



The OZONE HOLE over  
Antarctica ... Sept 6, 2000



**Ways to Green Your office** ... and help save the environment

Office of the Principal Director of Audit (Scientific departments), New Delhi

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## **Foreword**

Following the ongoing trend since the late 1980s, 2006 was the sixth warmest year. The world temperature increased by 0.2<sup>0</sup> Centigrade per decade in the past 30 years reaching the warmest levels since the end of ice age. It is now within 1<sup>0</sup> Centigrade of the maximum temperature of the past million years, threatening dangerous climate change based on the likely effects of sea level rise and species loss. Carbon dioxide emissions grew by 3.2 *per cent* per year in the last 5 years, 4 times faster than in the preceding 10 years. Tropical forests are being destroyed at the rate of 0.8 to 2.0 *per cent* per annum, sending some of their estimated 5 million species into extinction and 484 species of animal and 654 plants have become extinct since 1600 AD. Studies suggest that humanity's resource consumption and waste production exceeded the Earth bio-capacity by about 25 *per cent* in 2003 and would be more in the future. The 2005 Millennium Ecosystem Assessment estimated that 15 of the 24 major ecosystem services that support humanity—through provision of fresh water, replenishment of fertile soil or regulation of climate for example—are being pushed beyond their sustainable limits or are already operating in a degraded state.

However, trends towards environmental degradation can be slowed. Some environmental trends over the past half-century demonstrate the potential of regulation, information and, above all, prices to encourage both more efficient and less polluting uses of energy and materials. Technology has already delivered astonishing improvements in product performance. Better public understanding and awareness of the environmental and social consequences of the consumer society have begun to catalyze profound shifts in purchasing behavior and lifestyle choices. For a change to happen, each of us needs to act today in a more environmentally responsible manner.

At home, in an industrial plant or in an office, the general goals of environmentally responsible management are the same:

- to make the most efficient use of resources — materials, energy and water; and
- to minimize contamination, chemical and otherwise, of the environment.

As the nodal office for the audit of environment, the Office of the Principal Director of Audit, Scientific Departments, proposes this write-up to aid all Indian Audit and Accounts Department offices to improve their environment practices by more efficient use of resources and minimizing contamination to the environment. This write-up discusses ways to make our own office more environmentally appropriate. Whether we work in a small or large office, there are many things that we, as an individual, can do to "green" our office. There are also many improvements that we can encourage others within our organization to undertake. By taking a careful look at office procedures,

identifying possible improvements, implementing and communicating changes, we can significantly reduce the office's impact on the environment.

Chapter 1 provides an overview of how the best practices on environmental measures and initiatives are categorized to suit their operational needs. The following chapters provide lists of best practices on environmental measures and initiatives under each specific category. This write-up serves to bring together practical environmental measures and initiatives for IA&AD offices to adopt to suit their own circumstances.

Offices are welcome to feedback their experience in the use of this guide. In addition, we welcome suggestion on innovative ideas and new environmental measures/initiatives from offices to enhance and improve on the examples contained in this edition of the guide that will be revised from time to time. Your comments will be greatly appreciated and will be considered for the future revisions. Please send your suggestions and comments by email to our office email.

We recognize the fact that it may not be possible to implement all these good practices in one go. However, having an awareness and a plan in mind to go ahead is a step in the right direction to save our environment.

The effort of Ms Nameeta Prasad, Director in this office is acknowledged with thanks in conceptualizing and putting together this write up.

**Raj G Viswanathan**  
Principal Director of Audit  
Office of the Principal Director of Audit (Scientific Departments)  
**Nodal Office for Environmental Audit in the Indian Audit and Accounts Department**

# Chapter 1

The identified best practices are broadly divided by different categories as shown in the table below:

Chapter 2	Use Less Paper
Chapter 3	Save energy
Chapter 4	Eco-driving
Chapter 5	Recycling in the Office
Chapter 6	Green procurement
Chapter 7	Water conservation
Chapter 8	Staff awareness and training
Chapter 9	Environment management system

## Structure of This Document

Following the overview in Chapter 1, the best practices under the nine categories are presented in Chapters 2 through 9 respectively.

