

# Environmental Management by Pollution Prevention

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***Recycling that is conducted in an environmentally sound manner shares many of the advantages of prevention – it can reduce the need for treatment or disposal and conserve energy and resources***

**E**NVIRONMENTAL POLLUTION is defined as presence of harmful concentration of any substances or energy liable to harm to living organisms, comfort resources and ecological damage to structure, amenity or interfere with the legitimate use of environment. Environmental pollution is growing with the advancement of human civilization.

Any substance which causes Environmental pollution is called as environmental pollutant, environmental pollutants include any chemical or geochemical (dust, sediment, grit, etc) substance, biotic component or its product, or physical factor (heat) that is released into the environment in such a concentration that may have adverse or unpleasant effects on environment. A pollutant may also be defined as any solid, liquid or gaseous matter present in such

concentration as may be or tend to be harmful to the environment.

Pollutants may be metals, organic and inorganic compounds from domestic and industrial wastes or solid waste, radio-active waste from nuclear plants, heat from thermal power plants, gaseous matter like Carbon monoxide, Oxides of Sulphur, Oxides of Nitrogen ( $\text{CO}$ ,  $\text{SO}_x$ ,  $\text{NO}_x$ ). Many Pollutants are the residues of things we make use and throw away. Sources of pollutants are wastes such domestic, industrial and agricultural wastewater. Surface water such as the lakes and rivers are polluted by liquid wastes from chemical and other factories. Atmospheric air is polluted by gases of automobile exhausts, and emissions from industries, thermal power plants, etc.

Wastes containing pollutants produced by a variety of human activities enter the environment either as emissions to atmosphere

or discharges to water bodies or land. These pollutants change the natural composition of the environment and adversely affect human beings, animals, plants and material objects.

### **Pollution Prevention**

Pollution prevention may be defined as source reduction, and other practices that reduce or eliminate the creation of pollutants through:

- increased efficiency in the use of raw materials, energy, water or other resources, or
- protection of natural resources by conservation.

Source reduction means any practice which:

- reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and
- reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants.

Pollution prevention is the best way to protect the environment. It focuses on ways to avoid creating the pollution at its source, before it needs to be cleaned up. This can be done by using less polluting materials in manufacturing, being careful to prevent spills, maintaining equipment in top condition, and through a number of cost-effective techniques.

Traditionally, programmes have focused on treating or cleaning up

pollution after it happens. Pollution prevention means reducing waste at the source by changing the process so that less pollution is created. This is a better approach because it avoids creating the pollution in the first place so that it doesn't need to be cleaned up. Pollution prevention is voluntary because it goes beyond just complying with environmental regulations.

Common pollution prevention measures include:

- using less polluting materials in manufacturing,
- being careful to prevent spills,
- maintaining equipment in good condition,
- reformulation or redesign of products,
- equipment or technology modifications,
- process or procedure modifications, and
- improvements in house keeping, maintenance, training, or inventory control.

Pollution prevention has the following benefits:

- It protects our environment by avoiding or minimizing the creation of pollution.
- Preventing pollution up front avoids costly clean-up, treatment and disposal costs. Usually, companies can save money when they prevent pollution. Sometimes there are costs to get started but these are usually made up by the avoided costs of waste treatment and disposal.
- Pollution prevention reduces non-compliance and liability

risks, enhances worker's safety and improves a facility's image and credibility.

- Preventing pollution also minimizes health risks to members of the community.

### **Pollution Prevention Measures**

Make pollution prevention a part of your everyday life! Think of ways to reduce your waste so you can avoid creating pollution. Reuse materials what you can as many times as possible (i.e., lunch bags, reusable containers, cloth napkins). Walk, car pool or ride your bike when possible when you move around. Use environmentally preferable or non-toxic products.

Many products, such as fluorescent lamps, medical equipment, thermometers and laboratory chemicals, contain mercury. It can enter the air, water or land if these products are disposed of improperly. Mercury bioaccumulates and persists in the environment. It is toxic to humans and wildlife in all of its forms (both organic and inorganic) and can move up the food chain.

Mercury in the environment can be reduced by using alternative products that don't contain mercury, cleaning up spills properly, recycling mercury-containing products and properly handling and disposing of mercury-containing equipment.

Environmental Audit may be conducted annually to determine whether its own facilities are in compliance with environmental laws and regulations.

