538  
Email: pnd@coastal-papers.com, gm@coastal-papers.com, rmy\_cpworks@sancharnet.in

**Daman Ganga Paper Mills**

256, Silvasa Road,  
P.O.Box. 65, GIDC  
Vapi – 396195 Gujarat  
Ph: 0260 – 2390001(d), 2243225/2422522, 2430522, 2430239, 9824132522  
Email: tushar@damanganga.com, damanganga@damanganga.com

**Rama News Prints and Papers Ltd.**

181 – B Maker Tower E  
Cuffe Parade  
Mumbai 400005 Maharashtra  
Ph: 022 – 22188408 to 18  
Fax: 2180136  
Email: ramanewsprint@hotmail.com

**ITC Bhadrachalam Paper Boards Ltd.**

106 Sardar Patel Road  
Secunderabad – 500003  
Andhra Pradesh  
Ph: 040 – 27846561/62, 27811954

**ITC Bhadrachalam Paper Boards Ltd.**

Sarapaka  
Khammam Dist. 507128  
Andhra Pradesh  
Ph: 08473 – 32331-40  
Fax: 08473 – 32360  
Email: s.raghuvveer@itc.co.in

## b. HANDMADE PAPER

**Front Line Papers Pvt. Ltd.**

18, Amrit Nagar, South Extension Part  
1 New Delhi,  
Contact: Ashok Jain  
Ph: 9810019891,  
email: a@frontlinepapers.com

**Chimanlals Pvt. Ltd.**

A-2, Taj Building, 210,  
Dr. D.N.Road, Fort,  
Mumbai - 400001

**ALTERNATIVES TO PLASTICS**

## a. STATIONERY

Alternatives or substitutes to plastic stationery are usually available at the local stationary store.

## b. CUTLERY AND TABLEWARE

Mohan Fibre Products Limited  
5861, Modern Complex

Manimajra, Chandigarh 160 101  
Ph: 0172-731406,731689  
Fax: 0172-731406, 575043  
Email: info@mohanfibre.com  
Website: www.mohanfibre.com  
The vendor supplies to various locations across India.

c. **WOODEN VENETIAN BLINDS****Perfect Windows**

16/338 (A),C.R.George Memorial  
Building, West Karuvelipady  
Cochin-682 005  
Kerala  
Ph: 484-2222260, 484-2220665

**Appendix 6 : Selling Waste from Your Office**

You have two options when planning to dispose off waste from your office: Sell it or donate it. If you decide to sell it, here are some buyers who can offer you regular, professional quality services:

## FOR SELLING PAPER AND PLASTICS FROM YOUR OFFICE

Contact:

**Chintan-Bharti Waste Resource Centre.**

12, Jangpura Market, 2nd Floor,  
above Om Hotel,  
New Delhi-110013  
Ph: 24314478  
E-mail: wrc@chintan-india.org

We will help you identify small dealers, and waste-pickers near your office, who will collect all your paper and plastic waste.

## FOR SELLING GLASS FROM YOUR OFFICE:

**K.C. Bottle Merchant**

Shastri Market, South Moti Bagh  
(Near Indane Gas Godown),  
New Delhi-11002 Phone number:  
(O) 20042587, (R) 27318524  
(M) 9891142157

**Appendix 7 : Lead Acid Batteries**

Not every recycler has the legal clearance to purchase and recycle lead acid batteries. To see who has the permission, visit the Central Pollution Control Board website: [www.cpcb.delhi.nic.in](http://www.cpcb.delhi.nic.in)  
Contact the recyclers closest to your office to sell Lead Acid Batteries.

**Appendix 8 : Hewlett Packard's Take Back Cartridge Program**

HP is currently running a scheme called the 'Hp Planet Partner Program' whereby the company's representatives take back empty printer cartridges, (Hp and non-Hp) end-of-life printers, scanners, fax machines, personal computers, servers, monitors, handheld devices and associated external components such as cable,

mouse and keyboard for recycling in an eco-friendly manner. The cartridges are disassembled and sorted into plastics and metals like aluminium. The plastics are then down cycled into various other products. The aluminium is re-used if it passes certain quality checks. This is currently available only in some cities in India.

If you are interested in participating in the program all you are required to do is fill out a form, which is available at the official, website: [www.hp.com/recycle](http://www.hp.com/recycle).

You could also contact: Parikshet Singh Tomar, Country Category Manager-Supplies Business

**Imaging and Printing Group**

Direct: 91-124-2906177  
Ph: net: 91-11-26906177  
Board: 91-124-2566111 Extn: 6177  
Fax: 91-124-2566112  
Website: [www.hp.com/recycle](http://www.hp.com/recycle)

*It is absolutely important that all offices find out for themselves about the recycling process as Chintan has not been provided with enough information to endorse it.*

**Appendix 9 : Real Plants,  
Real Benefits**

You are all probably aware of the aesthetic benefits of having common indoor plants in our office environment. But did you know that they are also valuable weapons in the fight against rising levels of indoor air pollution within the office? As a matter of fact, NASA scientists have found that plants effectively absorb potentially harmful gases and clean the air inside modern buildings.

