

INDIA

MINIMISING WASTE, DISSEMINATING EXPERIENCE

The long-held belief that pollution is an inevitable by-product of industrial development is no longer valid. A project called DESIRE, carried out in India between 1993 and 1995 for the United Nations Industrial Development Organisation (UNIDO), has shown that enterprises can realise both financial and environmental benefits from cleaner industrial production. The initiative not only worked to minimise waste, but also led to the dissemination of the experience gained in participating factories throughout their wider industrial sectors, in India and beyond.



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The reduction of pollution through waste minimisation - also known as cleaner production (CP) - has been identified as the key to environmentally sound industrial development. Cleaner production improves environmental quality by eliminating waste at source, rather than by the more costly 'end-of-pipe' treatment. In 1992, the Ministry of Environment and Forests of India issued a policy statement on pollution abatement giving priority to waste minimisation in the industrial sector. UNIDO was asked to help implement this policy by assisting small-scale enterprises to adopt cost effective cleaner processes.

The result was an initiative called DESIRE (Demonstration in Small Industries for Reducing Wastes), set up in 1993. International and local experts carried out practical demonstrations of the financial and environmental benefits of waste minimisation in twelve demonstration companies in three industrial sectors (pulp and paper, textile and pesticides). These demonstration companies received assistance from the National Productivity Council to identify and evaluate waste minimisation options and assist with their implementation. The intent was to reduce environmen-

tal impacts through cost effective preventive options, in particular: good housekeeping; input-material change; better process control; equipment modification; technology change; on-site recovery and production of useful by-products. Altogether, more than 500 pollution prevention options were identified.

Collectively, the 12 pilot companies spent US\$300,000 to implement pollution prevention options and saved US\$3 million in raw materials and waste-water treatment costs. Implemented options

had covered their costs in less than seven months. The results of DESIRE were published as simple guidelines for waste minimisation in a booklet called 'From Waste to Profits'.



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A follow up assessment of DESIRE was undertaken three years after completion to identify and evaluate its impacts (including a qualitative evaluation to appraise the extent to which the companies had institutionalised waste minimisation as part of their day to day management practices). Results from five demonstration companies showed that all of them, some more than others, had sustained their waste minimisation efforts. The total number of implemented options doubled from 87 during the demonstration project to 172 in the first three years after completion of the demonstration project. All companies implemented additional options, either those already identified during the demonstration project (on average 28% of all implemented options), or options they identified themselves after completion of the demonstration project (on average 31% of all implemented options). In addition, pollution monitoring confirmed that the paper and textile companies had drastically reduced their environmental impact.

However, these impressive results are only half the story. One of the most significant impacts of DESIRE

has been the effort to disseminate its findings, not as an integral part of the DESIRE initiative itself, but rather as a spin-off from new waste minimisation, pollution prevention and cleaner production programmes launched after the completion of DESIRE. specific technical workshops and Waste Minimisation Circles. These are an innovative model for sharing waste minimisation experience in industry clusters. Groups of about 10 entrepreneurs from the same sector in a given region form the Circle, which meets regularly to inspect one another's plants under the leadership of a company that has implemented waste minimisation. The Circle members also receive training in waste minimisation methods and techniques.

Through these activities, the findings of DESIRE have been shared with some 2,200 industrialists and entrepreneurs, and almost 25% of all Indian agro-residue based pulp and paper mills, about a third of the textile

dyeing and printing companies in the Surat industrial cluster and virtually all pesticides companies in the Ahmedabad industrial have participated in DESIRE related follow-up activities. Some companies that participated in the follow-up dissemination activities were able to implement waste minimisation without any expensive external waste minimisation advice. While the success of the dissemination activities is still hard to validate, due to lack of data on actual environmental



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benefits achieved in companies that participated in those dissemination activities, the Waste Minimisation Circles seem to be the most promising activity.

DESIRE has sparked the launch of a number of other waste minimisation and cleaner production initiatives in India and other parts of the developing world. The project provided an example and inspiration for the launch of the joint UNIDO/UNEP National Cleaner Production Centres (NCPC) Program, with a dozen centres established in Asia, Africa, Latin America and Central Europe. The project has demonstrated that waste minimisation can help cut pollution and be a profitable business at the same time. The key to success lies in the sustained involvement of dynamic local experts and committed factory managers who are willing to open their factories to outside scrutiny, as well as share their experience with others.



Mr. Ralph Luken
Environment and Energy
UNIDO Vienna Int. Centre
PO Box 400
1400 Vienna
AUSTRIA

r.luken@unido.org

Prof. Rene van Berkel
Centre of Excellence in
Cleaner Production Cleaner
Process
Curtin University of
Technology
Perth 68045
AUSTRALIA

tel: + 61 8 9266 4240
fax: + 61 8 9266 4811
R.VanBerkel@curtin.edu.au



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