BUILDING A CORPORATE CULTURE OF SUSTAINABILITY THROUGH WORKER PARTICIPATION PROGRAMS: TWO CASE STUDIES FROM THE CPIE PROGRAM IN THAILAND

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INTRODUCTION

Traditionally, corporate environmental concerns have been the sole responsibility of the environmental manager or ES&H officer, focusing primarily on regulatory compliance. However, increased globalization of business and the realization that "green" production can mean greater profits are driving many companies to adopt more integrated approaches to environmental programs.

Using two case studies from manufacturing firms in Thailand, this paper will examine how worker participation programs can be used to promote sustainability across all functions in the firm. By expanding responsibility for a company's environmental initiatives, the firm can involve all staff, from cleaning crews to the accounting department, in implementing cleaner production (CP) and related initiatives. The resulting benefits include more successful cleaner production programs, increased awareness of ***all*** company staff of CP principles, and the development of a "culture of sustainability" that facilitates other cross-functional initiatives.

The two factories profiled are a small and large factory, both of which are participating in the Cleaner Production for Industrial Efficiency in Samut Prakarn (CPIE) Program. This paper will provide an overview of the worker participation initiatives undertaken at each of the factories and report on the successes of those programs in terms of promoting CP initiatives across the company and developing a corporate culture that encourages staff to consider "green" business principles in their job responsibilities. The paper also will discuss the collateral benefits of worker participation programs, such as linkages to improved working conditions for employees, education of the firm's suppliers, and facilitation of other intra-organizational initiatives. A comparison of the experience of factories of different sizes in implementing worker participation programs also provides useful lessons concerning how to structure successful programs in factories in developing countries

OVERVIEW OF THE CPIE PROGRAM

The Cleaner Production for Industrial Efficiency (CPIE) in Samut Prakarn Project is a non-regulatory program to support implementation of cleaner production technologies and practices in Samut Prakarn, an industrial province southeast of Bangkok, Thailand. This initiative, sponsored by the Royal Thai Government, is working in partnership with Samut Prakarn industry, government, and other stakeholders to develop incentives and accelerate the adoption of cleaner production technologies and practices. The focal point of the Project is the "20/20+ Program," a voluntary

membership commitment program aimed at improving efficiency among industry in Samut Prakarn and achieving measurable reductions in water consumption, wastewater generation and energy consumption. The Program also encourages facilities to achieve additional environmental improvements in areas such as toxic chemical releases, solid waste generation, and hazardous waste disposal. The Program name, "20/20+," is derived from the goals that the Program asks its members to attempt to achieve: a 20 percent reduction in water use and wastewater generation and a 20 percent reduction in energy use. The "+" represents any additional environmental benefit that is achieved.

In return for their commitment to working toward achieving their reduction goals, the CPIE Project provides 20/20+ member factories with a number of benefits, including technical assistance in the form of training programs, technical manuals and documents, advice from visiting CP experts, and periodic workshop and other activities, such as factory visits. In addition, the program reports on member factory successes in achieving their goals and provides industry with favorable publicity in the form of newspaper advertisements and other PR.

The CPIE Project and its 20/20+ Program represent an approach to promoting cleaner production that is unique in Southeast Asia. Unique aspects of the effort include:

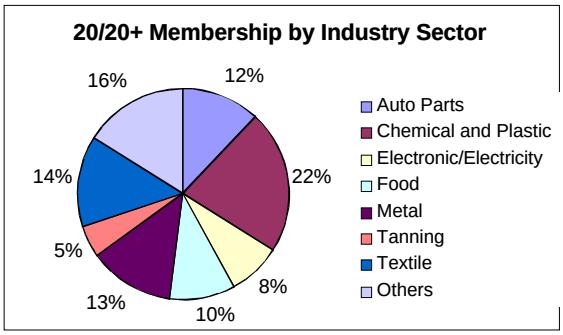
- ***It is voluntary***. There are no penalties, only rewards, for joining.
- The program focuses on ***contribution of CP to industrial productivity and therefore profitability***.
- The program has a ***local focus***. Activities are designed to address the specific needs of industry in Samut Prakarn Province only.
- Through ***partnerships*** with other organizations involved in CP in Thailand, the CPIE Project builds on and does not duplicate existing efforts.
- The Project includes ***activities to educate the financial sector*** on the benefits of supporting industry CP efforts.
- The 20/20+ Program is designed to reach a ***large number of companies***.
- Program assistance focuses heavily on ***fostering management-level change*** to make CP a part of the normal business culture rather than solely on traditional technology solutions.
- The project emphasizes ***sustainability*** of project impacts. It focuses on teaching industry how to do things (such as CP auditing), rather than doing things for industry.

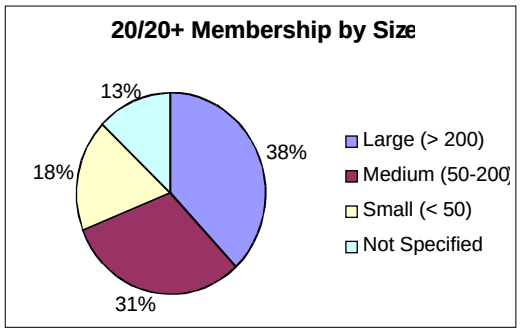
Overall, the CPIE Project views implementation of CP activities in factories as a management, rather than a technical, problem, especially in developing countries. What prevents most companies from implementing CP is not lack of technical know-how, but rather, a lack of corporate management systems that allow proven technologies and techniques to be implemented on an ongoing basis. For that reason, much of the technical assistance offered by the CPIE Project to its 20/20+ Program members is focused, not on providing information on the latest cleaner production technologies, but on training corporate managers in the types of management approaches that will enable them to incorporate CP into the day-to-day decision making of the factory. One indicator of the validity of this approach is the popularity of two training courses offered by the CPIE Project to 20/20+ member factories. The first is "Steps to Starting a CP Program in Your Factory," which provides step-by-step instruction to factory managers wishing to initiate a CP program, from developing a CP policy for the factory and convening a CP working group, to developing procedures for implementing and evaluating the success of CP initiatives. The second is "Five S in Practice," a seminar which introduces factories to

a Japanese management approach that focuses on increasing corporate efficiency through the elimination of waste in all aspects of corporate activity. These two courses are among the most consistently popular training courses offered by the CPIE Project.

