Employee involvement, pollution control and pieces to the puzzle

D. Keith Denton
Professor, Department of Management, Southwest Missouri State University, Springfield, Missouri, USA

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Abstract
Employee involvement is essential to improving pollution control. Organizations like Dow Chemical have been able to use employee involvement to reduce pollution. It begins by understanding, as Dow does, that "if pollution is a cost to you (my competitor) and a cost to me, I win if my costs are lower". Controlling these costs requires people to think about it - a lot. Everyone must accept ownership for pollution. All the pieces must fit together. Unfortunately, even the most advanced companies are still struggling with these issues. An anonymous survey was sent to some of the top pollution-reducing companies in the world. Responses to the questionnaire that focused on a wide range of issues often proved surprising to disturbing. Executives in charge sometimes felt they had employee involvement but few of the operational conditions for it to exist. Dow Chemical provides a rare example of being able to connect all the pieces, through its three keys.

Dow Chemical, among others, has become famous at reducing waste and enhancing the bottom line. Dow management and employees have generated literally millions upon millions of savings through their energy conservation and Waste Reduction Always Pays programs (WRAP). For instance, in 1992 alone they saved over $20 million, and the average return on investment was 111 percent (Nelson, 1992, p. 7). These savings, in large part, have occurred because of employee involvement. Impressive results like those of Dow Chemical can only occur if employees accept continuous waste reduction as part of their daily responsibilities. It should not come as a shock. Employee involvement (EI) is critical to good quality, productivity, and profit making. Why should it not also be critical to pollution control?

The state of EI efforts
Logically, one would think employee involvement would be a major factor in corporate efforts to reduce pollution but the reality is another matter. True, most managers recognize the need to both encourage their employees to recycle, and to show them how to reuse and conserve energy. These same managers know they should also recognize those same employees whenever they recycle, revise or conserve energy. On the other hand, rarely are salary raises or promotions based on environmental performance. Likewise, while managers may encourage employees to provide suggestions for reducing waste, little effort is made to systematically train those same employees so they can properly identify and classify the causes of environmental problems (e.g. Pareto’s Analysis, Cause and Effect Diagrams, Histograms, etc.).

Perhaps so little effort is given to coordinating employee involvement and pollution control because many companies still view pollution control as a cost that needs to be minimized. If company executives merely want to "stay out of the papers" then little attention is going to go to developing long-term solutions that require employee involvement. When it comes to pollution, perhaps a majority of managers simply hope to minimize the amount of capital needed to stay out of legal troubles.

Industry leaders like Dow Chemical have made a name for themselves by taking these cost concerns and turning it around. Their thinking goes "if it (pollution) is a cost to you (my competitor) and a cost to me, I win if my cost is lower". These managers recognize that pollution is an overhead, and like any overhead, if it can be better managed you can gain a competitive advantage. They also know controlling overheads requires EI and that requires long-term commitment, investment, and coordination.

Managers, in the cost competitive companies, make extensive use of cross-functional teams because pollution knows few boundaries. Pollution freely crosses functional and divisional lines, so management needs to teach others how to use the tools that both identify and solve pollution problems. Some managers assume that encouraging employees to recycle is enough. Likewise, most employees believe that they are doing all they can when they recycle, but both are wrong.

Controlling energy and waste overhead requires that people think about it - a lot. It requires that a broad group of people accept ownership for pollution. Pollution must not be thought of as a "company" problem, it is everyone's problem. Such commitment does not come easy, nor overnight. Companies like Dow show us that this kind of employee commitment takes substantial management coordination and communication. Ideas on how to manage pollution must be freely shared throughout all levels. There must be systematic training programs that teach employees both how to identify environmental problems and how to make good pollution reducing decisions.

A pilot study
Recently an anonymous questionnaire to some of the best known pollution reducing companies in the world was sent by the author. It was pilot testing, so it could be fine
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It doesn’t make sense

Perhaps this particular upper level manager had not paid much attention to the questionnaire (although each volunteered to fill it out). It is also possible that a significant gap existed between what this executive assumed existed and what really existed. Other lower level personnel might also not agree with this executive. Within the organization it is just as likely that their green efforts were not very logical or connected. How else can one explain his responses on one hand where it is saying the company “frequently” has a high degree of employee involvement in both plant and corporate green decisions, but on the other hand operational conditions for this participation were not in place.

