

“Capacity Building and Strengthening Institutional Arrangement”

Workshop: “Best Available Techniques (BAT)”

## **BREFs on Painting and Plastics and its Recycling Industries**

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# 1. Introduction

## Painting

- Finishing is a process affecting both aesthetic and mechanical aspects of a product. A quality product not only looks good but has a protective and durable surface coating as well.
- Painting production is a chemical process involving a lot of natural and artificial substances, often with significant potential risk for health and safety and for the environment.
- Potential dangerous effluents emission in the various environmental matrices, significant water and energy consumption, bad and dangerous smell emissions are the most relevant environmental issues of the production cycle.
- Painting products are used in many civil and industrial applications, widely spreaded, thus resulting in a lot of diffuse sources of emissions, not easily to be monitored and controlled.

# 1. Introduction

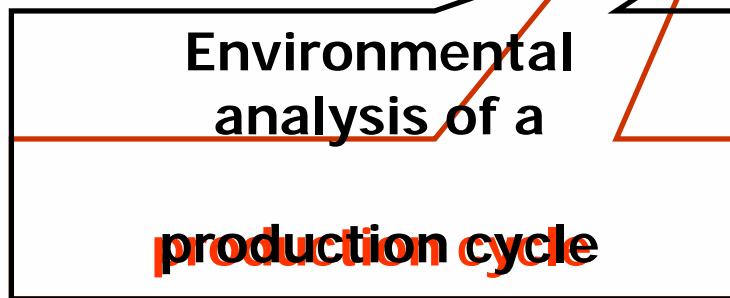
## Plastics

- Production of plastics is a complex process, mainly of chemical nature, involving a lot of materials with significant potential risk for health and safety and for the environment.
- Potential dangerous effluents emission and significant energy consumption in the production cycle (blend preparation and moulding) are to be attentively faced.
- The products spam from raw plastic (polymers) for further working to a large variety of objects, widely present in every part of our daily life.
- The life cycle of plastic objects is of a relatively short duration, thus requiring short term replacement.
- The large amount of plastic objects put in the environment calls for a great attention to the heritage that could be leaved to the future generations. Then recycling and reuse have to be strongly encouraged.

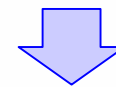
## 2. Methodology of analysis of a production cycle

### Analysis of a production cycle

the specific segment of an economic or industrial activity with an homogeneous production  
the analysis of every phase of the working process

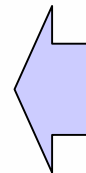


AIMED TO EVALUATE



IN ORDER TO

- Optimize the use of resources in the process
- Compare the environmental performance of the installation versus the pertinent industry