The CPIE Project launched the 20/20+ Program on August 31, 2000. After about 18 months of activity, the Program already can point to the following significant achievements (all data is as of April 2, 2002):

- More than 300 factories have joined the 20/20+ Program by submitting production data; water use, energy use, and waste water generation data; and goals for reducing water use, energy use and wastewater generation.
- Nearly 350 additional factories have expressed interest in becoming full members of the Program by submitting preliminary information.
- 20/20+ Program membership represents the full range of industry in Samut Prakarn Province in terms of industry sector and factory size (see graphs below).
- The Program has conducted more than 75 training sessions with a total attendance of more than 2,000.
- The Program has distributed more than 1,200 technical documents.





Early reporting data from 20/20 + member factories is encouraging and suggests that 20/20+ members are successfully implementing CP activities. Based reports supplied by member factories to date, the CPIE Project estimates that 20/20+ member factories have implemented CP activities that currently save a total of US $ 1 million per year. Examples of the types of activities that factories are implementing include:

- One member company reduced municipal water usage by 24 percent (280m^3/month) and groundwater usage by 35 percent (4,200m^3/month) by installing a water meter and fixing leaks.
- Another factory has reduced its electricity usage by 6 percent by installing energy efficient lighting and a capacitor to increase their power factor.
- A paper company reduced its water usage by recycling water back into the process, resulting in a water savings of 600m^3/day.

- A textiles manufacturer used an NaOH concentration controller, changed the type of dye that it was using, and reused condensate from the process to reduce waste water generation and to improve the quality of the wastewater that it continued to generate.

- A small factory reduced its water use in half by changing its rinsing process to fill and then drain rinse water from tanks as it becomes too dirty to use. Previously, the company had allowed water to continuously flow through the tanks. This same company is now saving energy in the same rinse tanks by covering them when not in use to retain heat (rinse water must be kept at a certain temperature for optimum performance.

WORKER PARTICIPATION PROGRAMS AND THEIR ROLE IN PROMOTING CP

Worker participation programs have been used very successfully, particularly in developed countries, to promote a wide range of corporate initiatives, including programs to promote increases in productivity, enhanced environmental compliance and CP initiatives, and improved worker safety and health. The use of worker participation programs is predicated on the concept that in the day-to-day conduct of their jobs, workers are in the best position to notice inefficiencies, detect threats to safety, and identify ways to improve a company's environmental performance (e.g., through repairs to equipment, reducing waste of materials, etc.). Their daily contact with the production process allows workers to see problems that managers cannot, even managers who make a point of regularly walking the shop floor. Consequently, by giving workers an active role in certain workplace initiatives, the chance for the success of these initiatives is enhanced.

Numerous case studies[1] document the use of worker participation programs both in promoting CP and other corporate initiatives. From these case studies, it is possible to identify factors that contribute a successful program:

- Management Commitment. Worker participation programs only work where management is committed to the concept. Managers need to convey the message that workers' ideas are welcomed and are considered a valuable contribution to the running of the business.

- Incentives. The most successful worker participation programs provide incentives for workers to offer their ideas. One popular model used by a number of companies in the U.S. is an incentive program that gives workers a percentage of any savings that are generated through the implementation of their ideas. Other incentives include prizes of various kinds (dinners, T-shirts, etc.) or recognition programs.

- Training. Workers need to have sufficient training to allow them to generate good suggestions. In the case of CP programs, this means providing workers with training in the principles of CP and how to apply those principles on the job.

Challenges to Implementing Worker Participation Programs in Southeast Asia

[1] It would be impossible to list all the case studies that point to the success of worker participation programs. The author of this paper is most familiar with sources of information in the U.S., but there are undoubtedly others that show similar successes outside the U.S. The U.S. Environmental Protection Agency has produced a number associated with some of its initiatives. U.S. State governments have produced case studies as well.

Although successful elsewhere, worker participation programs have been slower to take hold in Southeast Asia. This may be due to cultural, economic, and social forces that present greater challenges to the implementation of such programs in Southeast Asian factories. These additional challenges include:

- Worker participation is a new concept. Adopting new approaches is a challenge in any culture. The lack of successful Asian models for worker participation programs has limited their use.

- Traditional factory organizational structures do not lend themselves to worker participation programs. Typical factory organization in Thailand and elsewhere in Southeast Asia is highly hierarchical. Management makes virtually all decisions and workers take their direction from management. It is not considered a worker's place in the factory to offer recommendations about how to do the job.

- Workers typically are not well educated and have low levels of skill. Factory workers in Southeast Asia are typically very poorly educated (some cannot read or write). Lack of education contributes to a lack of confidence in expressing opinions to better-educated supervisors. In addition, factory workers are not highly skilled, which also may limit their ability to identify opportunities for improvement.

- Lack of sophisticated accounting systems. Many factories in Thailand and elsewhere in Asia lack the types of accounting systems that would allow the factories to track the benefits of worker suggestions. Without being able to see clearly the contribution that suggestions make to the "bottom line," managers may be unwilling to make even the small investment necessary to implement a worker participation program.

- Bias against training. Many companies have a bias against providing training to their workers that may increase their skill levels and therefore value. Some managers may fear that such training will simply encourage workers to find better jobs in other companies, and the cost of the training will be lost to the factory manager or owner.

- Difficulty in establishing culturally-acceptable incentives. In places like the United States, cash rewards are common and accepted. Therefore, setting up incentives for workers that include paying them a percentage of the savings generated by their ideas or other cash bonuses is easy. In Thailand, cash rewards are uncommon, and managers are generally not comfortable with the idea of dispensing cash as a reward. Workers are typically rewarded as a group with parties, outings, or articles such as company shirts.