**Chapter 2 Use Less Paper** -- It has been estimated that each employee in a typical business office generates 3 kilos of waste paper per week. There are several ways to cut down on how much paper you use and this chapter gives practical tips about how to reduce paper consumption and how to recycle paper.

**Chapter 3: Save energy** -- According to TIME magazine, heating, cooling and powering office space are responsible for almost 40 *per cent* of carbon dioxide emissions in the U.S. and consume more than 70 *per cent* of total electricity usage. While we in India may not always have the luxury of having our offices centrally heated/air conditioned, we have our own ingenious ways of wasting energy. Saving in energy bills is not only cost effective but also reduces harmful emissions, and is thus, beneficial to the environment. This chapter talks about practical issues like monitoring lighting usage, making the most of office equipment etc.,.

**Chapter 4: Eco-driving** -- Pollution from motor vehicles is a significant contributor to acid rain, global warming (the "greenhouse effect") and urban smog. As an individual, one can help to address these problems by changing one's form of travel to and from work. Employees can be encouraged to reduce the need for work-related travel and to improve the efficiency of vehicles. Greener fuels like CNG are also emerging as cleaner and most cost effective alternatives in the long run. This chapter talks about how we can reduce the harmful effects of vehicle emissions.

**Chapter 5: Recycling in the Office** -- This chapter talks about how we can recycle products used in the office so that there is less waste that needs to be disposed.

**Chapter 6: Green procurement** -- Improving office operations often involves changing the types of products used, purchased and buying environmentally appropriate products. Ideally, organizations should adopt a policy to encourage the purchase of such products. The Chapter on green procurement suggests some means of doing it.

**Chapter 7: Water conservation** -- Leaky faucets that drip at the rate of one drop per second can waste up to 10,000 liters of water each year. Water shortages are a fact now and this section tells you how you can conserve water.

**Chapter 8: Staff awareness and training**-- Providing information to staff and increasing staff awareness of various environmental aspects is an integral part of greening the operations of the office. This chapter set out the process and the areas where training can be imparted.

**Chapter 9: Environment management system**-- An Environment Management System (EMS) is a tool for managing the impacts of an organization's activities on the environment. It provides a structured approach to planning and implementing environment protection measures. The components and methods of implementing it are discussed in this chapter.

## Chapter 2-- Use Less Paper

- ✓ View documents on your computer instead of printing them out and edit on-screen, with different colored fonts, to avoid printing multiple drafts. Make hard copies only when absolutely necessary.
- ✓ Use e-mail to send documents rather than printing them or sending them via “snail mail” or fax.
- ✓ Reuse paper that only has printed material on one side. Keep a separate bin for this purpose for use as draft paper.
- ✓ Make sure all printers and copiers are set up to print on both sides of each sheet of paper. Where practical, use the reduction feature on your photocopier to fit more on a piece of paper.
- ✓ Timely addition of chemicals, such as toner, to your office photocopier can prevent ruined copies and needless waste.
- ✓ Reduce the number of copies made of standard documents, memos, etc., wherever possible. Distribute only one copy with a circulation list. Make an additional copy to post on a central notice board.
- ✓ Wherever practical, modify the formats of standard documents, correspondence, etc., to use less paper (e.g., by reducing margin widths).
- ✓ Use digital cameras for photos and establish a digital photo system to store digital photos. Avoid development of paper copies unless absolutely necessary.
- ✓ Wherever possible, circulate documents using routing slips rather than sending out individual copies
- ✓ Encourage sharing of documents in meetings.
- ✓ Review the distribution of items such as diaries, calendars and telephone directories and replace them with electronic equivalents as far as possible.
- ✓ Avoid fax machines that need thermal papers to eliminate the need for making copies for filing.
- ✓ Avoid sending original documents after they have been sent by fax and email.
- ✓ Examine critically who should be on distribution lists.
- ✓ Provide green boxes at strategic places in the office for collection of waste papers for recycling or reuse.