NASA and the Associated Landscape Contractors of America (ALCA) have announced the findings of a two-year study that suggest a sophisticated pollution-absorbing device: the common indoor plant.

Here is a list of top 10 plants, all available in India, which effectively removes formaldehyde, benzene, and carbon monoxide from the air:

**Common Name /  
Scientific Name**

Bamboo Palm  
*Chamaedorea Seifritzii*

Chinese Evergreen  
*Aglaonema Modestum*

English Ivy  
*Hedera Helix*

Gerbera Daisy  
*Gerbera Jamesonii*

Janet Craig  
*Dracaena 'Janet Craig'*

Marginata  
*Dracaena Marginata*

Mass cane/Corn Plant  
*Dracaena Massangeana*

Mother-in-Law's Tongue  
*Sansevieria Laurentii*

Pot Mum  
*Chrysanthemum morifolium*

Peace Lily  
*Spathiphyllum 'Mauna Loa'*

Warneckii  
*Dracaena 'Warneckii'*

**So please, get those artificial  
plants out of the way!****Appendix 10 : Ridding your  
Greens of Pests**

Pesticides are the most commonly used means of maintaining pest-free lawns and greens in offices. As you know, this is not good for either you or the environment. Here are a few ideas to reduce the use of toxic chemicals.

**The best measure against pests** is to cultivate, weed and mulch. Encourage your maali or lawn maintenance staff to cultivate, weed and mulch periodically or as often as required.

**Insects and bugs** can be hosed off the plants or wiped off with warm soapy water. But make sure that the leaves are thoroughly rinsed after using soapy water.

**Neem based pesticides** are commonly available in shops. Insist on purchasing these.

There are many other options. To learn about these contact the Chintan-Bharti Waste Resource Centre.

**Appendix 11 : Composting**

All yards produce waste from pruning, lawn mowing and other routine plant care activities. Composting is a way to reduce the volume of organic wastes and return them to the soil to benefit growing plants.

Composting can be carried out in three different ways viz. aerobic composting, anaerobic composting and vermi composting.

Aerobic composting is the most common method to compost garden waste such as leaves and grass clippings. It can be carried out in four simple steps:

1. Dig a pit 3 feet in length, 3 feet in width and 3 feet in depth.
2. Place the garden wastes such as leaves, grass clippings vegetable, left over flowers from decorations. Cover the pit with a thin layer of mud and ensure that it is kept damp at all times.

3. Continue adding your garden waste every day until the pit is full. Cover the pit with mud, gobar or nothing at all.

4. If you like, you could turn the pile once a week to provide for better air circulation. The compost should be ready in 7 to 10 weeks. You can also let the pile rest without turning it. The compost will take longer, upto 12-16 weeks to be prepared in that case.

For more details regarding composting please contact the Chintan-Bharti Waste Resource Centre.

**Appendix 12 : Rain Water  
Harvesting**

If you would like to attempt rainwater harvesting, contact:

**Rain Water Harvesting  
Assistance Cell**

Varunalaya, Karol Bagh,  
New Delhi-110005  
Tel: 23558264 or visit the  
Website: [www.delhijalboard.com](http://www.delhijalboard.com)

**Centres for Science and  
Environment (CSE)**

41, Tughlakabad Institutional Area  
New Delhi-110062.  
Ph: 91+11+6081110,6081124,  
60833394  
Fax: 91+11+6085879  
Email: [cse@cseindia.org](mailto:cse@cseindia.org)  
Website: [www.cseindia.org](http://www.cseindia.org)

**Appendix 13 : Sourcing Solar Energy**

If you require assistance with setting up solar energy systems please contact the following organizations:

In India, BHEL has been able to supply innovative solutions in the area.

**Bharat Heavy Electrical Limited**

BHEL House, Siri Fort Road  
New Delhi-10049

Ph: 011 26001010

011 26493021

011 26492534

For more information please visit:

[www.bhel.com](http://www.bhel.com)

DEALERS IN DELHI INCLUDE THE FOLLOWING:

**Scan Vision Enterprises**

A-203, Prince Apartments  
54, Patparganj,

New Delhi-110092

Contact: Mr. Sudhir Gupta

Mobile: 981084621

Ph: 011- 22443223/22525471

Fax: 011-22049172

Email: [scansudhir@hotmail.com](mailto:scansudhir@hotmail.com)

**Alfa Interior Pvt. Ltd.**

106 A, Allied House  
Old Rohtak Road, Inderlok  
Delhi-110032

Contact: Mr. Ajay Chachra

Mobile: 9811611004

Ph: 011-2365 9337

Fax: 011-2365 8597

Email: [ajaycha@vsnl.com](mailto:ajaycha@vsnl.com)

**Aditya Energy Systems**

J4/127B, DDA Flats

Kalkaji, New Delhi-110019

Contact: Mr. G.K. Raju

Mobile: 98100 73910

Ph: 011 2602 7796

Email: [gkrajusolar@hotmail.com](mailto:gkrajusolar@hotmail.com)

For the complete list of dealers in India please visit:

[www.tatabpsolar.com](http://www.tatabpsolar.com). Also see

[www.celsolar.com](http://www.celsolar.com)

**GLOSSARY****Biodegradable substance**

Any matter that can be degraded by micro-organisms.