- Individual versus team efforts. In Western cultures, rewarding individual effort is also common and accepted. In Thailand, individuals are typically not singled out for praise, and workers may therefore be uncomfortable about being singled out for recognition. In addition, workers may not feel comfortable acting alone to make suggestions. This aspect of Thai culture affects the development of incentive programs as well – most rewards (as noted above) are given to a group (a particular work team or division, or even the whole factory) rather than to individuals.

- A weak economy may inhibit adoption of new approaches. The continuing weak economy in Thailand may prevent managers from considering innovative approaches. In a business atmosphere that is focused on survival, it is hard to

devote attention to new initiatives. Also, the weak economy makes any "extra" spending (such as providing incentives and giving the training necessary to workers) look unattractive.

CPIE Interest in Worker Participation Programs

Despite the challenges outlined above, the CPIE Project was convinced that worker participation programs could be successful in Thailand. The interest of the CPIE Project in promoting worker participation programs in Samut Prakarn Province was two-fold. First, CPIE staff had first-hand experience with these programs in the United States, both in researching and documenting successful programs, and in assisting organizations in developing them. CPIE staff believed that the success of worker participation programs could be repeated in Thailand, if programs could be properly structured to address the challenges, and if factory managers could be convinced of the efficacy of these programs.

Second, the concept of worker participation programs was completely consistent with the CPIE Project's philosophy with regard to the promotion of CP more generally. Implementation of worker participation programs can be viewed as part of an overall change in management thinking about CP that fully incorporates it into the day-to-day functioning of the factory. In addition, training workers in CP principles and encouraging them to look for and recommend changes to production processes and other factory procedures was in line with the CPIE Project's desire to create sustainable CP programs in 20/20+ member factories.

Consequently, the CPIE Project determined to undertake measures to promote the use of worker participation programs among its 20/20+ Program member factories. Initial steps included the development of a training course in worker participation. The concept of worker participation is introduced to members in the "Steps to Starting a CP Program in Your Factory" training course. The worker participation course focuses in on the topic in significantly more detail. Over two days, participants are introduced to the concept, taught techniques that management can use to promote worker participation in factory CP activities, and presented with information on how such programs can be structured. Group work in the training session allows participants to begin to think about how the principles learned in the classroom can be applied in their own factories and obtain feedback on their ideas from other factory staff.

In addition to the training course, CPIE staff recognized that a demonstration of the efficacy of worker participation programs would be useful in convincing factory managers to implement them. The CPIE Project therefore developed and implemented pilot projects to promote the development and implementation of worker participation programs at selected 20/20+ member factories. It was hoped that the pilot projects would help identify ways to overcome some of the challenges that had limited the spread of worker participation programs in Thailand, and would provide the evidence that managers needed to make the necessary time and monetary investments to implement such programs in their factories.

TWO CASE STUDIES FROM THE CPIE 20/20+ PROGRAM

The following case studies represent the initial results of the CPIE Project's worker participation program pilot. The first, the Somboon Group, highlights the experiences of a larger factory with a more active workforce, while the second, KK Sparepart, features a small factory for which worker initiatives were quite new. Their experiences serve to illustrate the challenges facing Thai companies in trying to

implement successful worker participation programs, and the ways that those challenges can be overcome.

The Somboon Group -- A Large, Active Factory Implements CP Through Incentives and Worker Education

The Somboon Group is fully Thai-owned automobile parts manufacturing company. The company is comprised of three factories:

- Bangkok Spring Industrial Company, Ltd.
- Somboon Malleable Iron Industrial Co., Ltd.
- Somboon Advanced Technology Co. Ltd.

Together, the three factories produce more than one hundred different kinds of automobile parts, which are sold both to domestic and international customers, including some well-known Japanese automobile manufacturers. The three factories employ a total of 1,225 individuals and are located together on one corporate campus in the heart of Samut Prakarn Province.

Of the 1,225 Somboon Group employees, about half are factory floor workers, another third are classified as technicians, with the remaining staff made up of factory supervisors and corporate management. Somboon Group employees are fairly well educated as a whole. Factory managers and supervisors are university educated, technicians have vocational school education, while most factory floor workers have a junior high school education. The average tenure for staff at the Somboon Group is as follows:

- Management and factory supervisors: 6 years
- Technicians: 8 years
- Workers: 4 years

The Somboon Group is fairly advanced in terms of its implementation of current management techniques. It has ISO 9002 and ISO 14001 certification, as well as QS 9000 certification, and has implemented its own productivity improvement programs. In addition, the Somboon Group has a fairly active program to educate its suppliers in business areas that the company believes are important. The Somboon Group regularly convenes meetings of its primary suppliers. These meetings often feature speakers on business topics such as increasing productivity. While it does not have a formal "greening the supply chain" program, the Somboon Group has encouraged its suppliers to implement CP.

History of Employee Involvement at the Company

The Somboon Group's CP worker participation initiative was built on a fairly strong tradition of employee activity and direct interactions with management. The company's human resources director had been hired based on her reputation for motivating staff to "get the job done" under difficult circumstances. The company had implemented a more general worker suggestion program prior to initiating its CP worker participation program, but that suggestion program did not have explicit incentives for workers.

In addition, the company had undertaken other initiatives that demonstrated management commitment to its staff and a willingness to work together with its

employees. For example, the company typically provides an annual Labour Day "gift" to its staff in the form of lunchtime concerts, organized competitions among staff with prizes, etc. The Somboon Group also engaged in other special projects with its workers. In one case, the company set aside a piece of land that had formerly been used for dumping and supported worker efforts to beautify the area to make it into a garden that workers could use during breaks and lunch. The garden also includes vegetables that workers are allowed to harvest for their own use. In another case, the company developed an initiative to reduce drug use among factory staff. As an alternative to simply dismissing or punishing workers found to be using drugs, the program provided support for workers who wished to quit and education for workers who wished to avoid drug usage to start. This particular program has received a fair amount of attention and is now used as a model for other companies in Samut Prakarn.