- ✓ Reuse envelopes by pasting the address on the top of the envelope.
- ✓ Monitor other uses of paper.
  - Install a newspaper "filing rack" library; share newspapers and telephone books with co-workers.
  - Reuse cardboard boxes in the office or at home.
- Reuse envelopes and file folders. Order reusable envelopes for inter-office mail. Set up office collection boxes for used envelopes and file folders in your supply area.
- Set up an "office library" for your personal paperbacks, magazines; and newspapers. You'll end up buying fewer "disposable" books, and you and your colleagues will be introduced to new authors.

# Chapter 3—Save Energy

## *Monitor lighting usage*

- ✓ Switch off lights/ fans when you leave a room for a period of time. Try and install master switches outside rooms/sections to easily control this.
- ✓ Replacing tungsten bulbs with compact fluorescent lamps typically makes an immediate cost savings of between 50-80 percent, and CFLs last up to ten times longer.
- ✓ Since exit signs like signs for lifts are lit up 24/7, they use up a lot of energy and therefore add a lot to your office electricity bill. Make sure that all office exit signs are illuminated using compact fluorescent lamps (CFL). These will cut down on energy use and lower your electricity bill.
- ✓ Switch off your computer and printer when not being used for a long period of time.
- ✓ Certain printers, copiers and fax machines also have sleep modes that can be automatically activated when the machine senses inactive periods. Also, consider consolidating these machines by purchasing a machine that performs multiple office functions.

## *Air Conditioners*

- ✓ Think about solar shading. You can use a reflective roof coating and/or window films

and shading to reduce the amount of heat from the sun that penetrates your office building.

- ✓ Keep the blinds closed. In the winter, this will conserve heat in the office, and in the summer, it will keep heat out.
- ✓ Use reflective film on windows against direct sunlight.
- ✓ Adjust thermostats and set room temperature and fan speed at a reasonable level to avoid excessive air conditioning.
- ✓ Switch on AC only when staff arrives for work.
- ✓ Ensure windows are closed when air conditioners are operating and keep entrance doors closed. Please also ensure that windows are sealed without gaps.
- ✓ Use Venetian blinds to mitigate room temperature rise due to direct sunlight.

## *Others*

- ✓ Use staircases instead of lifts, wherever possible for inter-floor traffic.
- ✓ Switch off electrical items like TVs and music systems, instead of leaving them on stand-by mode.
- ✓ Use microwaves for heating up food rather than food warmers that are kept switched on through out the day.

# Chapter 4—Eco driving

## *Cut down on office transportation*

- ✓ Encourage vehicle pooling so that employees find co-workers to commute to office together. This is particularly useful for employees living in IA&AD colonies.
- ✓ Parking disincentives such as high parking charges spots close to the office or shaded/covered parking may entice workers to use pool vehicles or use public transport.
- ✓ Improve e-mail and video teleconferencing capabilities to allow for more telecommuting instead of travel.
- ✓ Maintain moderate speed and accelerate smoothly. Maintain correct tire pressure
- ✓ Plan the route by combining trips wherever possible, and avoiding heavy traffic. Ensure that staff turns off idle vehicle engines during waiting time.

- ✓ Use the telephone or fax instead of couriers whenever possible. For short-distance courier deliveries, encourage the use of bicycle courier services.

## *Use green fuel*

- ✓ Green fuels like CNG/LPG can be used to reduce CO2 emissions.
- ✓ Use ultra-low sulphur diesel fuel for diesel vehicles (e.g. trucks, buses and light buses). Install diesel-oxidation-catalysts in diesel vehicles.
- ✓ Introduce environmentally friendly vehicles, replace all pre-EURO I vehicles progressively with new vehicles meeting the latest emission requirements.
- ✓ Achieve good vehicle servicing and maintenance, and check conditions regularly, e.g. check the emission level of vehicles, and leakage during routine maintenance.

