



CP implementation gains momentum

The implementation of CP is building momentum. It is spreading to new sectors as well as being adopted by more facilities in the original sectors.

Chlor/alkali-PVC

The CP audits completed in the chlor-alkali and PVC plants of the Zhejiang Juhua Group Corp industrial complex have identified potential savings of 6.3 million RMB per year, and a total recovery of materials of 500 tonnes per year. Full implementation would reduce water consumption by 50%. Perhaps the most important benefit of implementation will be improved health and safety of workers, and reductions in the pollution from persistent toxic and cancer causing compounds.

In the chlor-alkali plant, one CP solution, to re-circulate water, has been implemented at virtually no cost, reducing water consumption by 50,000 m³ per year, and eliminating 245 tonnes per year of chlorine from the wastewater.

DEFI, a Canadian technology for detecting leaks into ambient air of toxic, cancer-causing vinyl chloride monomer (VCM), was demonstrated in the PVC facility. As the leaks are repaired, worker exposures to VCM will decline dramatically. The facility is planning to acquire the detection equipment, enabling it to continue to detect and repair any leaks in future. Such an undertaking will represent a major improvement in tools for achieving worker safety for China.

Although it is too early for conclusive results from these demonstrations, findings-to-date indicate a huge potential for improving both the quality of environment and the health and safety of workers through relatively low-cost CP measures in chlor-alkali and PVC plants.



SNC Lavalin files

Juhua industrial complex in Quzhou, Zhejiang Province.

Pulp and Paper

Implementation in the pulp and paper sector has experienced a gratifying turn around. Although it was one of the original sectors in which the Project completed CP guidelines, implementation at the Anhui Paper Mill was delayed, due in part to a downturn in the pulp and paper industry in China. CP solutions have finally been implemented at Anhui, with great success.

But the real success came with the demonstration that the CP guideline manuals could be readily used to replicate audits and implementation in other pulp and paper mills in China. Starting in July 2000, six additional pulp and paper mills, representing roughly 50% of pulp and paper production in Anhui Province, started CP programs with the assistance of the Chinese-Canadian Expert team. The results are nothing short of astounding!

The process began in July 2000 with a visit to the Anhui Paper Mill and training

of engineers from the participating mills. After their training, the engineers returned to their own mills with a mission! Each mill completed its own CP implementation and received a joint Canadian-Chinese expert team to audit their results. The audits were completed by March 2001, and their work was found to have been an unqualified success. Audited annual savings are roughly 35 million RMB and the environmental benefits similarly large.

Environmental benefits are classified in three main categories, for the sake of simplicity of reporting: fibre, coal and water saved. All mills implemented numerous solutions that recycled waste water and recovered fibre. At a minimum, the mills

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CIDA's Gender Equality Policy enhances Project

It has been five years since Fuyang Chemical General Works and CIDA's Cleaner Production Program started their joint project. As General Manager of the factory, I feel honoured and proud of the achievements.

We have benefited a lot from the project [...] Yet to me, I am most gratified at the inclusion of women in the developments, and gender equality in the project. It is this concept that has turned our attention to the importance of disseminating the sense of gender equality, trying hard to improve the working conditions of women managers and employees, and encouraging their participation in the work of the factory.

I would like to share with you my reflections on the work of gender equality.

1. To help satisfy the demands and needs of women managers and employees with the notion of gender equality

During the project, I got to know Ms Dorothy Lele, the Canadian Gender Specialist, and Professor Wu Qing from Beijing. Through conversations and gender training workshops, we [...] have found that there are inequalities in our factory. Like the managers of other institutions, we used to think that inequalities are unavoidable... that many jobs are not

“suitable” for women in the chemical and heavy industries... that women should be grateful for that because those are part of the special measures taken to protect their health. We also limited recruitment and opportunities for women to participate in training programs and to visit other factories outside of Fuyang. This thinking shows that women still face a lot of prejudice and discrimination. We have learned that the women managers and employees have played a major role in the economy and that, like men, they are an important part of the factory.

Due to changes in our ideas on gender, we have increased the percentage of female employees to 33%; built a day care centre and improved the working conditions in the bag-making workshops. In addition, air-conditioning has been installed and cloakrooms built for all female managers and employees.

2. To encourage women employees to actively participate in the reform and to compete for managerial positions at different levels

With the deepening of the reform in factories and restructuring of the economy, women managers and employees face greater challenges in terms of finding employment. Though we have not been

downsizing employees, there have been changes in the system of wages and policies in human resource development. Since 1997 the factory has (instituted a) system of equal pay for equal work and has adopted a system of competing for jobs. To encourage women to develop their abilities, we asked the members of Gender Equality Work Groups to encourage women to compete for management as well as staff positions. To truly guarantee equality in recruitment, 40% of the judges on the examination and appraisal committee are now women. Since this change, more than ten women have competed for mid-level managerial positions and 30% of women workers have been recruited to new jobs.

