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Regional Activity Centre
for Cleaner Production



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

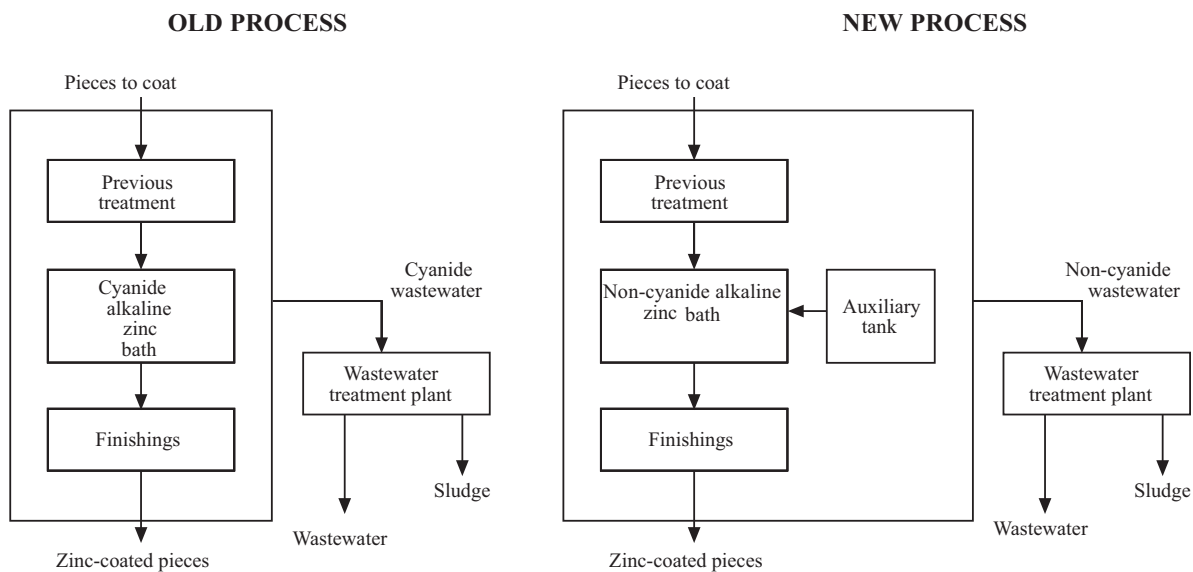
No. 16

Pollution prevention case studies

Cleaner production in a surface treatment sector company

Company background	ZINCATS INDUSTRIALS CANOVELLES, S.L. (Vallès Oriental. Spain) is a surface treatment company whose operations involve zinc coating of metal pieces.
Industrial Sector	Surface treatment industry.
Environmental considerations	The electrolytic zinc coating of metal pieces is usually carried out with cyanide alkaline zinc. The toxicity of the cyanide compounds makes handling and waste treatment difficult. Working with cyanide compounds also involves an added risk because of possible leaks or incorrect management and, in addition, an expensive oxidation process with sodium hypochlorite and cyanate precipitation is necessary in order to eliminate cyanide compounds from wastewater.
Background	The company carried out a Minimization Opportunities Environmental Diagnosis (MOED) and identified, among other pollution prevention alternatives, an option to replace the cyanide alkaline zinc bath with a non-cyanide alkaline zinc bath. Implementing this environmental option, the company would eliminate cyanide from production process, and savings would be achieved in cyanide compound treatment and sludge production from the wastewater treatment plant.
Summary of actions	<p>In order to replace the cyanide alkaline zinc bath with a non-cyanide alkaline zinc bath, the company exhausted the cyanided zinc bath, and proceeded to treat the remainings in the company's wastewater treatment plant.</p> <p>The non-cyanide alkaline zinc bath was then brought into operation and, in order to guarantee the correct operation of the new bath, an auxiliary tank for the chemical zinc solution that feeds the treatment bath was installed. It has not been necessary to make any other process modification in the zinc-plating line.</p>

Diagrams



Balances

	Old process	New process
Balances of material		
- sodium hypochlorite	50 t/year	0 t/year
- soda	30 t/year	26 t/year
- total sewage sludge production	13 t/year	8.5 t/year
Process costs		
- bath replacement costs	7,580 USD/year	3,860 USD/year
Environmental costs		
- wastewater treatment costs	19,050 USD/year	11,265 USD/year
- sludge sewage management costs	2,910 USD/year	1,380 USD/year
Total Cost	29,540 USD/year	16,505 USD/year
Savings		13,034 USD/year
Investment		22,580 USD
Payback period		1.7 years

Conclusions

In addition to environmental benefits achieved such as the elimination of cyanide from the surface treatment process and the reduction of wastewater and sewage sludge production and toxicity, the implemented cleaner production option of replacing the cyanide alkaline bath with a non-cyanide alkaline bath has brought considerable economic savings from environmental management cost reduction and raw material cost reduction.

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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