Pollution prevention approaches can be applied to all pollution-generating activities,

including those found in the energy, agriculture, consumer as well as industrial sectors. The impairment of wetlands, ground water sources, and other critical resources constitutes pollution, and prevention practices may be essential for preserving these resources. These practices may include conservation techniques and changes in management practices to prevent harm to sensitive ecosystems. Pollution prevention does not include practices that create new risks of concern.

In the agricultural sector, pollution prevention approaches include:

- reducing the use of water and chemical inputs;
- adoption of less environmentally harmful pesticides or cultivation of crop strains with natural resistance to pests; and
- protection of sensitive areas.

In the energy sector, pollution prevention can reduce environmental damages from extraction, processing, transport and combustion of fuels. Pollution prevention approaches include:

- increasing efficiency in energy use;
- substituting environmentally benign fuel sources; and
- design changes that reduce the demand for energy.

Some practices commonly described as “in-process recycling” may qualify as pollution prevention. Recycling that is conducted in an environmentally sound manner shares many of the advantages of prevention – it can reduce the

need for treatment or disposal and conserve energy and resources.

Remaining competitive in the 21<sup>st</sup> century requires any business or organization to use pollution prevention strategies that maximize production efficiency and minimize waste.

### **Cleaner Production Application**

Cleaner production (CP) refers to the continuous application of an integrated preventive environmental and business strategy to procure resources, process and produce products or provide services at a higher efficiency, increased profitability and reduce risk to environment. CP is about minimizing the ecological impacts of our commercial and industrial activity, while maximizing the benefits gained from any raw material or resources consumed. Cleaner production aims to:

- To minimize the creation of wastes and environmental pollution.
- Reduce overall costs and add market advantage.
- Increase resource-use efficiency and utilization.
- Decrease worker’s health risk,
- Improve public image of the industry

CP approach may involve:

- Modifying the product to reduce its environmental impact,
- Substituting raw material inputs with less toxic alternatives,
- Modifying production processes and technologies used,

- Good house keeping to minimize the risks of spills or leaks, and
- Resources recovery, recycle and reuse.

### **Action Plan for CP**

Awareness of ecological problems is increasing. This is due to the fact that some problems are beginning to manifest themselves: global warming; shortage of waste disposal sites; increase in ground water contamination incidents; depletion of the ozone layer and increasing evidence of the adverse health effects of pollution. We must either change the way we view our place within the global ecosystem or risk a disastrous spiral from which we may never recover. Every generation has faced an uncertain future, however, none had to deal with the highest stakes of all-the survival of earth itself. Choices must be made and there are several actions you can take that can make a difference:

- Buy natural products like wood, cotton and wool only and purchase only containers of glass, aluminium, tin and cardboard. Avoid purchasing non recyclable plastic.
- Recycle everything you possibly can. When discarding anything, ask yourself where it might be utilized. Support local recycling efforts and legislation. Do not be concerned with whether you will make money on your recycling. Do it because it makes sense.
- Get the fullest possible use of non-renewable and minimally recyclable products. Write on both sides of the paper and

use that scrap wood. Simply because our society gives the illusion of free flowing resources, does not mean they should not be utilized to the maximum extent possible. Resources are too often taken for granted and misused.

- Be selective in purchase of wood products like paper.
- Be prudent about the products and packaging materials you purchase, as not all wastes can be recycled. Everyone must be accountable for their waste, so plan accordingly. Think about where it will go and how it will be disposed of when you purchase something. If there is no place to recycle it, do not buy it.
- Purchase products made from recycled material whenever

possible.

- Plant native trees and see that they grow. Protest the cutting of any healthy tree in your community. Trees are often sacrificed in the name of development of new curb or underground pipe line. Even dead trees are needed by the wildlife.
- Minimize your use of electricity. Utilize natural light or change saving lights.
- Upgrade the insulation in your home. Insulate your hot water heater.
- Turn your thermostat down and put on a sweater.
- Keep your car in good condition.
- Take public transportation, ride your bicycle or walk instead

of using your car for short distance.

- Obtain as much of your energy as possible from renewable sources like sun and wind. Solar water heaters are cost efficient over lifetime use.
- Compost household food wastes for an organic garden in your backyard.
- Join with the others in the cause of global ecology and supporting national environmental organizations. There is strength and power in numbers.

It will not be enough to talk about is, but act on it. Only by action, before it is too late, can the earth be replenished and maintained as a viable support system for all inhabitants. □



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