3. To extend and deepen education on gender equality and help women gain greater self-esteem

Many women themselves think that they are not as bright and capable as men, and that there are certain jobs they can't perform, as they have been socialized to believe that women are inferior. This is clearly reflected in job competition. To encourage more women to gain self-confidence and self-esteem, the local Women's Federation gave a presentation on the “four selves—self-reliance, self-independence, self-respect and self-esteem.” The aim is to educate women to break away from traditional ideas and restraints, and gain confidence in themselves and their equality with men. [With this new found confidence,] they will improve themselves to do their jobs better and dare to compete for higher positions and new jobs. They will also understand that they have to make every effort to gain gender equality and that there will be no gender equality without an environment created by women themselves. It will take the efforts of many generations but if we try hard and exert every effort, we will reach our goal of gender equality.

As a result of the new gender awareness, there has been progress in all aspects of the factory. This has added prestige to the present leadership.

(edited from original letter)

*Mr Wang Xianyi
former General Manager,
Fuyang Chemical General Works*

Qi Hongwei



Beijingers eager for information at World Environment Day.

Project update (October 1, 2000 — March 31 2001)

As the Project moves into its last year the emphasis is on completing activities, consolidating the achievements of the past four years, and working towards sustainability of results. Long term potential is evident across the spectrum of Project activities: the cadre of trained, experienced people; the growing adoption of CP by authorities in several provinces and implementation by factories; the enthusiasm for access to CP information and participation in international networks. There is even evidence the Project is influencing how people think and act. Examples of all the above are found in the Project's semi-annual report.

It is increasingly apparent that one impact of the Project is the creation of a cadre of Chinese CP experts, both policy and technical, who will be available over the

long term to provide advice on CP, and to access international expertise and experience.

The CP policy expert group are a key force in the emerging policy and regulatory framework for CP in China (see *CP Policy Work*). The group provides analyses of Chinese proposals in the light of international experience, while Canadian experts serve as a sounding board for changes in policy and draft legislation. The work of the CP expert group is also attracting attention outside China: during a study tour in the fall of 2000, World Bank officials expressed interest in including case studies developed by the CP expert group in the Bank's Pollution Prevention and Abatement Handbook.

Project-trained Chinese engineers are playing a central role in the implementation of CP across the two original sectors. The Project's audit and implementation program has been implemented in more than half the Pulp and Paper mills in Anhui Province, with a notable reduction in emissions and consumption of coal, fibre, oil and water. More than a third of Anhui's fertilizer factories are also included, again with a notable reduction in emissions and consumption of coal and water. This widespread acceptance of CP and its success in participating facilities suggests that implementation in these sectors will be sustainable beyond the life of the project.

CP implementation has also been extended to new sectors in response to requests from the Chinese. The Project completed audits in one new sector, chloralkali/PVC, and a pre-audit in a second new sector, brewing. Results in the chloralkali/PVC sector are reported elsewhere in this newsletter (cover story). Demand for training has also far exceeded the original plan, with 170% of training completed to the end of March 2001. A total of 1040 people (including 301 women) have received 4144.5 days of training in China.

The popularity of the Project website continues to grow. Since the website was re-designed and adopted by the SETC as its official CP website, use has grown from about 13,000 page requests per month in late 2000 to over 26,000 in May. The Chinese language site now consistently gets more requests than the English site.

Mr Wang Xianyi, (former) general manager of Fuyang Fertilizer and Chemical Works, provided a unique perspective on the the Project's influence, as he prepared to move on to a new position. In an article reprinted elsewhere in this newsletter (*CIDA's Gender Equality policy*), Mr Wang points beyond improvements in the environment and enhanced performance, to the central importance of his newfound understanding of gender equality.

The ultimate measure of the sustainability of results will be in the widespread adoption of CP across China. Signs are encouraging, as a second province, Kunming, used a Project sponsored workshop to launch CP and develop a CP plan for the province.

Mary Ellen MacCallum

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CP implementation

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have removed roughly 15,000 tonnes of fibre from the effluent, representing a significant reduction in suspended solids and COD. As well, the mills reduced their water consumption by 6 million tonnes per year. There are many benefits of such a reduction. Notably, operating costs will be reduced and the mills will be able to build and operate smaller waste water treatment plants. Energy efficiency also improved, with significant reductions of coal consumed (11,000 tonnes less coal).

