CROATIA

Mediterraneum Clean Propre Limpio

Autonomous Government of Catalonia
Ministry of the Environment
Centre for Cleaner Production Initiatives

UNEP

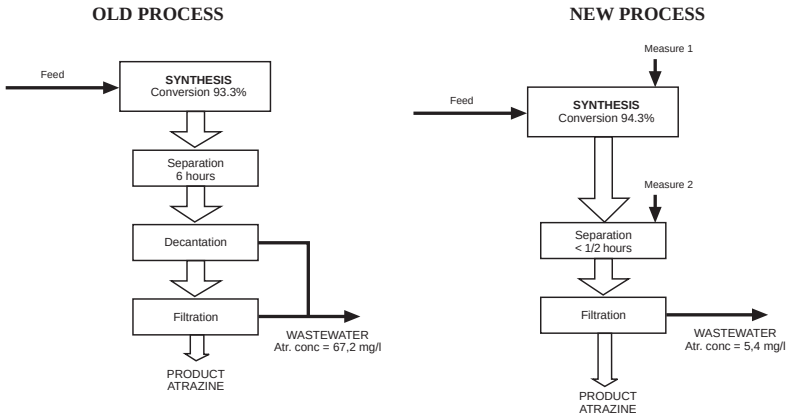
Ministry of the Environment
Spain

n.12 **Pollution prevention case studies**

Cleaner production in a chemical industry by means of the adoption of good practices and process changes

Company	Herbos d.d. (Sisak, Croatia).
Industrial sector	Chemical industry. Herbicides production.
Environmental considerations	Herbos company, as chemical industry, generated wastewater highly contaminated with herbicide Atrazine. After dilution, this wastewater was discharged to the recipient. The fee for water contamination was high. In order to improve wastewater quality and to reduce water discharge fee, Herbos orientated cleaner production project to the wastewater.
Background	Before the implementation of cleaner production project, the concentration of herbicides in the wastewater was 67,2 mg/l, due mainly to the product Atrazine, finely suspended in the wastewater. Except for environmental pollution, the total produced herbicide lost in wastewater was 0.85% of annual production. Another issue was the possibility to improve the raw materials exhaustion, that could be easily achieved and will produce considerable savings.
Summary of actions	Two main cleaner production measures were implemented: 1. Increase of raw material exhaustion (for 1%) was performed by better control of the process, improved housekeeping and slight process modification. 2. Reduction of wastewater pollution. Adding more tenzide in the Atrazine synthesis process, filterability of the suspension was much better, the filtration of total mixture was easier and faster and no decantation phase (the main source of water pollution) was needed. These measures did not require any capital investments.

Diagrams



Balances

	Old process	New process
Balances of material		
Absolute raw materials consumption per unit of product (Atrazine)	1,99	1,89
Atrazine concentration in wastewater	62,7 mg/l	5,4 mg/l
Savings		
Raw material		101 tons
Final product		21 tons
COD		54 tons O_2
Financial Savings		215.000 US $/year
Investment (Total)		0
Pay-back		immediately

Conclusions

After some initial investigative work of Atrazine synthesis, the process control was improved. The raw materials exhaustion was increased for 1% and by adding more tenzide, the filterability of product suspension was better. The financial savings were obtained by the reduction of: consumption of raw materials, final product lost, wastewater discharge fee the investments for wastewater treatment plant.

This is an example how better process control, followed by simple organizational and technical measures can producte cost-effective solution to the waste and emission problem. The company becomes environmental friendly.

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

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