Preventive Preparedness: The Highest-Value Emergency Planning

Streamline your emergency planning, and combine it with P2 for enhanced value

Not only law, but also common sense, requires facilities with hazardous materials to conduct emergency planning. All too often, however, the task is treated as a mere compliance activity, performed for the purpose of meeting a mandate or preparing for an imminent inspection.

The resulting emergency plan (usually voluminous) is placed in a binder and sits on a shelf. If consulted periodically and used for training, it is probably at least a useful document. But emergency planning can have substantially greater value.

The planning process can motivate changes that save money and enhance products. It can provide the impetus for long-needed improvements. It can prompt a reexamination of assumptions about how things need to be done. Ultimately, it can help transform working relationships, both inside the facility itself and with the neighboring community.

Making the Most of Emergency Planning

To realize these benefits, companies that are required to do emergency planning should set themselves the objective of using the process to produce important information about both the facility itself and potential improvements that can be made in the facility's operations.

How can a facility accomplish this? By taking two basic steps: First, integrate all emergency planning operations into a single effort. Second, combine emergency planning with pollution prevention (P2) planning. These two steps are discussed in more detail throughout this article.

Why Integrate Planning Efforts?

Integrating emergency planning efforts makes the planning process more efficient and the resulting plan more useful. Facility personnel will waste less time when emergency planning is integrated. Moreover, the facility will have only one emergency plan to consult. Integrating planning efforts makes the facility's plan more practical before, during, and after an emergency.

Similarly, combining emergency planning with pollution prevention creates a powerful synergy. It makes problems much more visible and is much more likely to produce sensible solutions.

Rick Reibstein

Published online in Wiley InterScience (www.interscience.wiley.com).
DOI: 10.1002/tqem.20076

Prevention Is the Best Protection

Prevention of hazards offers the truest protection against accident risk. Unfortunately, however, most emergency planning efforts focus on responding to accidents that have occurred, rather than on preventing them from happening in the first place.

Pollution prevention, when effectively combined with emergency planning, will provide the facility with an understanding of options for substituting safer materials, equipment, processes, or practices.

Given our current worries about terrorism and sabotage, it is important to recognize that reducing the storage of potentially dangerous chemicals is the most effective way of increasing chemical security.

Combining emergency planning and pollution prevention has enormous potential to illuminate the value of alternatives.

Highlighting Value

The value to be gained from substituting materials or modifying operations is often obscured by a reluctance to upset production practices or revisit the work of past decision makers. Combining emergency planning and pollution prevention has enormous potential to illuminate the value of alternatives.

Performing both planning operations at one time pinpoints those chemicals whose use creates both waste management concerns and accident risks. As the value of safer alternatives becomes better understood, management will be more likely to approve the investment of time and money needed to implement them.

In some cases, one of these considerations alone (that is, either waste management or risk exposure) may be enough to justify a change, such as substituting a less toxic chemical. Often, however, neither concern alone will be viewed as sufficient, especially since management can always identify competing uses for available money. Putting risk- and pollution-related information together can make a more convincing case that use of the chemical itself should be examined.

Once alternatives to the use of a chemical are on the table, the possibility of true money-saving investments is opened up because the production process is now capable of being upgraded.

Clearly, the value of emergency planning can go far beyond reducing harm from accidents, or shortening the time needed to restart the facility after a shutdown. An emergency planning process that is integrated and preventive can produce both a safer plant (i.e., one less likely to experience an accident) and modernization of production, which enhances profit potential.

P2 Planning and Emergency Planning: A Comparison

In order to effectively combine P2 planning and emergency planning, it is helpful to understand some key differences and similarities between the concepts.

Accident Risk

P2 planning generally takes note of the facility's accident risks but does not focus on them. By contrast, emergency planning provides a very tangible picture of accident risks. Emergency planning can even create a "risk shock" effect. Accident scenarios can paint a much more vivid picture than lists of contingencies.