The CP Worker Participation Program

The Somboon Group's CP worker participation program drew heavily on its history of employee activities and emphasized education, fun, and competitive incentives. Working together with CPIE staff with a background in worker participation programs, management at the Somboon Group developed a fairly elaborate program to educate its staff about CP and to motivate workers to identify CP initiatives within the company's factories. Key aspects of the program included:

- Ensure widespread management participation in the program. This was accomplished by providing CP training to all managers and by actively involving managers in later steps of the program, including training of workers and reviewing worker suggestions.

- Include ***all*** company staff. The Somboon Group's program explicitly included all company employees, not just the factory staff.

- Teach workers about CP. From the outset, it was important that all employees, lower level staff and managers alike, receive adequate training in CP in order to help ensure that they could participate effectively in the program.

- Provide some rewards to employees simply for participating in program activities. Incentive structures provided an escalating scale of rewards that included small gifts for participating in educational activities, larger gifts for making suggestions and implementing them, and significant prizes for workers who recommended and implemented the "best" ideas.

- Encourage teamwork among staff. The program rewarded teams of workers, rather than individuals.

The specific structure of the Somboon Group's program is as follows:

Step 1 -- Increase Awareness of CP and Launch the Program

The Somboon Group launched its worker participation program on Labour Day as its gift to its employees for the year 2001. Leading up to the launch day, the company developed a special logo for the program (included in this section of the paper), distributed promotional materials, and put up banners and flags. Management was trained in CP and briefed on the program. A short presentation on the launch day introduced the concept of CP to the workers, provided some information about the CPIE Project, the 20/20+ Program and the Somboon Group's participation in the

program, outlined the new worker participation program for the company's staff. After the launch program, company staff were given scorecards and asked questions about the material that had been presented at the launch. For each correct answer, the employees received a sticker. Those employees who received 10 stickers were allowed to go on to the next step of the program.

All Somboon Group employees were invited to join into the program, from management and administrative staff to factory workers and housekeeping and maintenance personnel.

Step 2 -- Form Teams and Register for the Program

Employees who demonstrated their understanding of the program through correct answers to the questions in Step 1 were then invited to organize in teams of ten and register to participate in a Walk Rally (the specifics of the Walk Rally will be discussed in greater detail below). Walk Rallies were scheduled for four different dates to minimize disruption to the factories' production schedules and to give factory staff some flexibility in their participation. Once a team was organized and registered, each team member received a T-Shirt demonstrating his participation in the program.

Step 3 -- Participate in the Walk Rally

The Walk Rally was the cornerstone of the Somboon Group's worker participation program. Rallies (motor rallies, walk rallies), are a staple of Thai social life, and are used by groups throughout the country to provide information to the public and simply as social events. In a rally, participants move in teams from station to station (either by car or on foot) and participate in some activity or game at each station. Typically, teams garner points and at the end of the rally, the team with the most points wins a prize.

The Somboon Group used the Walk Rally as the means for educating its workforce about CP, and to provide incentives for workers to begin providing suggestions for making CP improvements in their factories.

Working together with CPIE staff, Somboon Group management with direct responsibility for the program developed a series of games for each station of the rally. These games were designed to teach the workers about different CP principles and help them begin to identify suggestions that their teams could make for implementing CP in the factory. Somboon Group managers staffed each of the games and ensured that the teams understood the lessons to be learned from each game. Some of the games developed included:

- Crows Love the Water. In this game, water was passed from team member to team member using drinking cups, until the final team member deposited the water into a bottle. The object of the game was to fill the bottle as quickly as possible. However, the drinking cups had small holes drilled in them so that team members needed to figure out how to plug the holes in order to prevent loss of the water as it passed from person to person. In addition, team members had to work effectively together to prevent water loss due to spilling. The lesson learned from the game was that workers needed to be aware of the loss associated with leaks or from careless handling of materials.

- With Our Own Hands. In this game, team members were asked to form child's modeling clay into pre-determined shapes using cookie cutters. The object of the

game was to form as many shapes as possible out of a given amount of dough. The lesson learned from the game was to be aware of the loss of raw materials in the production process and to think about ways to reduce waste in the process to save money on raw materials and reduce waste disposal costs.

- Treasure Cave. In this game, teams were given articles labeled as different types of waste and asked to separate them according to how the materials could be disposed. The object of the game was to correctly separate as much of the "waste" as possible in a given amount of time. Team members learned about the value of recycling wastes where possible, and the costs of properly disposing of wastes that cannot be recycled.

In addition to the games, the Somboon Group began the Walk Rally day with a brief video on CP and distributed some written materials that provided concrete examples of CP activities that had been implemented in other factories.

Using what they learned at each walk rally station, the teams were asked to develop 10 recommendations for implementing CP at the Somboon Group factories. To encourage workers to think seriously about CP and to help ensure that company management would ultimately support suggestions, the Somboon Group developed the follow criteria for the ten suggestions:

- Five suggestions should address issues in the team members' own work area, while five should be applicable to other areas of the factory as well.

- Five of the suggestions should generate cost savings to the company of 1,000 Thai Baht (about US $23) per month of implementation.

- Five of the suggestions should generate cost savings to the company of 3,000 Thai Baht (about US $70) over two months of implementation.

Learning through games was supplemented during the rally through stations called "CP Clinics." The CP Clinics were staffed by Somboon Group management who reviewed suggestions developed by each of the teams, identified improvements for the suggestions, and helped teams come up with suggestions where they were having difficulties.

At the end of the walk rally day, the team with the highest number of points received a special prize. All participating teams that generated ten CP activity suggestions received a crabmeat dinner (not an extravagant prize but highly valued, especially among factory floor workers).