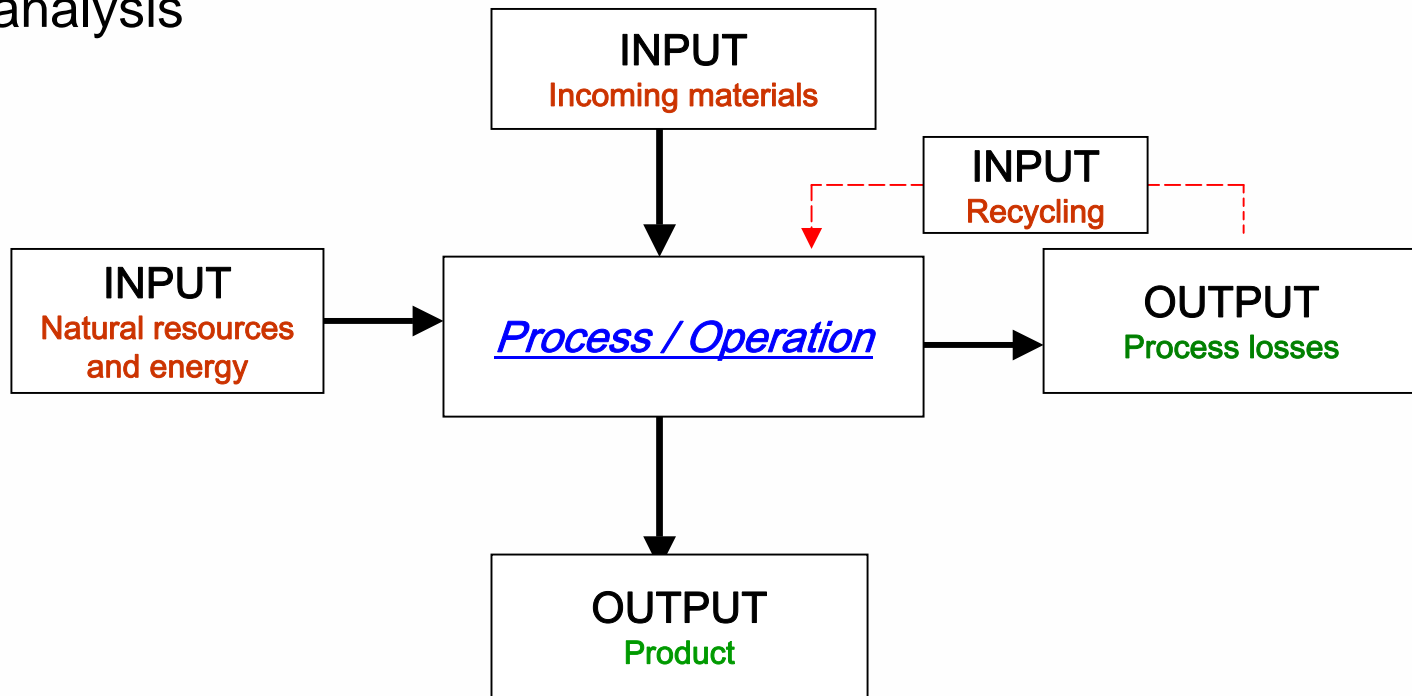


1. materials & energy consumption
2. primary resources consumption
3. dangerous effluents emission
4. impact and risk factors
5. applied techniques in the process
6. best available techniques

## 2. Methodology of analysis of a production cycle

### Splitting up into phases the process cycle

phase  
analysis



## 2. Methodology of analysis of a production cycle

### Methodology of analysis

- Input: incoming materials, natural resources, energy
- Output: final product, waste, dangerous effluents and effects in the different environment matrices
- Reuse of materials inside the production process
- Balance of materials, energy and water
- Indirect environment effects
- Integrated approach: IPPC, BAT, BREF

### 3. Final remarks

#### Painting industry

- Also in absence of a comparative analysis of the existing techniques aimed to identify and to propose formal BATs, primary and secondary prevention analysis, as previously presented, could give a good starting point aimed to implement a valid environment safeguard program.
- Existing BREFs on chemical industry at EU level can give some general indication on effective measures to be implemented, mainly on filtration systems and on water and energy saving techniques.
- Uncontrolled dispersion of working residuals in the vast variety of civil and industrial applications of painting products remains one the most critical problems to be still faced.



### 3. Final remarks

#### Plastic and its recycling industry

- Plastic production can give a considerable impact on the environment, due to the specific nature of the involved processes, resulting in air and water pollution, but mainly in large non biodegradable waste production.
- Implementation of BAT in every production phase (from raw material selection to the final handworks production) can significantly reduce emission of dangerous pollutants in every environmental matrix.
- Attentive water and energy balances in the affected production phases can result in both primary resources saving and significant economic advantages.
- A sound priority should be given to the recovery of plastic material at the end of life of products, in order both to reduce the amount of dangerous material left in the environment and to produce energy, thus saving other sources.

## 4. Reference documents

### Painting industry

- A specific BREF (Reference Document on Best Available Techniques) has not still been prepared. Some indications could be found only on pigments production, which are only one of the raw material used as input in the painting industry (Speciality Inorganic Chemicals).

<http://eippcb.jrc.es/pages/Fmembers.htm>

- Methodology for environmental analysys of production cycles – APAT 36/2006 (*Italian language*)

[http://www.apat.gov.it/Media/cicli\\_produttivi/Avvio.htm](http://www.apat.gov.it/Media/cicli_produttivi/Avvio.htm)

- Analysis of dangerous materials in Emilia Romagna Region (Cap. 3: Painting, Cap. 5 Plastics) ARPA Emilia Romagna, 2005 (*Italian language*)

- Athmospheric pollution reduction from industrial activities – Lombardia Region Official Bullettin, 2003 (*It. language*)

## 4. Reference documents

### Plastics and its recycling industry

- A specific BREF (Reference Document on Best Available Techniques) has not still been prepared. Some indications could be found only for polymers production, thus covering just the preparation of the raw materials used in the plastic industry. <http://eippcb.jrc.es/pages/Fmembers.htm>
  
- Methodology for environmental analysis of production cycles – APAT 36/2006 (*Italian language*)  
[http://www.apat.gov.it/Media/cicli\\_produttivi/Avvio.htm](http://www.apat.gov.it/Media/cicli_produttivi/Avvio.htm)
  
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