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No. 146 Pollution Prevention Case Studies

Vapour Extraction and Collection System in a Battery Production Facility

Company	Chloride Egypt (Information provided by Eng. Ahmed Kamal & Eng. Adel Taha from the Environmental Compliance Office and Sustainable Development, ECO-SD)
Industrial sector	Manufacture of batteries and accumulators ISIC Rev. 4 no. 2720 (International Standard Industrial Classification of All Economic Activities)
Environmental considerations	The manufacture of batteries implies the use of several products that can be hazardous to workers and the environment, such as heavy metals, acids and other chemical products. The main factory gas emissions are acid vapours, lead or lead-oxide emissions, and CO_2 emissions from fuel combustion. In addition, the generation of potentially toxic solid waste includes: lead and lead alloy scrap, lead oxide dust, and packaging materials. For this reason, it is important to implement clean production measures to reduce and control the exposure limits both for workers and the surrounding environment.
Background	Chloride Egypt is an Egyptian joint-stock company established in 1982 and is a leading company in manufacturing several types and models of batteries, such as car batteries, solar batteries, industrial batteries—both acidic and alkaline, standby batteries and UPS.
Summary of actions	Prior to the development of this project, workers in the tank formation area were exposed to the uncontrolled emission of acid vapours, leading to a severe health hazard. In addition, the acid spillage from the tanks increased the pollutant load in the wastewater and also affected the infrastructure. The actions carried out consisted in: - Installation of an acid vapour extraction system. - Installation of a collection system for accidental spills. The collection system led to a reduced consumption of sulphuric acid due to the reuse of the collected acid.

Photo

OLD PROCESS

NEW PROCESS

Balances

INVESTMENT	
Vapour extraction and collection systems	€131,859.61[1]

SAVINGS	
Reduction in H_2SO_4 consumption	51.2 t/year
Regenerated lead from collected dust	3,210 m^3/year
Total savings (monetary)	€35,592.09/year[2]

RETURN ON INVESTMENT	
The return-on-investment period is calculated as	**3.7 years**

[1] Feb. 2011 exchange rate. Original amount: EGP1,050,000

[2] Feb. 2011 exchange rate. Original amount: EGP283,327

Conclusions

An investment initially oriented towards health safety has become an important source of economic savings for the company, achieving a reduction in raw material consumption due to the reuse of previously discarded chemicals and allowing the company to reduce the pollutant load of the wastewater.

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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