Step 4 -- Review and Implementation of Suggestions

On the Walk Rally day, suggestions developed by each team were given a brief review to determine whether they were likely to meet the company's criteria for suggestions that would be implemented. After the Walk Rally, each suggestion received a thorough review by Somboon Group management, who approved the suggestion for implementation, asked for revisions to the suggestions prior to implementation, or rejected the suggestion for implementation. To assist workers in revising their suggestions, the Somboon Group continued its CP Clinics, with managers assigned to help worker teams during their lunch breaks with necessary revisions to their suggestions.

All teams that successfully implemented ten approved projects were awarded a two-day trip to a local seaside resort.

Step 5 -- Determination of a Grand Prize Winner

As a further incentive to workers to identify CP activities that would generate the greatest environmental benefits and cost savings to the company, the Somboon Group also had a Grand Prize competition among all of the approved and implemented projects. Six months following the launch of the worker participation program, a committee of Somboon Group management reviewed all completed projects and selected one team to receive a long weekend trip to Chiang Mai, a popular tourist destination in the north of Thailand.

Results to Date

The Somboon Group's initial worker participation efforts have yielded extraordinary results. Participation in the program was extremely high, with 92 percent of employees in all three factories participating in Step 1, 87 percent of those employees forming teams, and 86 percent of teams participating in a Walk Rally (an overall participation rate of more that 67 percent of all company employees). Participation was so high, in fact, that the Somboon Group added a fifth Walk Rally to the originally scheduled four to accommodate all the interested teams. The high level of participation is particularly noteworthy, as workers participated in the Walk Rallies on their own, and not company, time.

Building a Culture of Sustainability

Even office staff joined into the worker participation program. Examples of some suggestions from Somboon Group office staff include:

- ✓ Use refilled toner cartridges instead of new ones – savings of 4,400 Baht (US $100).
- ✓ Use waste abrasives from the production process to repair gutters and pathways – savings of 4,300 Baht (US $98) in materials and disposal costs.
- ✓ Initiate double-sided copying.
- ✓ Segregate office waste.
- ✓ Reduce waste from coffee service by only serving what guests request (most Thai offices serve coffee, without asking whether a guest wants any).
- ✓ Place a water-filled bottle in the toilet tank to reduce water usage.

Participating teams submitted 857 suggestions, with 345 suggestions approved for implementation by Somboon Group management. Highlights of some of the suggestions that were implemented as part of the program include:

- Reduce fuel oil use. Use of fuel oil in the Stabilizer Bar manufacturing section of one of the factories was reduced by decreasing the time needed to ignite the fuel burner, moving the bend mold used in the process to the side of the furnace with a temperature controller, and cleaning the oil injector once a month. These actions reduced fuel oil used by ten percent, saving the company an estimated 104,832 Thai Baht (over US $2,400) per year.

- Garbage Bank. A garbage bank was developed to collect and segregate wastes into those that could be recycled or sold and those that needed to be disposed. The garbage bank has reduced the Somboon Group's waste disposal costs by 125,000 Thai Baht (about US $2,875) per year. This figure does not include the money that the Somboon Group received through sale of recyclables and scrap.

- Coolant recycling. A significant amount of chemical coolant was found to be lost with scrap material (coolant remained on the scrap material) and due to leakage

and splashing from the cooling process. This loss was reduced by collecting coolant that pooled in the scrap storage area and recycling it back to the process. In addition, workers fixed leaks and devised a cover for the cooling unit to prevent splashing in the cooling process. As a result, the company has reduced coolant loss and saved an estimated 127,000 Thai Baht (about US $2,920) per year.

- Reduced use of Quick Dry Color. Workers identified opportunities to reduce the amount of coating used on springs manufactured at one factory. By spraying the coating on in thinner layers and moving the springs closer to each other during the process, coating use was reduced and the amount of coating released to the environment was minimized, resulting in a savings of 104,580 Thai Baht (more than US $ 2,400) per year.

- Reduce knife (sharp pill) wastage. In one metal cutting operation, knives that became too dull to cut the material were simply disposed as waste. Workers determined that the knives could be reused in another part of the process with material that was easier to cut, saving the company 772,200 Thai Baht (US $ 17,750) per year.

In total, the Somboon Group estimates that the cost savings associated with the 345 suggestions that have been implemented so far totals about 2.6 million Thai Baht (nearly US $60,000) over a two to three month period. This amount is more than double the amount originally invested in the project (for prizes, promotional material, training, etc.).

In addition to environmental improvements and reduced costs, the Somboon Group also has identified the following collateral benefits achieved through their worker involvement program:

- Increased teamwork among all company employees.
- Improved relationships between factory workers and management.
- Improved quality of life for workers in the factories.
- Awareness among workers about the importance of CP and attention to potential areas of improvement in the factory.
- Increased confidence among workers to offer suggestions to their supervisors.
- Awareness among workers about environmental issues that they can use at home to decrease waste and environmental impacts there as well.

Keys to Program Success

The success of the Somboon Group's worker participation program can be linked to several factors. These include:

- Strong commitment from and involvement of management in the program.
- On-going promotion of the program through employee newsletters, daily announcements, postings on bulletin boards, publicizing individual team successes.
- Involvement of all factory staff, including administrative and janitorial staff, in the program.
- Creative use of a popular cultural activity (the rally) to teach workers about CP.
- A tradition of activity to support workers and to encourage cooperation between workers and management.

Program Sustainability

While the Somboon Group had strong management support and participation in its worker participation program, at the outset of the program, management at the highest levels remained quite skeptical of the ultimate value of a worker participation program. Due to this skepticism, it is unlike that the Somboon Group would have been able to develop the program that it ultimately implemented without participating in the CPIE Project pilot program. The company's high-level management would probably not have approved expenditures for such items as promotional materials and prizes before they had proof that worker suggestions would generate value for the company.

However, now that the first phase of the program has been completed, and Somboon Group senior management has been briefed on the short-term results, worker participation organizers have been given approval to plan for a longer-term program. Current plans are to fold the CP worker participation program into the company's existing worker suggestion program, and to develop on-going incentives for participation. In the meantime, due to the large volume of suggestions, the company has temporarily suspended taking in any new worker recommendations until some of the remaining backlog of suggestions have been implemented. At present, 94 approved suggestions remain in the company's Suggestion Bank and will be implemented as other suggestions are completed.