**BOPP (Biaxially Oriented Polypropylene)**

A type of plastic used to pack edibles such as chips, biscuits etc. It cannot be recycled.

**Carcinogen**

Any toxic substance that can cause cancers in human and animals.

**Composting**

A controlled process that involves the microbial decomposition of organic matter.

**Dioxin**

It is generally regarded as the most toxic substance known to science with no known safe level of exposure, triggering various health impacts even at the minutest of concentrations. Dioxins are created whenever any

product containing chlorine or traces of chlorine is burned at high temperatures in the presence of air

**Downcycling**

It refers to the reprocessing (of plastic, for example) where the final material derived is not of the original quality or grade used in the reprocessing. This downcycled plastic cannot be used to make products that require the original grade of plastic that was recycled.

**Greenhouse gases**

Gasses that have been observed to significantly contribute to an increase of the earth's temperature and hence, effect a shift in climates. These include carbon dioxide, methane, ozone and chlorofluorocarbons (CFCs).

**Landfills**

The sealing in of residual solid waste on land in a facility designed to protect the groundwater and other media from contamination.

**PVC (Poly-Vinyl-Chloride)**

One of the most toxic plastics currently in use on a global scale. Characteristically brittle, requires several additives to provide it with a range of commercially applicable properties. Many of these additives have been known to contain toxic properties, which easily leach. PVC is toxic throughout its life cycle and is being phased out in various applications globally.

**Wastepickers / Ragpickers**

The section of informal labour sector involved in waste recycling who actually collect discarded materials which are passed on to reprocessing units via a chain of buyers and sellers. On an average, ragpickers collect upto 20% of the waste in an Indian city, saving the municipality significant sums of money.

**Recycling**

It is the reprocessing of a discarded material into new raw materials that can be used to manufacture the same or similar grade products.

**End NOTES**

<sup>i</sup>CSE Website: [www.cseindia.org](http://www.cseindia.org)

<sup>ii</sup>Estimated by CSE based on the wastewater-discharged data published by CPCB in "Water quality in India (Status and trends) 1990 - 2001".

<sup>iii</sup>Trash to Cash, By Fran Berman

<sup>iv</sup><http://www.ourlittleplace.com/air.html>

<sup>v</sup><http://www.epa.gov/iaq/pubs/occupgd.html>

<sup>vi</sup><http://www.epa.gov/iaq/pubs/occupgd.html>

<sup>vii</sup>[www.toxiclink.org](http://www.toxiclink.org)

<sup>viii</sup>Guidelines for Greening Offices, <http://www.entlink.net/education/resources/greenoffice.cfm>

2 ibid

3 ibid

4 ibid

5 ibid

6 ibid

7 ibid

8 ibid

9 ibid

10 ibid

<sup>ix</sup>Indian Agro and Recycled Paper Mills Association, New Delhi

<sup>x</sup>Indian Agro and Recycled Paper Mills Association, New Delhi

**REFERENCES**

While most of the information in this manual is based upon Chintan-Bharti Waste Resource Centre's own work and experiences, we have used information from some other sources given below:

*The Green Office Manual: Waste Busters Ltd.* by Earthscan Publications Limited, 1997.

*Trash to Cash* by Fran Berman, Published by St. Lucie Press Inc., 1996.

*Forty Ways to Make Government Purchasing Green*, By Eleanor J. Lewis and Eric Weltman, Center For Study of Responsive Law, PO Box 19367, Washington, DC 20036, 1992.

*Plastics profiting From Pollution: A Primer on Plastics for Everyone* by Chintan Environment Research and Action Group, 2003.

*The Green Reader: An Introduction to Environmental Concerns and Issues*, by Centre for Environment Education (CEE), Supported by the Ministry of Environment and Forests, Government of India, 1999.

*50 Simple Things Your Business Can do to Save Earth*, The Earth Works Group, Berkeley, California, 1991.

Ministry of Environment and Forests, Government of India website: [www.envfor.nic.in](http://www.envfor.nic.in)

This manual has been designed in a way that minimises paper wastage. The font Frutiger 45 Light, used for formatting the text, makes minimum use of printing ink because of its light character.