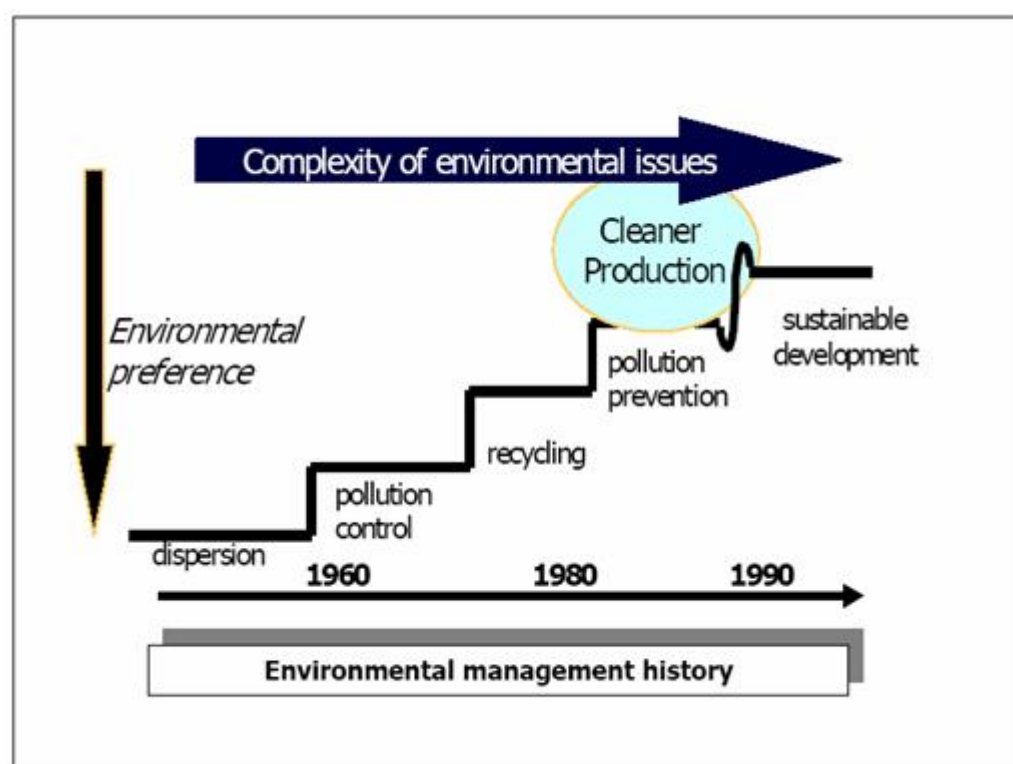


CLEANER PRODUCTION - OVERVIEW

Traditional environmental thinking focuses on what to do with wastes and emissions after they have been created. Cleaner production avoids or minimizes waste and pollution even before it is generated! Therefore it is called “pollution reduction at source”.

The key difference between pollution control and cleaner production is one of timing. As illustrated below, cleaner production can be seen as recognition of the need to consider the complexity of sustainable production. While the earlier focus on pollution control was an after-the-event, ‘react and treat’ approach, cleaner production is a proactive, ‘anticipate and prevent philosophy’. Prevention is, as is well known, always better than cure.

Cleaner production does not only go together with environmental performance. When minimizing waste and pollution through cleaner production, a reduction in consumption of raw materials, water and energy is also achieved. Cleaner production thus also goes together with productivity increase. Cleaner production strives to get as close to 100% resource efficiency as possible – within the barriers of what is economically profitable. It is important to stress that cleaner production is not simply a question of changing equipment, cleaner production is a matter of changing attitudes, applying know-how, and improving production processes as well as the product.



DEFINITION OF CLEANER PRODUCTION

Cleaner production is defined as the **continuous** application of an integrated **preventive** environmental strategy to processes, products and services to increase the overall efficiency and to reduce risks to humans and environment. In production processes, cleaner production includes the saving of raw materials and energy, the elimination of toxic raw materials and the reduction in the quantities and toxicity of wastes and emissions. In product development and design, cleaner production aims at the reduction of negative impacts throughout the life cycle of the product: from raw material extraction to ultimate disposal. In services, cleaner production advocates the incorporation of environmental considerations into the design and delivery of services.

