SUMMARY

A consultancy study of company operations involved staff from all levels of the organisation and led to greater environmental awareness and significant environmental and cost saving benefits. Initial projects have focused on reducing solids in effluent to eliminate overloading of the wastewater treatment plant servicing the potato and corn lines. The consultancy has resulted in cost savings of over $130,000 per annum to date and bore water usage reduction of 20 ML per annum. Further reductions of 50 ML per annum in water usage are planned.
**Business Profile**

The Smith's Snackfood Company is the largest snackfood manufacturer in Australia with operations in Adelaide, Brisbane and Perth. The Adelaide site processes potatoes and corn to produce a variety of products including Lay's, Smith's Potato Chips, Doritos and Twisties.

**Financial assistance provided**

Advanced Envirosafe carried out the consultancy with a grant of $15,000 provided by the EPA’s Cleaner Industries Demonstration Scheme. Smith’s has also contributed to the project with $30,000 for capital equipment and $20,000 in employee time and analytical costs.

**Measures implemented**

Staff training; equipment and process changes; housekeeping improvements; installation of hydrocyclone technology to reduce water use and improve solid waste disposal.

**Cleaner production motivators**

Improve competitiveness by reducing environmental costs.

**TRADITIONAL APPROACH**

- The company’s water use has increased by 19.5% since 1993 from 264 ML per annum (47% mains water and 53% bore water) to 315 ML per annum (61% mains water and 39% bore water) without an increase in production.

- The effluent generated contained 10% solids and was directed to the wastewater treatment plant where the solids were removed by sucker trucks at a cost of $130,000 per annum. The plant was often stopped because the build-up of solids caused flooding.

- Although routine monitoring of waste levels was in place, there was no water use and waste reduction programme.
CLEANER PRODUCTION INITIATIVES

Benefits recommended and implemented

Staff training
The consultancy brought together staff from different levels of the organisation to be involved in the decision-making process. This has led to a broader understanding of aspects of the plant’s operation and consequently a smoother running plant.

Monitoring
Plant water usage, both from mains and the bore is monitored daily. Water meters were calibrated and installed at various locations within the plant to monitor the water used by individual production processes. Water meters are read on a daily basis by the production crews themselves. The water use is charted weekly and any unaccounted rise in consumption is investigated.

Hydrocyclones
The volume of water used for potato washing is determined by how much and what type of soil is on the potatoes. The manufacturing process includes several washing stages to meet stringent quality requirements.

Hydrocyclones have been used initially on the potato and corn lines. The inlets from various concentrated solid effluent streams have been directed to the hydrocyclones. Strong centrifugal forces are generated and solids are separated (underflow collected in bins) from the effluent. The resultant liquid stream containing few solids is recycled back to the process.
BENEFITS

ENVIRONMENTAL

Water usage • Recycling of clean water has reduced water consumption from the rod washer by more than 80%.

Waste reduction • The recovered solids from the hydrocyclone are in a cake form and are not entering the wastewater treatment plant.

ECONOMIC

Investment • $30,000 for the purchase of two hydrocyclones.

Productivity • Effluent system maintenance has been reduced substantially.

Savings, outcomes • Waste disposal is now $40 per tonne instead of $144 per tonne. Total saving: $130,000.

Payback period • Five weeks.

OTHER INITIATIVES FOR IMPLEMENTATION

• Other opportunities for the use of hydrocyclone technology are under investigation, with further installations likely to provide more dramatic reductions in water consumption.

• Commercial uses for corn sludge are being investigated.

• Various measures are being investigated for disinfecting soil and potato peel that is currently deep buried as an anti-nematode measure. If successful this would produce further savings in disposal costs for quarantine material and allow it to be used as a mulch or agricultural additive.

WHERE TO FIND ADDITIONAL INFORMATION

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