Remember this vice-president said that his company frequently had a high degree of employee involvement in actually making plant and corporate decisions. But the company “rarely” provided incentives, bonuses or salaries that were directly tied to how well environmental goals were met. If their employees’ job appraisals rarely included environmental considerations, how did their employees be motivated to make or to participate in green decisions? If the company rarely provides systematic employee training that teaches employees how to make good environmental decisions (question number 38), how can these same people possibly make good green decisions at the plant or corporate level?

Another company involved in manufacturing, also renowned for its green efforts, uses tuned. It was sent to the top level executives of these companies and was designed to identify current pollution management practices and focused on strategic, financial, operational, marketing and employee involvement initiatives. The official in all cases was perceived to be the highest ranking official in charge of environmental responsibilities. Responses in the area of employee involvement proved to be especially interesting. As expected, these top level executives perceived that their companies had been successful at filling in several pieces to the pollution management puzzle.

The questionnaire inquired about these pieces, 56 of them to be exact. Questions focused on operational, employee involvement, markdown, accounting and finance, and strategic management procedures. Each of these were then grouped into three levels of effort called cost minimization, competitive costing, and revenue generating approaches. Cost minimizations questions (1-5, 15-19, 31-34, 41-44 and 51-53) had to do with practice that involved meeting basic legal and shorter term pollution responsibilities. Competitive costing questions (6-8, 20-27, 35-38, 45-46, and 54-55) focused on practices that tended to demonstrate a more long-term commitment to reducing pollution overhead cost. Revenue generator questions were those requiring even greater commitment and involved restructuring of the organization to the point that employees are deeply involved in making pollution management decisions. Respondents were then asked to fill out a “pollution wheel” similar to Figure 1. If it were fully filled in then all of the “pieces of this pollution puzzle” would be completed. Notice each question has four concentric circles because questions asked participants to rate the degree (from never to always) that certain practices existed.

If one examines Figure 1, it can be noticed that there are several white spaces in this particular organization’s “green” efforts. One of the first things that catches your eye is questions 35 through 38 in the Employee Involvement part of the pollution wheel. Question number 35 asks participants to what degree their companies’ employees’ salaries, incentives and bonuses were tied to how well their environmental goals were met. In this case this vice-president stated that these incentives “rarely” (one ring) existed. If he had felt it always existed then he would have shaded the entire number 35 question similar to the way question number 55 was shaded.

Question number 36 asked this executive how often an environmental category is part of their employees’ job appraisal. Question 37 asked to what degree cross-functional green teams were in operation, and 38 inquired about how systematically his company approached pollution management training. The vice-president’s responses showed that there were gaps in their employee involvement activities. These gaps are present despite the fact that the company is renowned for its pollution efforts. What is curious is that he felt more strongly that their workforce “frequently” (third ring) had a high degree of involvement in plant level green decisions (question number 39). A high degree of involvement, according to the question, is defined as actually making decisions, not simply providing input or recommendations for decisions. He likewise felt that the companies workforce frequently had a high degree of decision-making authority in corporate level green decisions (question number 40).
a similar disjointed approach. A diagram of the company’s pollution wheel is seen in Figure 2. As in the first case, they also seem to lack salary, incentives or appraisal systems (questions 35 and 36) that provide a foundation for achieving environmental goals. The responses to the survey may also indicate a lack of management commitment at lower level. This company “rarely” conducts employee idea-generating contests (question number 31). Such a simple activity, as we will see shortly, can be an extremely positive and profitable way of encouraging employees to provide management with ideas on how to recycle, reuse and conserve energy.

The company’s disjointed efforts can also be seen in the way this vice-president answered questions number 33 and 37. His response may indicate that a good underpinning for successful cost reduction may not be present. They do not encourage “anti-pollution” champions (question number 32), nor recognize employees for their environmental ideas or innovations (question number 33). It seems illogical, on the one hand, that they “frequently” (third ring) use cross-functional green teams (number 37) but do not encourage nor recognize green efforts.

One item that is logical is the executive’s description of his company’s green efforts. He noted that his company rarely or only occasionally had a high degree of employee involvement in plant level or corporate wide green decision making (question 39 and 40). It would not make sense to have this high degree of employee involvement if the proper foundation for success had not been laid.

**Building a good foundation**

Dow Chemical is one company which has approached EI in a logical and rational way. They have been very successful at getting EI...
through their WRAP activities. When you inquire about why they are successful, a typical Dow manager will tell you that almost all their managers favor saving energy and reducing waste. They tell you that their waste management efforts have continued to receive upper level support.