## Chapter 5—Office Recycling

- ✓ Avoid disposable dishes and cups. Avoid the use of single- serving creamers, coffee and sugars. Stock milk, sugar and condiments in bulk to eliminate the need for single-serving packages.
- ✓ If you bring your lunch to work, pack a "garbage- free" lunch in a reusable container (e.g., a washable rigid plastic container, a milk bag washed and slit open at one end or nylon or cloth lunch bag). Bring a drink in a thermos or reusable glass bottle instead of using single serving juice boxes or milk cartons. Use a cloth napkin instead of a disposable paper towel.
- ✓ If your office has a kitchen, use refillable soap containers. Encourage the purchase of liquid cleaning products in concentrated form. Add water as required and store in bulk containers; to use, refill small portable containers.
- ✓ Composting of left over food can also be done. Home composters are available which can compost the leftovers from lunch and other meal times.

# Chapter 6—Green Procurement

## *Procurement of Goods*

- ✓ Introduce green specification in procurement of certain stock items like environmentally friendly printer cartridge, rechargeable batteries, energy saving personal computer and monitor.
- ✓ Buy recycled paper. Make sure to purchase paper with the highest percentage of post-consumer recycled content available.
- ✓ Only buy paper that Processed Chlorine Free. Chlorine Free Paper comes in two types: Totally Chlorine Free (TCF) and Processed Chlorine Free (PCF). TCF paper has not been exposed to any forms of chlorine during the bleaching stages. The source of the pulp is virgin timber. PCF paper is made from recycled fiber that has not been rebleached with any chlorine-based bleach. Hence, PCF is more environmentally friendly. When paper is bleached using chlorine gas, it causes the formation of dioxins and other highly toxic waste materials.
- ✓ Use unbleached and uncolored paper. Unbleached paper is more environment friendly. The process of bleaching makes paper to appear brighter than regular. Bleaching is done using the gas form of chlorine; therefore, it produces a lot of unwanted emissions. During the process, naturally occurring chemicals called dioxins in the wood react with added chlorine, producing a residue with dangerous and toxic dioxins.
- ✓ Buy recycled paper. There are two different types of recycled paper. One of them is made out of recycled material, which is usually scrap pieces and parts found at the paper mill. The other one is called "postconsumer" content paper which means that the material used to produce paper has at least been used once already.
- ✓ Buy products in bulk to minimize packaging.
- ✓ In general, products should meet as many of the following criteria as possible:
  - Be reusable or contain reusable parts (refillable pens and beverage containers, rechargeable batteries);
  - Be recyclable (uncoated recyclable paper instead of coated, non-recyclable stocks for publications); contain recycled materials (paper products containing post-consumer recycled fibre, etc);
  - Make efficient use of resources and energy (water-saving devices for plumbing fixtures; photocopiers capable of double-sided photocopying; energy-efficient lighting).

# Chapter 7—Water Conservation

- ✓ Install water saving faucets, e.g. timer taps in toilets (say which switch off after 30 seconds of opening the tap) and water saving, self-stopping taps.
- ✓ Regular maintenance inspection of the plumbing fixtures to prevent leaks and dripping.
- ✓ Reduce flushing cistern volume.
- ✓ Fix leaks. One dripping faucet can waste up to 75 liters of water per day.

