

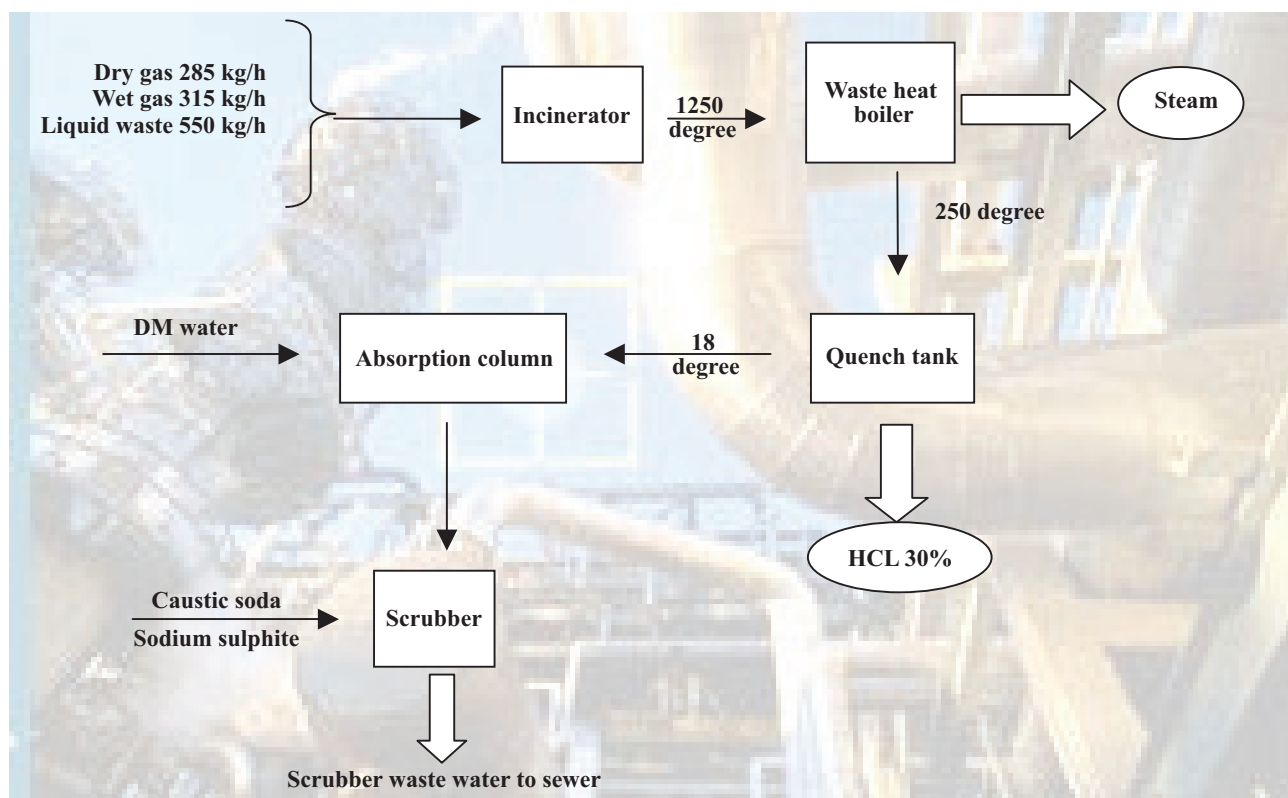
MedClean Propre Limpio


No. 95
Pollution prevention case studies

Reducing hazardous waste from VCM production

Company	Egyptian Petrochemical Co.
Industrial sector	Petrochemical industry - VCM (Vinyl Chloride Monomer) and PVC (polyvinyl chloride) production
Environmental considerations	<p>Vinyl chloride monomer (VCM) is an important industrial chemical chiefly used to produce its polymer, polyvinyl chloride (PVC).</p> <p>During the VCM production process, hazardous liquid and gaseous wastes are produced; they are ignitable, corrosive reactive and eco-toxic.</p> <p>The very hazardous waste generated by the recovery of VCM needs to be burnt on site in incinerators adapted to this purpose.</p>
Background	<p>Egyptian Petrochemical Co. is a public company owned by the Egyptian General Petroleum Corporation (EGPC).</p> <p>Previously, the incinerator used to burn the VCM waste was corroded and its design capacity could not handle all the produced waste. Moreover it was frequently shut down due to corrosion problems arising from HCL (hydrogen chloride) vapours and as result 200 Kg/hr of liquid chlorinated waste was discharged into the sewer.</p> <p>There was another incinerator but it was out of service.</p>
Summary of the initiative	<p>To tackle these problems, the company decided to make an audit and study different solutions for:</p> <ul style="list-style-type: none"> • Achieving safe disposal of VCM hazardous liquid and gaseous wastes. • Reducing the waste water load. • Installing a new incinerator to recover 30% HCL. • Reducing the corrosion of the production process due to gas emission. <p>As a result:</p> <ul style="list-style-type: none"> - The two existing incinerators have been replaced by a new one with high technology. - Hazardous liquid waste is sprayed into the incinerator using a waste liquid pump with plant air. - Hazardous gaseous waste (dry and wet) is injected into the incinerator. - The combustion gas containing HCL is quenched and the recovered crude HCL is pumped to a 30% HCL tank.

Diagrams of the process



Balances

	Old process	New process
Balance of materials		
- CO ₂ emission level	2,29.4 %	7.9 %
- Volatile organic compounds (VOC) emissions	0.1 %	0.04 %
Total annual saving		1 M€
Investment in facilities		5.76 M€
Payback period		5.5 years

Conclusions

The installation of a high technology incinerator unit for VCM hazardous liquid and gaseous wastes permitted the Egyptian Petrochemical company to reduce the quantity of very hazardous waste it generated.

Incineration permits the conversion of the amount of chlorine into HCL by oxidation, and the high combustion speed prevents the formation of dioxins.

The recovered HCL 30% can be sold as a by-product of the VCM production.

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

Case study presented by:

EEAA

P.O. 11728 Cairo

Tel: (+20) 10 529 5717

Fax: (+20) 255 64 54



Regional Activity Centre
for Cleaner Production

Dr. Roux, 80

08017 Barcelona (Spain)

Tel. (+34) 93 553 87 90

Fax. (+34) 93 553 87 95

e-mail: cleanpro@cprac.org

http://www.cprac.org