Hach Company

COMPANY BACKGROUND

Hach Company is a leader in analytical instruments, test kits and reagents for water testing. The company manufactures a variety of products that can be used in labs, in-line processes or in the field. Its products are designed to be easy to use, high in quality and accessible to customers. Hach Company has two manufacturing facilities in the United States. The Ames facility produces chemical reagents and testing kits and is the worldwide product distribution center. Approximately 300 people work in the Ames facility.

CHRISTINE BAUER
CHEMICAL ENGINEERING, IOWA STATE UNIVERSITY

PROJECT BACKGROUND

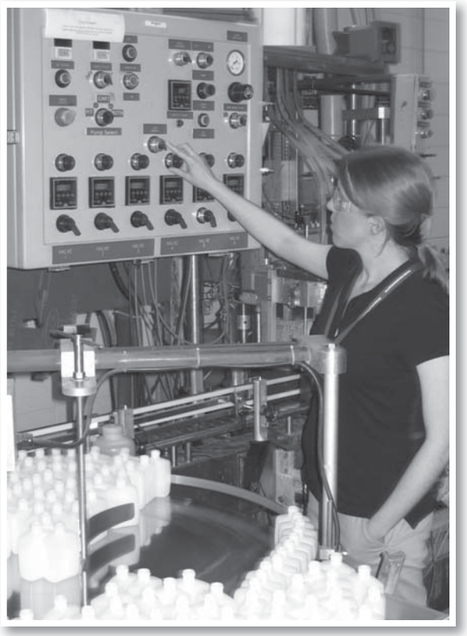
The intern primarily focused on two goals in waste reduction: heavy metal wastewater and aniline wastewater. These pollution prevention projects are viewed to have high economic and environmental impacts. Boiler insulation and compressed air leaks were also investigated.

INCENTIVES TO CHANGE

Hach Company is committed to reducing its environmental impact as well as its costs. Recent increases and changes to production have increased waste disposal costs and driven Hach to explore more advanced pollution prevention strategies. Potential savings were identified through the Pollution Prevention Intern Program. Actions related to boiler heat loss and compressed air leaks should result in significant spending reductions and reduced environmental impacts. These monetary savings will help Hach Company absorb other costs throughout the company.

RESULTS

Heavy Metals Wastewater Reduction: Molybdenum wastewater from cleaning bottling lines is collected after each product run. There is no standard procedure to control how much water should be collected as hazardous waste so collection was excessively cautious. Operators were often unnecessarily including non-hazardous rinses in the collection. Testing showed that minimizing the rinses and waste collection was possible and would not affect switch-over time between product runs. According to the data, this minimization would result in a waste reduction of about 40 percent and offer monetary savings.



Aniline Wastewater Treatment: Wastewater containing the hazardous constituent aniline is produced from a chemical synthesis process at Hach Company. An evaporator may be an option to reduce the volume of aniline waste. A pilot test showed that a 75 percent volume reduction was possible, which is a significant amount of hazardous wastewater. This option could be adapted to other waste streams at Hach Company. The intern also explored the use of an activated carbon system to reduce aniline waste. Test results on the effectiveness of the system are not conclusive at this time. Further research is needed to determine feasibility.

Boiler and Dryer Insulation: Hach Company's boilers and one dryer were appraised for insulation to prevent heat loss. Traditional insulation was impossible to easily remove for maintenance and production. A local appraisal company was contacted to provide a cost analysis for custom insulation.

Compressed Air: Compressed air is used throughout the plant, especially in the production lines and other machinery. A compressed air leak audit was completed and a total of 27 leaks were discovered. A record of each leak's location and description was kept, along with a tagging system using labeled pictures. A compressed air leak maintenance program would be an option to investigate in terms of viability and ease of implementation.

AIR POLLUTANTS DIVERTED IN TONS

Total for all sectors	
SO2	0.564
CO	0.219
NOx	0.329
VOC	0.102
PM	0 .026

GREEN HOUSE GASES DIVERTED IN TONS
(CO2 Equivalent)

Total for all sectors	
CO2	109.2
CH4	18.7
N2O	1.45
CFC	1.84

PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
HEAVY METALS WASTEWATER REDUCTION	$3,200	1,100 GALLONS CHEMICAL WASTE	RECOMMENDED
ANILINE WASTEWATER REDUCTION - EVAPORATION	$8,400	6,060 GALLONS HAZARDOUS WASTE	INVESTIGATION IN PROGRESS
BOILER INSULATION	$8,910	12,002 THERMS	RECOMMENDED
REPAIR COMPRESSED AIR LEAKS	$7,700	128,000 KWH	RECOMMENDED