## **Chapter 8—Staff training and awareness**

- ✓ Provide information to staff and increase staff awareness of various environmental aspects and measures through posters, leaflets and labels on e.g. waste, energy and paper savings, either by distributing it or by displaying it in prominent locations to increase staff awareness.
- ✓ Issue regular reminders and guidelines on best green practices to increase staff awareness of green practice guidelines.
- ✓ Provide training regularly for relevant staff, e.g. seminars, workshops, and training courses on green management, Environment Management Systems (EMS) or environmental audits.
- ✓ Encourage staff to contribute ideas on green practices e.g. through staff suggestion scheme. Arrange competitions and give awards to winning proposals to raise staff's awareness, e.g. cash prizes or departmental commendations.
- ✓ Set up "Green Corners" on the Department's notice boards for the purpose of displaying environmental information or provide green management corner on the departmental computer network or send information on e-mails.
- ✓ Establish Responsibilities. Who's going to do what? Form a working committee to direct the "greening" program. Assign responsibilities and arrange regular meetings.
- ✓ Look at current practices and decide what should be changed. Look at such things as the use and disposal of paper and other office products; coffee/lunch practices; the way chemical products are used and disposed of; energy use in equipment, appliances and the building itself; water use; transportation; product supply and purchasing.

# Chapter 9: Environment Management Systems

- ✓ Offices can consider implementing Environment Management Systems (EMS) conforming to an international standard such as the ISO 14001 for their office.
- ✓ If EMS is not found feasible, an environment action plan can be implemented.

## *Implementing EMS*

An EMS is a tool for managing the impacts of an organization's activities on the environment. It provides a structured approach to planning and implementing environment protection measures. Like a financial management system monitors expenditure and income and enables regular checks of a company's financial performance, an EMS monitors environmental performance. An EMS integrates environmental management into an organization's daily operations, long term planning and other quality management systems.

## *Components of an EMS*

To develop an EMS, an organisation has to assess its environmental impacts, set targets to reduce these impacts, and plan how to achieve the targets.

The most important component of an EMS is organizational commitment. For an effective EMS to be developed and implemented, you need commitment from the very top of the organisation, as well as all staff. Further examples of

components that should be considered when developing an EMS are:

- **Environmental Policy:** This is a statement of what an organisation intends to achieve from an EMS. It ensures all environmental activities are consistent with the organization's objectives.
- **Environmental Impact Identification:** Identification and documentation of the actual and potential environmental impacts of an organization's operations need to be undertaken. This can be achieved through undertaking an environmental audit.
- **Objectives and Targets:** An environmental audit forms the basis of determining an organization's environmental objectives and targets. An organisation can find benefits in adopting more stringent longer-term objectives to encourage it to improve its performance. To continually improve, targets should be regularly reviewed.
- **Consultation:** Staff and community consultation should be undertaken before, during and after establishment of an EMS. This is necessary to ensure that all staff are involved in, and committed to the EMS. It can also help to improve public perception of the company, one of the benefits of implementing an EMS.
- **Operational and Emergency Procedures:** All procedures should be reviewed to ensure they are compatible with the organization's environmental objectives and targets. Any changes should be included with the documentation.

- **Environmental Management Plan:** This details the methods and procedures that an organisation will use to meet its objectives and targets.
- **Documentation:** All objectives, targets, policies, responsibilities and procedures should be documented along with information on environmental performance. Documentation is useful for verifying environmental performance to staff, regulators and the community.
- **Responsibilities and Reporting Structure:** Responsibilities need to be allocated to staff and management to ensure the EMS is implemented effectively.
- **Training:** Staff should undergo environmental awareness training to familiarize them with their responsibilities for implementing the EMS and with the overall environmental policy and objectives of the organisation. This provides staff with the necessary skill and motivation for the effective implementation of the EMS.
- **Review Audits and Monitoring Compliance:** Review audits should be undertaken regularly to ensure the EMS is achieving its objectives and to refine operational procedures to meet this goal. In order to ensure regulatory and other requirements are being met, it is often necessary to undertake regular environmental monitoring.
- **Continual Improvement:** An important component is continual improvement. An EMS comes into its best use when used to review progress towards the targets and objectives set by a company to protect the environment. The procedures set in place to meet these objectives should be constantly examined to see if they can be improved or if systems that are more effective can be introduced.

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e mail: [pdsd@cag.gov.in](mailto:pdsd@cag.gov.in)

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