Alternatives to Existing Chemicals and Practices

Emergency planning often does not focus on alternative chemicals or ways of operating that might help prevent accidents. It also generally does not reflect waste costs or consider the efficiencies that might be gained from making

process changes. In addition, emergency planning typically does not consider the benefits to be gained by reducing the facility's regulatory burden.

Emergency planning often clarifies how a facility can be made safer, without noting that the same changes can also make that facility more productive. By contrast, P2 planning looks for ways to prevent accidents and reduce risk, while also saving the facility money and enhancing productivity.

Where P2 and Emergency Planning Converge

Despite these differences, emergency planning and P2 can lead facilities to ask the same question: What happens if we change our material inputs, or the way we use our materials?

Integrated Contingency Plans: A Streamlined Approach to Emergency Planning

A number of different federal agencies, including the United States Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA), require facilities to prepare emergency plans for responding to releases of oil and hazardous substances. In 1996, several of these agencies agreed that facilities that are covered by multiple emergency preparedness requirements mandated by different agencies could meet their separate requirements through use of a single plan, called an Integrated Contingency Plan (ICP).

Guidance on preparing the ICP was drafted by the U.S. National Response Team (NRT), an organization of federal departments and agencies that have responsibility for coordinating emergency preparedness and response to oil and hazardous substance pollution incidents. The NRT guidance was published in the *Federal Register* at volume 61, page 28641 (June 5, 1996).

The ICP sample format, as set out in the guidance, includes three sections:

- plan introduction,
- a core plan that is intended to serve as the facility's primary emergency response tool, and
- a series of annexes that provide detailed information and regulatory compliance documentation; annex seven addresses prevention.

Value of the ICP

As a first step to more effective planning, the facility should integrate all its emergency planning efforts through use of the ICP. If it has not yet "come up to speed" on emergency planning, it should recognize that integrated planning can be quite efficient.

The Integrated Contingency Plan can save facilities a great deal of effort. Every facility that is covered by emergency planning requirements should take the time to become familiar with it.

The Integrated Contingency Plan has a core section that is easy to use, and it can be truly helpful in an emergency.

If a facility has already developed a number of separate emergency plans, it may assume that the additional effort needed to create an integrated plan would offer little payoff. The test, however, should not be simply whether the facility's emergency planning efforts have produced compliance with applicable laws. Instead, the test should be whether such efforts have benefited the facility by reducing risk.

In case of an actual accident, is it better to have numerous plans to consult or just one? The Integrated Contingency Plan has a core section that is easy to use, and it can be truly helpful in an emergency.

If an accident occurs, the facility's costs can escalate quite quickly—particularly if alerts are not made rapidly and effectively, and if information about proper response actions is not readily

available. Having an efficient, coordinated, easy-to-use plan makes a lot of sense. Rapid response can help limit contamination and reduce the chance of personal injury.

In addition, an Integrated Contingency Plan brings all staff perspectives together in one place, ensuring coordination and avoiding the risk of having different responses, or different strategies for response, in different parts of the facility.

Utilizing an Integrated Contingency Plan means having one training scheme, one communications effort, one plan to keep updated, and one unified response.

Utilizing an Integrated Contingency Plan means having one training scheme, one communications effort, one plan to keep updated, and one unified response.

Why Pollution Prevention?

As noted, the Integrated Contingency Plan includes a section on prevention (annex seven). Facilities may be tempted to give this section short shrift, but there are some compelling reasons to resist that temptation:

- First, prevention works. The best way to make sure a bomb doesn't go off is not to have a bomb.
- Second, a pollution prevention plan can tell management how much it will cost to continue wasteful processes, while highlighting opportunities for taking alternative paths.

Even with this knowledge, however, management may still choose to continue business as usual because current operations represent sunk costs that cannot be recovered if changes are made. Management may reason that the current process works, and produces an adequate product; that people have been trained in it; that the company has learned to live with the costs; and that it would make more sense to invest in activities that will yield greater returns.

But management may also choose to implement preventive risk reduction. In order to make a stronger—or more accurate—case for preventive risk reduction, it helps to combine P2 with emergency planning, as discussed below.