Wider Benefits of the Somboon Group Program

CPIE Project support for the Somboon Group's program was predicated on the belief that Thai factories needed a demonstration of the potential for worker recommendations to contribute to the successful implementation of a CP program. Given the company's history of support for worker activities and initiatives, the skepticism of the Somboon Group's senior managers about the value of investing in such a program was significant evidence of the likely barriers to such programs at other factories. As the CPIE Project publicized Somboon Group successes to other 20/20+ member factories, a substantial amount of interest was generated among other factories in implementing similar programs. The Somboon Group generously invited other factories to observe its later Walk Rallies and recently conducted a workshop on behalf of CPIE, for 20/20+ member factories that wished to learn more about how the Somboon Group had developed and implemented its program. A total of 47 people from 23 factories participated as observers at the Walk Rallies. Participation in the workshop was limited to those factories that were able to demonstrate that they intended to implement a worker participation program. Nevertheless, 48 individuals from 9 factories attended the weekend seminar.

KK Sparepart Company, Ltd. -- A Small Factory Adapts a Model to Its Own Circumstances

KK Sparepart is a small, family-owned enterprise that began as a motorcycle parts manufacturer in 1986 and has since expanded its operations to include electrostatic powder coating of automobile parts manufactured elsewhere. The coating business is now the company's major operation. The company has customers both in Thailand and in other parts of Southeast and Central Asia, including Indonesia, Malaysia, Sri Lanka, India, Iran, and Pakistan.

KK Sparepart employs 111 people. Of these employees, more than 86 percent are factory floor workers. Management and support staff account for less than 10 percent of staff, while factory supervisors account for less than 5 percent of staff. Typical of small factories in Thailand, the education level of most staff is not high. Only management staff have university degrees, and factory supervisors and workers generally have only a primary school education (compulsory education in Thailand ends with the 6th grade). Turnover at KK Sparepart, however, is extremely low. Factory floor workers have been at the factory, on average, more than 10 years.

While KK Sparepart is not certified either for ISO 9002 or ISO 14001 and has no immediate plans to pursue such certifications, the company has become a very active implementer of the "Five S Program." The Five S Program is a Japanese management approach that emphasizes visual order, organization, cleanliness, and standardization as the means for achieving improved profitability, efficiency, service, and safety. A key tenet of Five S is the elimination of waste in all parts of the production process. It therefore is very consistent with the goals of CP.

History of Worker Involvement at the Company

Prior to initiating its worker participation program, KK Sparepart had had no experience with such programs. However, KK Sparepart had a very loyal and cohesive workforce. This stemmed in part from the fact that virtually all of its factory floor workers came from the same small town in the northeast of Thailand, and because all factory workers live in company-supplied housing on the factory site. While it had no formal program for workers, in the past, KK Sparepart had sponsored staff outings and supported a company football team, which competed against teams from other factories.

The factory's challenge was to develop a worker participation program that would work with a small group of workers who were not well educated and who had never been in a work environment where they were expected to generate suggestions for their management.

The CP Worker Participation Program

KK Sparepart selected the Somboon Group program as a model, which they would adapt to conditions in their own factory. The small number of managers relative to factory floor workers at the company meant that, in contrast to the Somboon Group, the KK Sparepart program would need to be fairly simple, because the managers would have little extra time to implement it.

The company's first step in developing its worker participation program was to convene a committee of top management and factory supervisors. Committee responsibilities was divided among a working group, which plans activities and advises factory staff on their suggestions, a promotion team which publicizes the program to the workers and plans means to publicize the successes of worker suggestions, and a registrar to collect data and track results as well.

Like the Somboon Group, KK Sparepart trained its managers and supervisors in CP, so that they could actively participate in the program and provide guidance to other factory staff. However, because the company lacked experience with worker programs, company management determined that it would be a good idea to provide managers and supervisors with training in promoting employee participation.

Similarly, KK Sparepart management was concerned that Walk Rally games in and of themselves would not be sufficient to provide the background that their workers would need to make good CP suggestions. KK Sparepart management believed that the low level of education among its factory floor workers, coupled with a lack of experience in making recommendations to management, would limit their ability to participate fully in the program. KK Sparepart therefore added a half-day of training for all of their non-management workers. The half-day covered CP principles, but also included a segment led by a management consultant that included exercises designed to help the workers identify problems and draft suggestions to their management. To prevent disruption of the production process at the factory, the factory's workforce was divided into four groups, and the half day training was presented four times.

Key aspects of the KK Sparepart program included:

- Sustainability was built into the program from the start. KK Sparepart management indicated from the outset that they wanted a system and set of incentives that they could live with over the long term.

- Program was consistent with the company's culture. Factory management were careful to ensure that the size and scope of the project were consistent with the types of activities that the company had undertaken in the past, and which its management had planned for the future.

- Scope of allowable suggestions was broad. In order to make it easier for workers to offer suggestions, the company allowed a broader range of suggestions (some only tangentially related to CP) to be included in the program.

- Training was appropriate to worker education and skill level. KK Sparepart management were concerned about the lack of education and skill among their workers, and the impact this could have on the success of their program. Time was taken to ensure that proper training was provided for workers.

The formal structure of the CP worker participation initiative is as follows:

Step 1 -- Increase Awareness of CP and Launch the Program

KK Sparepart held a brief event to launch its worker participation program near the end of the working day in early December 2001. Prior to the launch day, KK Sparepart aggressively promoted the program through daily announcements, postings on bulletin boards, and posting banners and flags throughout the factory. All factory managers received CP training prior to the launch.

A short presentation on the launch day introduced the program, and like the Somboon Group's launch, provided some information about the CPIE Project, the 20/20+ Program and KK Sparepart's participation in the program, and outlined the new worker participation program for the company's staff. Also similar to the Somboon Group, KK Sparepart gave its staff scorecards and asked questions about the material that had been presented at the launch. For each correct answer, the employees received a sticker. Those employees who received 5 stickers were allowed to go on to the next step of the program and were given a promotional mug.