One plant, Ma An Shan, also reported that they will recover 960 litres of oil per year. This oil previously entered groundwater and the Yangtze River. Its recovery is a significant accomplishment, given that one litre of oil can contaminate 100,000 m³ of groundwater.

The ongoing success of CP in these facilities seems assured. All the mills have promised to continue their CP programs, as their initial enthusiasm and diligence has been transformed into concrete results. Cleaner Production has become an integral part of the management programs at these mills. While the savings are likely to be less spectacular in the future, the cycle of continual improvement will continue as each mill becomes more sophisticated in its management and awareness of CP, with the mills becoming increasingly efficient and competitive.

Mark Osterman
Mary Ellen MacCallum

Mill	Fibre saved (t/year)	Coal saved (t/year)	Water saved (t/year)	Oil saved (L/year)	Renminbi saved per year
Ma An Shan	1,450	*	870,552	960	4,824,110
Tian Du	1,224	*	822,936	---	1,836,302
Jin Zhong	5,000	3,120	---	---	11,525,200
Chao Lun	6,420	2,970	3,354,852	---	8,075,134
Lu An	680	4,163	526,400	---	6,255,860
Gao Sen	211	1,020	336,600	---	2,440,309
Total	14,985	11,350	5,911,340	960	34,956,915

Environmental and economic benefits derived from CP implementation in six pulp and paper mills. * indicates probable savings achieved but not reported.

CP Policy work continues to break new ground

The work on CP policy continues to generate widespread interest and serve as a catalyst for progress. With support from Project sponsored CP experts, Taiyuan City has become the first city in China to introduce CP regulations to guide investment; the National People's Congress is expected to consider CP Legislation later this year; and the SETC is proposing to begin operating a China Center for Industrial Pollution Prevention by winter 2001.

Members of the Chinese CP policy expert group are playing a central role, while Canadian experts serve as a sounding board for changes in policy and draft legislation. Over the past half year, the Project has commissioned the group to summarize international policy experience and analyze Chinese experience. They prepared and circulated three reports: CP implementation in Jiangsu Province, a case study of ISO 14000 implementation in Suzhou Industrial park, and further analysis of international CP policies, with emphasis on public participation. The expert group's expertise and status continues to grow as it plays a key role in China's emerging regulatory framework.

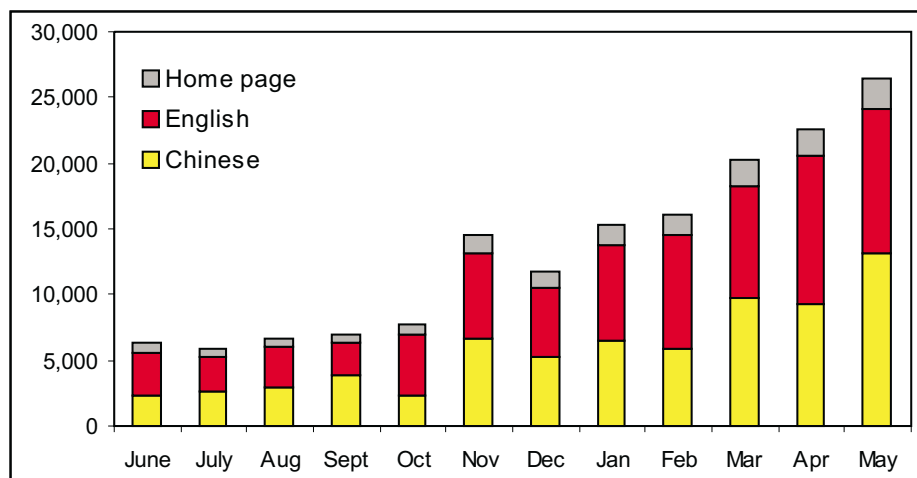
A policy study tour in October 2000 provided the international CP community with an opportunity to learn about China's rapidly evolving CP policies and impending legislation. The Chinese delegation attended UNEP's High Level Summit (an invitation only event) and the International Pollution Prevention Conference in Montreal. They met in Ottawa with officials from the World Bank and the International Financial Corporation, who had traveled from Washington to meet with them. The delegation then went on to UNEP and OECD in Paris. The World Bank officials were particularly interested in the expert group's case studies; and are considering including the cases in the World Bank's publication "Pollution Prevention and Abatement Handbook."

Mary Ellen MacCallum

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CP on the web

Main page of the project web site www.chinacp.com
Chinese language site www.chinacp.com/newcn/
English language site www.chinacp.com/eng/



Monthly website page requests - June 2000 to May 2001, www.chinacp.com

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