Putting It All Together: Combining P2 and Emergency Planning

The value of integrating P2 with emergency planning can be summed up as follows: Although P2 planning and emergency planning can each illuminate cost-saving choices, neither may provide a sufficient incentive for change, especially when viewed separately. But when the two perspectives are combined, a compelling case for making improvements will be more likely to emerge.

It is only by creating a total picture—considering waste costs and accident risks together—that the facility can fully frame the issues. Doing so makes it more likely that management will seriously consider alternatives to current practices.

The sidebar accompanying this article offers some questions that can help companies effectively incorporate P2 planning into their Integrated Contingency Plan.

One Company's Experience with Combining P2 and Emergency Planning

The Massachusetts Office of Technical Assistance for Toxics Use Reduction (OTA) is a state agency that helps companies search for pollution prevention options. In our visits, we have observed that it is typical for a company's emergency planning and pollution prevention efforts to be entirely separate. But we have worked with a few companies that have combined their planning efforts, and the result can be powerful.

One company (with assistance from both OTA and EPA's New England Region) developed

Rick Reibstein

an Integrated Contingency Plan. When OTA offered help, we asked the company to combine their pollution prevention planning effort with emergency plan integration. (As noted above, the Integrated Contingency Plan model includes an annex on prevention, but there is a great deal of leeway concerning the quality of effort that is put into this component.)

In Massachusetts, a toxics use reduction (TUR) plan (which is a form of P2 planning) includes assessment of the full costs of chemical use. In developing a TUR plan, it is important for the company to consider not just expenditures for routine chemical purchases, but also costs for the associated disposal of hazardous waste.

Other important questions to ask are: How much time is spent on related paperwork, training, and monitoring? Have there been violations or inspections? Is it necessary to report the use of the chemical? Are there ancillary wastewater discharges or energy costs?

In this case, creating an Integrated Contingency Plan with a P2 component caused the company to revisit previous emergency planning efforts. They also paid more attention to business

Seven Questions for Annex Seven

The National Response Team has published guidance for integrating various emergency response plans required by EPA, OSHA, the Department of Transportation, the Department of the Interior, and other agencies. Annex seven of the Integrated Contingency Plan addresses prevention.

The following questions, developed by the Massachusetts Office of Technical Assistance for Toxics Use Reduction, are intended to assist planners in fully integrating pollution prevention into the ICP so that the planning process will capture value and reduce risk—as opposed to simply demonstrating compliance with applicable laws.

1. Has the performance of hazard evaluation or the review of accident history (including near-misses) repeatedly identified any chemical or activity as a higher risk for accidents, exposures, contamination, or liability? Did the evaluation consider whether the chemical or activity is also a cause of significant pollution, waste, or other costs (including time, human resources, regulatory compliance, and public relations)?
2. For priority higher-risk chemicals or activities, have any evaluations or trials been performed of substitute chemicals or practices that would have lower risks?
3. If no evaluations or trials were performed of alternative lower-risk chemicals or processes, has the intended purpose or function of the higher-risk chemical or process been reviewed and described so that potential alternatives with similar functionality may be easily identified?
4. Has any analysis been performed of the long-term savings that might result from material substitution, including elimination of costs allocated to overhead or to a category external to the account that is paying for implementation of the alternative?
5. Has there been consideration of the qualitative benefits (or quantitative benefits difficult to calculate) that might result from substitution to a lower-risk alternative, such as improved worker safety, public good will, enhanced product quality, increased productivity, greater availability of insurance, increased market value to investors or clients, reduced risk of potential civil liability, reduced risk of process shutdown, or reduced costs of incident response (including preparation)?
6. If evaluations of potential alternatives have been performed and it has been determined that no chemical or equipment changes are warranted at this time, has quantitative monitoring of pounds of chemicals used been implemented to assess how much becomes unused by-product waste and to identify loss and accident risk locations and opportunities in order to prevent releases, emissions, and waste generation?
7. Have product designers and clients been involved in the evaluation of alternatives? Have vendors been asked to supply information about potential alternatives? Have relevant sources of information or assistance been consulted? Have ideas for ways to reduce current use of chemicals been solicited from employees that direct, plan, or monitor their use? Have any top management policies been issued establishing pollution prevention as an organizational priority? Have any regular meetings or bodies been dedicated to the task of pollution prevention? Have any actions been taken to encourage or reward the production of ideas for pollution prevention?

outcomes, as opposed to merely bringing their operations into compliance with applicable laws.