To further augment its employees' exposure to CP principles, the factory presented CP informational videos in the canteen at lunchtime on several days following the launch.

Step 2 -- Form Teams and Register for the Program

Employees who demonstrated their understanding of the program through correct answers to the questions in Step 1 were then invited to organize in teams of five and register to participate in the program (the specifics of the program are discussed in greater detail below). Once a team was organized and registered, team members received a hat demonstrating their participation in the program.

Step 3 -- Participate in Educational Games

The small size of the KK Sparepart operation meant that putting on even one Walk Rally similar to the rallies conducted at the Somboon Group would have been too disruptive of the production process. Also, such a large-scale event was inconsistent with past company activity and with activity that management envisioned for the future. At the same time, KK Sparepart management believed that the type of educational games that had formed the activity of the Somboon Group walk rally would be very useful providing practical training for their staff beyond the classroom training that they had already received. As an alternative, KK Sparepart planned a series of games that ran over several weeks during the factory's lunch break and after working hours in the evening (the fact that the workers live at the factory site made this evening activity possible). The selected games were modeled on the games developed by the Somboon Group, and were used as the means for educating the factory workforce about CP and to provide incentives for workers to begin providing suggestions for making CP improvements in their factories. Factory managers were responsible for overseeing the games.

After participating in the educational games, each of the KK Sparepart teams was asked to generate ten suggestions for implementing CP activities in the factory. KK Sparepart management developed criteria to help guide workers in the development of these suggestions. Suggestions submitted by workers must meet at least one of the following objectives:

- Increase the efficiency of the production process
- Reduce the costs of production
- Save money for the factory, other than in production
- Improve worker safety and/or the environment
- Reduce working time
- Improve equipment operation
- Improve product quality
- Improve the process generally
- Serve the customer

The broadness and generality of these objectives was intended to give workers wide latitude in making suggestions. The management of KK Sparepart did not want to discourage worker suggestions, even if they would not result in large cost savings or were not explicitly related to cleaner production.

As further guidance, KK Sparepart also identified some criteria that it used to reject suggestions. Specifically, it determined that it would not approve suggestions that fell into the following categories:

- Construction of new structures
- Purchases of new machines
- Suggestions that cast blame on the actions of other workers

- Suggestions that were incompatible with current management decisions/directives
- Suggestions that were similar to on-going projects
- Suggestions that had already been made by other teams

In addition, directions for developing suggestions also indicated that of the ten suggestions developed by each team, five should address issues in the team's own work area, while the other five should be suggestions that were applicable across the factory more generally. Note that KK Sparepart did not specify savings thresholds that needed to be met in order to make a suggestion acceptable. This was done at least in part to encourage any suggestion, regardless of potential saving.

KK Sparepart managers and supervisors made themselves available to work with teams to revise and refine their suggestions.

Teams completing preparation of ten suggestions received souvenir carry bags with the worker participation program logo.

Step 4 -- Review and Implementation of Suggestions

All worker suggestions received a thorough review by the committee that oversees the worker participation program. If the committee found that it could not approve a suggestion, the suggestion was returned to the worker team with recommendations for improvements. The team could consult with other factory staff on changes to their ideas. Teams that received approval for and implemented ten suggestions received a special dinner from the factory management.

Step 5 – Additional Incentives for Highly Successful Projects

To encourage workers to develop suggestions that that save the company significant amounts of money, the KK Sparepart management developed a proposal to give a substantial reward to the team that generates suggestions that meet fairly stringent criteria for success. The company proposes to send teams on a short trip to some destination in Thailand if the teams generate suggestions meeting one of the following critieria:

- Five suggested projects each yield a cost savings of 1,000 Thai Baht per month (about US $23) and five additional projects each yield cost savings of at least 3,000 Thai Baht (about US $70) per month.
- The total cost savings generated by ten suggestions exceeds 30,000 Thai Baht (about US $690) over a 6 month period.

KK Sparepart management is currently reviewing these criteria to determine whether to finalize them. The management also is considering establishing criteria that would allow for the implementation of worker suggestions requiring investment, if the payback period of the investment is less than 6 months.

Results to date

The worker participation program at KK Sparepart is quite young (it was only initiated in December 2001), so results to date are somewhat limited. At the same time, these early results suggest reasons to be optimistic concerning the ultimate outcomes of the program. First, participation levels in the program are quite high, similar to the outcome at the Somboon Group. Ninety-three percent of KK Sparepart staff participated in Step 1 of the program by answering questions concerning the program

and CP more generally. Of that group, all formed teams to participate in the educational games. Eighty-four percent of those who participated in the games ultimately submitted suggestions for activities to the review committee.

The program committee received a total of 249 suggestions, and to date, 145 have been approved for implementation. The remaining 104 have been returned to the submitting teams for revision. As of the writing of this paper, it was too early to tell what type of specific results (e.g., specific reductions and/or cost savings) would be generated by the suggestions that had been approved for implementation. However, overall it can be said that the initial recommendations developed by KK Sparepart workers tend to be quite simple and unlikely to yield high reductions in water use, waste water or energy or other environmental benefit. Examples of early worker suggestions include:

- Reuse cleaning water from the production process to clean the factory floor.
- Design a new mold to print both the KK Sparepart logo and model name simultaneously on the ster (a motorcycle part manufactured at the factory).
- Trim down softened, used straw on brooms so that the brooms can continue to be used for longer periods of time.
- Separate different types of sters in the sand blow process to save time later.

