

## Workshop 11: Production propre

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“Cleaner Production” in industrialised countries

### 1 Introduction

“Cleaner Production” (CP) is a comparatively new approach to handling environmental concerns in industry. Economies do not only produce goods and services, they also consume raw materials and energy and are producing wastes and emissions. CP aims at avoiding the generation of waste and emissions, by making more efficient the use of materials and energy through the optimisation of products, production processes, operating practices, use of less toxic and recyclable input materials.

The definition of Cleaner Production which has been adopted by UNEP is the following: “Cleaner Production is the continuous application of an integrated preventive environmental strategy to processes, products, and services to increase overall efficiency, and reduce risks to humans and the environment.”

Or in a few words: „CP is a strategy to make enterprises more eco-efficient“.

Eco-Efficiency was coined by the World Business Council for Sustainable Development (WBCSD) in 1992 and defined as the delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life cycle to a level at least in line with the earth's estimated carrying capacity.

However, the concepts of eco-efficiency and Cleaner Production are almost synonymous. The slight difference between them is that eco-efficiency starts from issues of economic efficiency which have positive environmental benefits, while Cleaner Production starts from issues of environmental efficiency which have positive economic benefits.

The prevention of waste rather than the so called “end-of-pipe” treatment is in general economically a much more interesting approach to protect human beings and environments from hazardous emissions and wastes.

### 2 History and experiences

The concept of CP was pioneered by large companies in the 1970's and it took more than 10 years until the experiences were transferred to small and medium sized enterprises (SME's). Since then CP is rapidly developing and disseminating in particular in Europe, North America and specially SME's.

CP can be achieved in various ways. A division of five prevention practices is most common: product modification, input substitution, technology modification, good housekeeping and on-site recycling and reuse (UNEP 1994).

In general there are four important elements for the successful implementation of a CP program in a company (Van Berkel 1999)

- The management commitment has to initiate and support the CP activities, in order to ensure collaboration of all involved departments of a company
- The involvement of employees especially the ones involved in the daily operations and maintenance, contribute largely to the generation of smart and cost-effective CP opportunities

- Cost awareness and proper cost information is convincing management and employees that producing cleaner can make money
- A well established project management is necessary to organise a smooth identification, evaluation and implementation of CP opportunities.

Many case studies and implemented CP opportunities in all different industrial branches prove that this approach is successful in companies, their employees and for the environment.

The Institute of Environmental Technology of the University of Applied Sciences Basel for instance detected within the framework of a regional "CP promotion program" a cost saving potential of 1.6 million Euros within 8 different companies. The overall costs for the consulting activities were 60'000 Euros, that means only about 4% of the overall cost saving potential.

### 3 Lessons learnt

Even if the numerous pilot projects show the economic and environmental benefits of CP measures, especially SME's are often not implementing this approach by themselves. Successful case studies are published for many different applications but the continuous evaluation and implementation of CP opportunities is so far in many SME's not becoming a daily business.

These difficulties and experiences show that usual marketing strategies for common products are not successful for a larger scale implementation of CP opportunities. As a possible strategy the introduction of CP opportunities has rather to be seen as an innovation cycle, comprising the following phases:

- *Invention* (discovery, development of new processes, product strategies)
- *Adaptation* (use and application for pilot or demonstration projects)
- *Diffusion* (wide application, market penetration)

For basic innovations, such as Cleaner Production, there are besides the industry several other institutions and stakeholders involved.

Up to now, within the CP projects often only the second phase of the innovation cycle, the *Adaptation*, could be fully reached, but wide applications and investment processes did not occur. The interest of the involved parties (suppliers, consumers) remains thus small and the risks are estimated high. The strategy on how to enter the diffusion phase is crucial.

- Active and intensive information (e.g. specific benefits about EST have to be known to the industry)
- Cooperation with all involved stakeholders (authorities, industry unions, design institutes, academia, etc.)

### 4 Next steps

In order to disseminate existing CP information and CP technologies, networks on national and international levels like "Prepare" have been built up.

PREPARE (Preventive Environmental Protection Approaches in Europe) is an informal, independent European network of experts in the field of Cleaner Production and Sustainable Development. The members are mainly from research institutions, administrations, governments, industries, and international organizations.

PREPARE stands for the joint development of new ideas and initiatives in the area of Cleaner Production, sustainable products and systems, exchange of information and dis-

semination of knowledge and skills, the stimulation of innovative R&D projects, cooperation between research, administration, industry, and international organizations.

Regional programs like the pilot study for CP implementation in northwest of Switzerland which are based on a multi-sectoral approach will foster the diffusion process of CP methodology.

#### References:

UNEP 1994, Government Strategies and Policies for Cleaner Production , UNEP Industry & Environment, Paris

Van Berkel, R. 1999, Cleaner Production: a profitable road for sustainable development of Australian industry, Clean Air, Vol. 33, No 4, pg 33-38