The company found that reviewing their incident history was a particularly useful exercise. In the course of focusing on it more carefully, they took a hard look at the outdoor tanks they were using to store chemicals.

The accident scenario they developed revealed what would happen if the tanks were breached. The scenario was written not just to satisfy regulatory requirements and please a potential inspector, but also to inform the company's own thinking and decision making.

In drafting the accident scenario, the company considered potential effects on houses located near their site (some of which belonged to their employees). They also analyzed the possible impacts on a stream located right next to their plant, as well as potential effects on a nearby church and school.

For one company assisted by OTA, taking existing plans off the shelf and developing an Integrated Contingency Plan made the issues come alive.

The company formed a cross-functional team to undertake the accident analysis. This was an important point, since it meant that people on the team were asking one another whether the risks identified were acceptable. It is one thing to ask yourself this question, or to consider it on paper. It is another thing to ask someone else, out loud.

The accident analysis created a "safety shock" that motivated members of the cross-functional team to become interested in reducing risks. It also got management's attention, and helped secure their approval to make changes. For this company, taking existing plans off the shelf and developing an Integrated Contingency Plan made the issues come alive.

The chemicals identified as significant hazards were stored in large tanks, and getting rid of these tanks would free up substantial space. The emergency planning effort made clear that this change would improve safety. The pollution prevention plan showed that it also would have economic and practical value.

This company's experience highlights a crucial point we have made in this article: Emergency planning alone can tell you what hazards your company faces. But does it tell you how to decrease or eliminate those hazards? In this case, it was the pollution prevention planning effort that focused on alternatives.

The company's planning team looked carefully at an option for regenerating the hazard-creating chemicals. This option had been identified years earlier by staff but was rejected at the time because it involved buying equipment, and because it would introduce uncertainties into the production effort.

Now the cross-functional team was able to argue that implementing the regeneration option would not only eliminate accident risk, but also lower the company's expenditures on chemical purchase and disposal costs.

The cost savings highlighted through pollution prevention planning are much more concrete—that is, much more visible and tangible—than the benefits of accident prevention. If you tell company management that you want to get rid of chemical tanks in order to prevent a disastrous accident, they may very reasonably reply, "We have never had such a disaster, and we may never have one." By telling them that they will also save money and free up valuable space, you will more effectively communicate the potential benefits of making the proposed change.

For this company, combining the cost/savings and safety arguments worked, whereas neither approach had been persuasive enough before when used separately.

Rick Reibstein

The company implemented the chemical regeneration option, investing in the equipment and expertise they needed. The large tanks were emptied and slated for removal. The company is projected to save $50,000 annually in avoided chemical purchase and disposal costs. They also will realize an additional $50,000 in associated savings from reduced costs for training, regulatory compliance, and other management expenses. Moreover, they have eliminated potential safety concerns.

This example illustrates how a combined planning approach can give companies a clearer picture of both risks and costs. Rather than conducting an incident history and vulnerability assessment at one time and a review of material loss points, relevant costs, and alternatives at another, it makes sense to do both at the same time.

If both analyses independently point to the same solution, its value relative to other options becomes much clearer. Risks and costs are most effectively viewed together.

Acknowledgments

This article was produced under the direction of Paul Richard, Office Director of the Massachusetts Office of Technical Assistance for Toxics Use Reduction, with the assistance of Denise Zambrowski and John Raschko.

Rick Reibstein is Senior Analyst at the Massachusetts Office of Technical Assistance for Toxics Use Reduction. He has worked in pollution prevention assistance for almost two decades, and at the federal and state levels as an enforcement attorney. In addition, he currently teaches environmental law at Boston University. The opinions expressed in this article are his own and do not necessarily represent the views of his employers.