

# MedClean Propre Limpio



Regional Activity Centre  
for Cleaner Production



Generalitat de Catalunya  
Government of Catalonia  
Department of the Environment  
and Housing

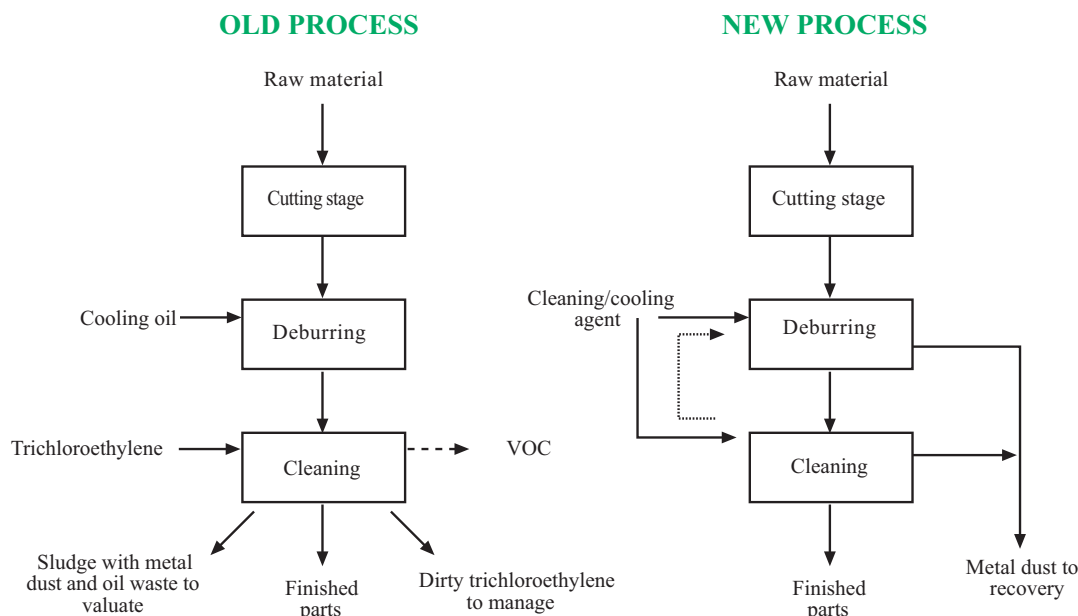
No. 30

Pollution prevention case studies

## Elimination of trichloroethylene in the production of metal parts

<b>Company background</b>	Sasonia de Corte Fino, SA. La Roca del Vallès (Barcelona-Spain).
<b>Industrial sector</b>	Metallurgy. Manufacture of thin cut press parts.
<b>Environmental considerations</b>	<p>The company manufactures metal parts with high-precision cuts. The raw material (metal strip coils) is passed through a roller straightening machine to straighten it and is then cut in the press. To facilitate the cut, the material is impregnated with a thin oil layer. Afterwards, to eliminate the rough edges, the parts are smoothed with abrasive bands and metal brushes, and cut oils are also used as cooling agents.</p> <p>The parts without rough edges are totally impregnated with oil. This means that the parts have to be washed and degreased. The company used trichloroethylene that had to be periodically renewed. Consequently, wastes containing trichloroethylene were generated (and externally treated) as well as sludge containing metal dust and oil residues that were recovered with scrap.</p>
<b>Background</b>	<p>The company decided to implement a series of pollution prevention measures at source due to the following reasons:</p> <ul style="list-style-type: none"> <li>• Possibility of eliminating trichloroethylene in the facility and prevent its potential health and environmental effects (VOC emissions).</li> <li>• Possibility of reducing management costs of wastes generated containing trichloroethylene.</li> <li>• Possibility of unifying the products used in the deburring stage and in the washing of the parts.</li> <li>• Possibility of reducing the handling of the parts between the different stages of the process.</li> </ul>
<b>Summary of actions</b>	<p>The actions carried out by the company have consisted in installing a new cleaning machine at the end of every line that eliminates rough edges.</p> <p>These machines use a non-hazardous water-based cleaning agent (96% deionized water). The characteristics of this cleaning product, which is also a lubricating/cooling agent, enable it to be used in the deburring stage. This way, the use of lubricating oils in this subprocess may be eliminated.</p> <p>Cleaning machines include a system to separate oils (from the cutting stage) and metal dust (from the deburring stage). Thus, the cleaning agent may be recycled and after being used in the cleaning stage may be reused in the deburring stage.</p> <p>With the carrying out of this project, all foreseen background objectives have been achieved.</p>

## Diagrams



**Note:** Flows of materials are only shown in those stages where actions have been implemented.

## Balances

	Old process	New process
<b>Balances of material</b>		
Trichloroethylene consumption	9,600 kg/year	0 kg/year
Consumption of cooling oil	6,500 kg/year	0 kg/year
Consumption of the new cleaning agent	0 l/year	700 l/year
<b>Economic balances</b>		
Trichloroethylene consumption	6,058 €/year	0 €/year
Consumption of cooling oil	7,813 €/year	0 €/year
Trichloroethylene management	4,788 €/year	0 €/year
Management of sludge containing trichloroethylene	847 €/year	0 €/year
Consumption of the new cleaning agent	0 €/year	3,142 €/year
<b>Total savings</b>		16,364 €/year
<b>Investment</b>		€79,393
<b>Payback period</b>		4.85 years

## Conclusions

The advantages obtained when redesigning productive processes with environmental criteria are clear. In this specific case, after the use of the new cleaning agent, the use of halogenated solvents has been totally eliminated and thus the environmental quality of the company and work and health conditions have been improved without damaging the quality of the parts produced required by the company's customers.

In addition, the characteristics of this new product have enabled its use as a cooling agent in the deburring stage and the elimination of the consumption of cooling oils in this process stage.

**NOTE:** This case study seeks only to illustrate a pollution prevention example and should not be taken as a general recommendation.



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Dr. Roux, 80  
08017 Barcelona (Spain)  
Tel. (+34) 93 553 87 90  
Fax. (+34) 93 553 87 95  
e-mail: [cleanpro@cprac.org](mailto:cleanpro@cprac.org)  
<http://www.cprac.org>