It is probably not too far off from the truth to say upper level management always tend to believe they are “actively involved”. Remember, both of the vice-presidents, whose responses are seen in Figures 1 and 2, said their top management was “always” actively involved in fostering good pollution management (question number 6). It is natural for managers to believe they are involved and assume others recognize their involvement. It is more a matter of how those objectives and responsibilities are carried out. Execution determines the success of pollution control efforts.

Dow Chemical management says the foundation for successful pollution control depends on a focal point. One of their focal points is their use of an Energy Evaluation Committee. Their corporate level committee consists of those who can make the proper engineering decisions as well as those that are needed to make economic decisions. The committee's task was to evaluate waste reduction ideas and recognize and implement the best of them.

Dow's employee involvement activities were set up as a contest and everyone was encouraged to participate. They started out small so they could work out the details and gain the confidence and trust of employees. The committee was not looking for spectacular results the first few years of operation, but the results were impressive. In 1981, their first year of operation, 39 projects were reviewed, there were 27 that survived the review, 1.7 million was allocated, and there was a 173 percent Return On Investment (ROI) (Nelson, 1992, p. 3). By 1992, they were
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approving well over 100 projects with over a 300 percent ROI.

Dow management felt that for their project to be effective it must be simple. The contest rules asked participants to provide a project description to the committee that summarize its utility, yield, cost savings and ROI calculations (the formula is part of the form). One copy is submitted to the committee and minor correction and updates are made on the original. One copy is kept as back up.

The committee does a project review, letters are sent to each participant documenting the time the review will occur. They ask participants to come in to the committee and tell them what will be discussed. The focus is on evaluating the project, not people. If there are errors, it is the committee’s job to correct them, not to attack people. The committee tries to make its reviews as supportive as possible so that people leave feeling good about the review. If the project proposal is “shot down”, the committee’s goal is to make participants feel thankful that time was not spent on uneconomic projects (Nelson, 1992, pp. 10-11).

Kenneth E. Nelson is Dow’s Energy Conservation Manager. He does admit that in the early days some plant superintendents did not like a committee of “outsiders” coming into their plant and evaluating projects. However, the committee developed a reputation of requiring people to justify their projects. They also tried to treat everyone as equals so that gradually everyone gained confidence in their judgment. One superintendent noted, after being reviewed, “you gave us a hard time, but then again you give everyone a hard time” (Nelson, 1992, pp. 10-11).

The contest is a special event at Dow. It is held once a year with a specific deadline. About 90 percent of all entries are submitted within a week of the deadline. It is then up to the committee to uncover good proposals and to prioritize them. Members of the committee do not control any capital. At Dow, expenditures are administered through their Economic Evaluation/Capital Planning Department.

Their annual contest has become an integral part of the budgeting process, so it is highly prized since it is used to help define capital need. In fact, many people see the contest as a good way to get capital because funds are normally made available to contest winners. Some of the keys to their success may surprise you.

No cash

Several ingredients of this successful employee involvement program seem to challenge conventional wisdom. Winners of the contest do not receive any cash awards, all they personally get out of it is an engraved plaque given at a formal awards ceremony. Kenneth Nelson, Dow’s Energy Conservation Manager, listed several reasons why they avoided cash awards.

First, Dow believes it is impossible to be fair in compensating people for waste reduction ideas. He listed some concerns like: Who thought of the idea? Who worked on it? Who implemented it? How is the size of the award determined? (Nelson, 1992, p. 12). Nelson also wonders if a project with 1,000 percent ROI is better than a million dollar project with a 50 percent ROI. He also points out that waiting for some projects to prove themselves may take so long that they lose motivational value.

In fact, Dow management even believes cash awards for contests can actually be demotivating. People with really outstanding projects will expect more compensation. Those who cannot submit projects, because their work does not produce a lot of risk or pollution, may feel cheated. Rewarding people with cash in an era of team management also may inhibit good communication and team play. Who would share information and ideas when one individual might get the credit and cash?

At Dow they also felt it was important to not break their chain of command. Individual supervisors have the primary input on the size of rewards for good performance. Managers felt that having a contest that awards cash would compete with the boss for employee loyalty. It might create conflicting priorities and result in a loss of support for the supervisor.