While these examples seem quite simplistic, it is important to remember that KK Sparepart workers have never before been asked to contribute any suggestions to management concerning the production process. To quote KK Sparepart management, workers in the past always did "whatever the management commanded." The fact that the management of KK Sparepart is now committed to soliciting suggestions from workers suggests an extraordinary shift in management philosophy at the factory. In addition, the high level of participation in the program among workers to date suggests that, at a minimum, the workers are beginning to become socialized into the idea that they can contribute ideas. KK Sparepart management, though initially disappointed in the quality of the initial suggestions, now believes that over time, worker suggestions are likely to improve. Management plans to rereview rejected suggestions to determine whether some can be easily improved for implementation and to continue to work with staff to help train them to think more critically about the processes in their work areas and ways to improve them.

KK Sparepart management also has identified collateral benefits from their worker participation program that are similar to those identified by the Somboon Group:

- Workers are now more confident about sharing their ideas.
- The program has improved relationships between management and the workers. Both factory management and supervisors take time to discuss workers' ideas with them.
- Workers take greater pride in their work and are happy to implement suggestions that the program committee approves.

Lessons Learned

With no experience in any type of worker participation program and only limited experience in promoting activities among workers, developing an effective worker participation program has been a process of trial and error for KK Sparepart. One important lesson learned was the need for explicit standards by which to evaluate suggestions. The company had left selection criteria deliberately vague in order to allow the greatest possible latitude for suggestions to be approved. However, the

lack of a clear standard meant that suggestions were not always evaluated using the same criteria. This frustrated workers who could not understand what some of their suggestions were rejected, while others were approved. The company is now in the process of revising its selection criteria and refining the selection process. Another lesson learned by company management was the need to adapt expectations to the particular circumstances of their factory. The low level of education among KK Sparepart workers, coupled with their complete lack experience in thinking independently about their work, has meant that factory management has had to accept a slower pace of change among its workers.

Program Sustainability

In order to ensure program stability, KK Sparepart plans to implement a second phase to their program that will focus on individual worker suggestions, rather than the team approach currently being implemented. It is hoped that after developing confidence in their ideas while working with the team, workers will begin to feel comfortable in offering suggestions on their own. Workers who offer suggestions will be given coupons that they can redeem for prizes. Workers will be allowed to accumulate coupons until the end of the year. KK Sparepart management also has plans to select the "best" suggestions for additional awards.

CONCLUSIONS

It is clear, even from the limited results obtained so far from the CPIE Project's worker participation pilots, that successful worker participation programs can be implemented in Thailand and, very likely, elsewhere in Southeast Asia. The early successes of both the Somboon Group and the KK Sparepart programs suggest the following conclusions:

- Hierarchical factory organization need not be an insurmountable barrier to the implementation of worker participation programs. At both the Somboon Group and, more importantly, at KK Sparepart, workers are becoming comfortable with the idea of directly contributing their ideas.

- Committed management, that recognizes the potential benefits of these programs to the company, is essential. Management at both the Somboon Group and KK Sparepart were willing to try a new initiative that had the potential to improve the performance of their companies. While both companies undertook their initiatives in the relatively risk free world of a pilot project, once the benefits of worker participation programs were demonstrated, management bought into longer range plans for the programs. Also, the interest in these programs demonstrated by other 20/20+ Program members suggests that Thai factory owners and managers are beginning to respond to what is seen as a successful model.

- Programs must be designed with cultural sensitivities in mind. The worker participation programs at the Somboon Group and at KK Sparepart have succeeded at least in part because the design of the programs incorporated elements, such as the Walk Rally, to which workers could easily relate and which they felt comfortable in joining. It seems clear that Thai companies will continue to resist the concept of cash awards, but it seems equally clear that workers in Thailand will respond favorably to more traditional incentives.

- Low education and skill levels need not be a barrier to implementation of worker participation programs. What does appear to be important, however, is careful design of training programs that take education and skill levels into account. The

case of KK Sparepart, for example, suggests that training programs may need to be broader in scope. Narrowing in too closely on CP principles, when there are other fundamental skills that workers need in order to effectively participate in a worker participation program, may limit the ultimate success of the program.

The experiences of the Somboon Group and KK Sparepart also appear to support the notion that worker participation programs can be an effective means to promote a sustainable culture of CP within the factory. Certainly the participation of a wide range of factory employees, from maintenance to office staff, in the Somboon Group's program suggests that CP is a concept that can be embraced by all parts of a manufacturing concern. In addition, it appears that, at least at the Somboon Group, there is evidence that CP is becoming part of the way that workers think about their jobs in the factory. KK Sparepart workers are not yet as far in the process as the Somboon Group, so it remains to be seen whether similar progress will be made. At the same time, the progress made so far by KK Sparepart staff provides reason for optimism concerning their ultimate progress.

While the successes of the Somboon Group and KK Sparepart suggest a significant potential for the use of worker participation programs, significant obstacles remain to the widespread dissemination of these programs in Thailand, obstacles that should not be overlooked. These include:

- Managers may remain unconvinced of the potential benefits of worker participation programs. By participating in the CPIE pilot project, both the Somboon Group and KK Sparepart minimized their risk in implementing these programs. It can be hoped, however, that the success of programs at these factories will promote the use of these programs at other factories.

- Absence of appropriate accounting systems may continue to be a barrier. If managers cannot see the business value of worker suggestions, those suggestions will be undervalued. Larger factories, like the Somboon Group, have the kind of accounting procedures and administrative support staff in place that can track the contributions of worker suggestions to the bottom line. Smaller companies, like KK Sparepart, will very likely have greater difficulty in tracking these benefits.

- Continued economic weakness may prevent change. If the Thai economy does not improve, managers may continue to avoid new initiatives. At the same time, if the benefits of worker participation programs can be adequately demonstrated, barriers to this innovation, at least, might be reduced as managers recognize that such programs may, in fact, help them through the current crisis.

Worker participation programs can be an important means for implementing successful and sustainable CP programs in manufacturing concerns and can be used to promote a culture of sustainability throughout the firm. Ongoing efforts will be needed, however, to continue to demonstrate the benefits of the approach in areas, like Southeast Asia, where these ideas remain new and relatively untested. The CPIE Project hopes that its pilot projects, and others like it, will be one step in making those demonstrations.