As mentioned before cleaner production is the continuous application of a preventive strategy and methodology. Cleaner production is:

- A problem-solving strategy that uses a collection of analytic tools to improve the efficiency of production processes and improve profitability.
- A business-focused, profit-driven approach that can be transparently integrated into a business planning process.
- Relevant to all sizes of enterprise, from home-based to multi-national.

Other concepts similar to cleaner production are:

- Waste minimization.
- Pollution prevention.
- Green productivity.

These are fundamentally the same as cleaner production; with the basic idea to make companies more efficient and less polluting.

The goal of cleaner production is to avoid pollution by using resources and raw materials to the utmost possible. This means that a higher percentage of the raw materials are turned into valuable products instead of being wasted. Many cleaner production improvements require little or no initial investment or have rapid payback.

CLEANER PRODUCTION VERSUS 'END OF PIPE'

Up to now, conventional environmental technologies have mostly worked on the treatment of existing waste and emissions (examples: air filter technology, waste water treatment, treatment of sludge, waste incineration etc). As this approach takes up things at the end of the production process, it is also referred to as end-of-pipe technology. It is essentially characterized by additional expenses for the company and a shifting of problems (examples: production of sewage sludge through waste water treatment, production of gypsum from flue gas, etc.)

End-of-pipe treatment focuses on reducing the pollution load, but you do not recover the lost raw materials. Therefore, end-of-pipe treatment is always expenditure, whereas cleaner production brings economic benefit in addition to the reduced pollution load. Cleaner production is the same as waste minimization and pollution prevention. Cleaner production is also a useful step towards environmental management, e.g. ISO 14001.

Cleaner production aims to systematically integrate environmental objectives into the production process to reduce waste and emissions in terms of quantity and toxicity and thus to reduce costs. Compared to the disposal by external services or to end-of-pipe technologies, it presents several advantages:

- Cleaner production in the sense of reducing the quantity of materials, water and energy used essentially presents a potential for economic solutions.

- Due to an intensive exploration of the production process, the minimization of waste and emissions generally induces an innovation process within the company.
- Responsibility can be assumed for the production process as a whole; risks in the field of environmental liabilities and of waste disposal can be minimized.
- Waste and emission minimization is a step towards a more sustained economic development.

While conventional waste management asks 'what can we do with existing waste and emissions?' Cleaner production asks:

- Where do our waste and emissions come from?
- Why have they turned into waste at all?
- How can we minimize waste and emissions?

Therefore, the essential difference lies in the fact that cleaner production does not simply treat the symptom but that it tries to get down to the source of the problem.

A further characteristic of cleaner production is the idea of regarding the company as an entity. This means that cleaner production recognizes that raw materials, energy, products, solid waste as well as emissions into the water and the air are closely intertwined with the production process - notwithstanding the fact that the areas of water, air and soil are legally independent.

BENEFITS OF CLEANER PRODUCTION

- Improved production efficiency.
- More efficient use of raw materials, water and energy.
- Recovery of valuable by-products.
- Less pollution.
- Lower costs for waste disposal and wastewater treatment.
- Improved image.
- Improved occupational health and safety.
- Reduced environmental liability.

Cleaning up afterwards and treating the waste is not enough. Cleaner production helps to protect the environment by reducing pollution and waste at source. This minimizes the environmental impact, improves efficiency and reduces costs. Cleaner production is relevant to all industries, whether they are small or big, or whether they have a low or high consumption of raw materials, energy, and water. The most convincing benefit of cleaner production is its ability to reduce the consumption of resource and materials. Savings in water, energy and materials bring direct reductions in production costs, which again make the company more competitive. With the increasing cost of raw materials, energy and water, no company can afford to lose these resources in the form of waste.

Further Information Available:

FIP references:

Module 4 – Cleaner Production

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