Finally, Nelson emphasized that Dow does not believe in cash awards because it is contrary to the company philosophy which is one of continuous improvement. Finding significant improvements is supposed to be a normal part of everyone’s regular job. Paying cash for ideas generated through a contest implies that finding these significant improvements is not what you are normally paid for in the first place. Dow believes the message that should be sent is that continuous improvement is a part of your job, not something separate (Nelson, 1992, p. 13).
No goals, no gimmicks - just the facts

Dow's program is successful despite the fact that they have no numerical goals for the number of participants, number of projects, nor for the dollars spent or dollars saved. Management feels it is more important to set up a good mechanism and process so that projects can be conceived, designed, funded, and implemented. Their thinking goes something like, if both the organizational structure and funding is in place, other things will take care of themselves. Although many may not agree with Nelson, he believes that if an effective system is in place, then there is no need for specific objectives and goals. Management's main goal is to help fine tune the system.

Dow also tries to avoid gimmicks that are normally associated with corporate contests. Management never felt the need to use slogans, posters, decals, bumper stickers, key chains, arm patches, jackets, or coffee cups to publicize savings. It is not that such gimmicks are necessarily bad, only that they do little, if anything, to encourage people to save energy or reduce waste. Management also feels that sometimes it is the gimmicks, rather than the contest, that can become the focal point of the program. For instance, a contest to design the best poster can consume weeks of effort that could be better spent looking for projects (Nelson, 1992, p. 16).

Dow also does not use monthly newsletters to publicize their contest. It is not that Dow does not necessarily feel newsletters are not helpful - its simply a matter of priorities. Newsletters might be helpful for recognizing people or for generating ideas and spreading information, but they can be extremely time consuming. If you were to miss sending out an issue, others might believe the program is being de-emphasized. Back issues are also a problem. After a few months good ideas tend to get lost because few people rarely take the time to read through back issues.

If Dow does not use cash, gimmicks, goals or even newsletters - what could explain the contest success? Management believes there are at least three keys to their success.

Three keys

Dow management stresses that they have found relatively few technological breakthroughs for reducing waste. Most of their ideas for reducing waste are applications of old principles. For this reason they try to concentrate on communicating good project ideas.

The first way they have found to effectively communicate these ideas is to publish a complete list of all of their Energy/WRAP contest projects. This includes both winners and non-winners. They point out that they feel there are no losers. The list contains the names of the plant, people submitting the project, a brief description of the project, its cost, savings, ROI and waste that was reduced.

Project descriptions are worded so the reader can understand the principles without getting into a great deal of detail. These project summaries are read by almost everyone involved in the contest. People want to know what others are doing and frequently find ideas that are applicable to their own plants. This way they can then submit a similar idea to the next contest.

Dow's corporate management also publishes a Waste Elimination Idea Book that contains improvement ideas organized by subject (pumps, heat exchangers, compressors, etc). Ideas in the book are collected from past contests and from work done at other locations.

Dow also operates a Continuous Improvement Workshop that they hold every year or two. It is an intensive two-day workshop aimed at giving people practical ideas for improving plant processes including how to find cost saving projects. One session is titled "How Winners Think" and is based on interviews with Dow's top 12 waste reduction project generators. The session concentrates on how these people find so many pollution reduction projects year after year.

Their workshop concludes with a two-hour session where participants split into groups of four or five and analyze a hypothetical flow sheet looking for problems and suggesting ways to improve the process. Dow managers in the session emphasize that there are no right answers and that the purpose is to encourage a wide variety of ideas to be exchanged (Nelson, 1992, p. 17).

Participants are then encouraged to return to their plants and use the knowledge to generate at least one new project. The group then reconvenes in two weeks and discusses what each participant experienced when trying to apply the principles learned in the workshop.

Conclusion

Good EI planning and activities are the key to pollution management. A management
initiative without employee involvement is useless. It is management's job to encourage employees to continually find ways to improve operations but, unfortunately, many EI initiatives are often disjointed. Systems need to be in place where ideas are freely shared.

Dow is one company that has operated pollution management as it should be. Pollution is an overhead, and like any other overhead it has to be managed. Their WRAP and energy committee represents a case study of effective employee involvement. It is effective because it is well thought out. There are no gimmicks, just a focus on good communication. The efforts are on transfer of knowledge, sharing success and making it easy to participate. It sounds quite logical and that should be management's role. Create logical, well focused employee involvement efforts and everything else will take care of itself.

Reference