Cleaner Production

CP Methodology/Finances

Part II - Finances

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Contents

UNIT: CP Methodology / Finances

• Trend-setting intro

• Theoretical concept of Eco-efficiency

• Cleaner Production and how is it achieved?

• Financial benefits of Cleaner Production

• Future developments

In this unit
Financial benefits

Examples of the implementation of CP leading to financial benefits

- 3M Corporation – USA
- Printing firm - Norway
- Química y Textiles Proquindus - Peru
- Cervecería Suramericana S.A. - Ecuador
- Plastigama S.A. - Ecuador
3M Corporation

Pollution Prevention Pays (PPP) program Worldwide
1975 - 1990 (15 years)

- 126,000 tons of air pollutants
- 16,600 tons of sludge
- 6,600 m³ of wastewater
- 409,000 tons of solid/hazardous waste
- 210,000 barrels of oil annually
- US $ 506,000,000 in 15 years

In 2005, 3M's Pollution Prevention Pays (3P) program celebrated its 30th anniversary. Over the last 34 years, the program has prevented 1.3 mega tons of pollutants and saved more than 1.2 billion dollars worldwide.
### Financial benefits

**Química y Textiles Proquindus**

<table>
<thead>
<tr>
<th>Action</th>
<th>Cost (US$)</th>
<th>Savings (US$/y)</th>
<th>Payback period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace leaking steam traps</td>
<td>700</td>
<td>47,000</td>
<td>1 week</td>
</tr>
<tr>
<td>Modifying rinsing procedures</td>
<td>400</td>
<td>45,000</td>
<td>&lt; 1 week</td>
</tr>
<tr>
<td>Replace sulphate with NaCl</td>
<td>none</td>
<td>7,500</td>
<td>immediate</td>
</tr>
<tr>
<td>Repair leaks in wool laundries</td>
<td>50</td>
<td>3,700</td>
<td>&lt; 1 week</td>
</tr>
<tr>
<td>Repair leaks on Zonco washer</td>
<td>none</td>
<td>2,200</td>
<td>immediate</td>
</tr>
<tr>
<td>Filter sulphuric acid continuously</td>
<td>700</td>
<td>300</td>
<td>2.5 years</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,850</strong></td>
<td><strong>&gt; 100,000</strong></td>
<td></td>
</tr>
</tbody>
</table>
## Financial benefits

### Norwegian printing industry

<table>
<thead>
<tr>
<th>Approach</th>
<th>Measure</th>
<th>Costs (NOK)*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dilution</strong></td>
<td>• 23 km pipeline</td>
<td>• investment: 100 M</td>
</tr>
<tr>
<td></td>
<td>• 1.5 m Ø</td>
<td></td>
</tr>
<tr>
<td><strong>Pollution Control</strong></td>
<td>• wastewater treatment plant</td>
<td>• investment: 32 M</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• operation: 8 M/y</td>
</tr>
<tr>
<td><strong>Pollution Prevention</strong></td>
<td>• procedural and technical changes</td>
<td>• investment: 8 M</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• savings:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>❖ 5 M/y on chemicals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>❖ 10 M/y on energy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>❖ 8 M/y increased productivity</td>
</tr>
</tbody>
</table>

* Norwegian Krone (approx. 7 NOK per Euro 2012)
Two enterprises in Ecuador

<table>
<thead>
<tr>
<th>ENTERPRISE</th>
<th>MEASURE</th>
<th>INVESTMENT COSTS (US$)</th>
<th>PAY-BACK PERIOD (MONTHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervecería SA</td>
<td>Reuse of Wastewater Effluent</td>
<td>7400</td>
<td>3.5</td>
</tr>
<tr>
<td>Cervecería SA</td>
<td>Reutilization of Filtration Material</td>
<td>7681</td>
<td>2.3</td>
</tr>
<tr>
<td>Plastigama SA</td>
<td>Various small corrective material expenditures</td>
<td>9100</td>
<td>5.7</td>
</tr>
<tr>
<td>Plastigama SA</td>
<td>System for the management of raw and composite material</td>
<td>900,000</td>
<td>9</td>
</tr>
</tbody>
</table>
Financial benefits

- The Ecoprofit project – a demonstration project in Graz, Austria in 1992

- The environmental profit is expressed graphically
From 10 kg of raw materials to 2.16 kg of raw materials per the same kg of paint.

Before CP implementation:
- Purchased amount: 10.0 kg
  - Lack: 8.0 kg
  - Solvents: 2.0 kg (Cleaning)
- Paint for application: 8.5 kg
- Paint sprayed: 7.55 kg
- Wasted paint: 1.0 kg
- Solvent in Air: 3.5 kg
- Solids in Air: 0.1 kg
- Dust: 0.1 kg
- Sludge: 1.3 kg
- Dry film of paint on surface: 1.0 kg

After CP implementation:
- Purchased amount: 2.16 kg
  - Paint: 1.94 kg
  - Solvents: 0.22 kg (Cleaning)
- Paint for application: 1.94 kg
- Sprayed paint: 1.85 kg
- Wasted paint: 0.1 kg
- Solvent in Air: 0.16 kg
- Solids in Air: 0.02 kg
- Dust: 0.02 kg
- Sludge: 0.4 kg
- Dry film of paint on surface: 1.0 kg
Financial performance based on progression of share values of 300 enterprises operating in the US

*Sustainable performance Group, 1997*
Financial benefits

Good business?

- Better choice of resources
- Less in-process spillage
- Less ‘end-of-pipe’ waste
  - Less observable pollution
  - Better public image
  - More reuse/recycling/recovery or materials
Thank you