

PREPARATION OF AN OIL SPILL PREVENTION TRAINING PROGRAM

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ABSTRACT

What are the critical items in the preparation of a packaged learning program on oil spill prevention? What steps and strategies most directly contribute to success? This paper highlights three items within the context of the overall development of a well accepted program:

- 1. the strategy used to involve the people who made the program work*
- 2. the generalizations developed about terminal operators' background, skills, and present knowledge of oil spill prevention. This data was essential for deciding what would go into the program.*
- 3. the features of the program resulting from these generalizations.*

From the start, representatives of the terminal operators (the eventual participants) and their managers were involved completely in the program design. Members from a wide spectrum of company management selected the specific problems to be addressed, approved the desired results, and reviewed the entire program for achievement of objectives and technical accuracy. Interviews with operators in the field allowed basic assumptions to be made about the prospective audience. For example, most like to read the newspaper, but few read books for pleasure. This particular assumption suggested that a large amount of written material would not be appropriate for this program.

The final result was a program which could be used with either a group or an individual in locations spread out geographically. The first section is on prevention; the second presents fundamentals of cleanup. Each section has an audio tape and a supplemental workbook.

Overall plan

The overall program development plan can be broken down into the following four steps: (1) feasibility study, (2) proposal, (3) development, and (4) production.

Strategy

Throughout these four steps, we had these two main themes: (1) to make the program as true to the real life situation in the field as possible, and (2) to involve as many of those people as we could who would ultimately be responsible for the successful implementation of the program.

Feasibility study

Our first step was to study whether or not training was an appropriate approach to the problem. Interviews were conducted with eight different individuals working in a wide variety of functions. Among these were oil transfer managers from marketing, producing

and manufacturing, as well as several foremen and operators of oil transfer facilities. In this study we made a distinction between large installations which included terminals with more than 15 or 20 employees and small installations with under about 10 employees.

The "large installations" were, for the most part, deepwater ports which received tankers. We found that many of these made considerable changes in the organizational structure and normal operating procedures to minimize loss due to oil spills. The trend was toward greater accountability and increased supervision. Another important item at the large terminals was the equipment required to reduce oil spills in both normal operations and during cleanup. Better collection systems, separators, loading arms, etc., had been installed in many large installations. Also, a certain amount of spill control equipment was on hand and ready to deploy in the event of a spill. At the large installations, the optimum investment in this type of equipment varied considerably depending upon the geography and the complexity of operations. Also, at most of these locations, emergency organization and contingency plans had been complete and ready for a long time. At most of the large installations the number of people employed was sufficiently great that comprehensive operator training programs existed. These programs provided instruction in good operating procedure as well as for specific items on oil spill prevention and cleanup. In these procedural areas, the large installations tended to be very individualized.

Our conclusion was that there is a high degree of complexity and variation in the operation of large terminals. Thus, the recommendation was that the transfer of prevention and cleanup expertise continue to be accomplished by visitations to and from company facilities where the expertise exists.

We found quite a different story when looking at the small installations. Small terminals are also influenced by many of the factors described above; however, in each case the scale is very much less. In general there appeared to be much more uniformity in the small terminals' needs. This can probably be attributed to two main points. Because of their size, the operations are much simpler and, thus, tend to be more similar. Also, they were not as advanced in oil spill technology as the larger facilities; thus, they are primarily concerned with the fundamentals which are common to nearly all locations. Because of this apparent uniformity of needs, our recommendation was that a packaged learning program covering the fundamentals of oil spill loss prevention and cleanup be prepared and distributed to the organizations having small terminals.

Proposal

At this point we were ready to make a concrete proposal as to what a training program should contain. We had already gotten the involvement of many people and now we needed to relate the program as closely as possible to the real situation as found in typical small terminals.

The next step was probably the most important step in the program and one of the most difficult. We needed to come to an

agreement with line managers, staff, and field operators as to just precisely what the problem was in order to decide what we wanted to accomplish. The problem was tackled in two stages. During the preparation of the proposal, a preliminary definition was made by several line managers and staff personnel. Later, during the development of the program, this preliminary definition was further refined during the site visits. We emphasized this step in the development process because we knew that if we tried to train people to do something they already knew how to do, they would react negatively and it would probably result in the failure of the program.

Our initial assumptions were that, for the most part, there was no problem in operator skills for transferring oil, but there was a problem with operators making assumptions that were not checked out and not following established procedures (i.e., short-cutting the proven way of handling the oil). However, we did initially assume that the typical field operator did not have the skills for determining what to do during a cleanup operation. Specifically, he did not know what to do in the initial few hours after a spill.

Once we generally agreed on the nature of the problem, we needed to state the desired results of the program. In other terms, we wanted to realistically state where we wanted to go with the program. We also wanted to state this in terms of operator behavior so we would be able to determine whether we were successful or not.

At this point we made up a tentative choice of training methods. We initially chose tapes and slides, but this was changed later in the program development stage as more data was available. With this information, we were ready to present the proposal to management for approval.

In our company we have a subcommittee on oil spill prevention which consists of line managers from all operating functions that are involved with the moving and transfer of oil. This group functions as a task force and meets once every six months to consider items important to oil spill prevention and cleanup. Our assumptions about the problem and the stated results of the program were submitted to the subcommittee prior to their regular meeting. After some modifications of each, the proposal was accepted, and we were ready to go into the development phase.

Development

Once the proposal received approval, the author made a series of 7 site visits to typical field operations. The purpose of these visits was to refine previous assumptions about the problems that existed and the desired results of the program and to get more specific information on the background and characteristics of the people who would make up the audience for the program. Figure 1 gives a list of ground rules that we used in visiting the various terminals in order to try to get the most valid information possible. Should you have to make similar visits, some of these guidelines might prove helpful to you.

From the site visits the following generalizations were made about the locations which would be using the program.

1. The program will be used primarily at terminal locations with fewer than 10 employees. Users will probably be wholesale distributors and very likely will handle barges.
2. Many terminals have permanent employment of only 4 or 5. In these, no one is assigned exclusively to the dock. They may hire part time employees to help handle peaks.
3. Larger installations (8-10 employees) may have permanent wharf assignments including a night watchman.
4. Wholesale distributors may be a one-man operation. After working all day, this man may be up all night receiving product by barge. During the product transfer, he will likely divide his time between dock and tank field. He may receive one to three barges per month.

The following generalizations were made about the probable audience for the program:

1. Most small terminal operators have had some high school education. Many have graduated from high school. Most do not have any college experience.
2. Most like to read the newspaper and some magazines, but few read books for pleasure. They enjoy watching television.

1. Explain why I am visiting the site and what purpose I have in the interviews.
2. Explain that I need the wharf operator's advice. Emphasize his importance.
3. Ask wharf operator to give me a tour.
 - (a) Ask him to explain what his job is. Note what kind of language he used; take note of regional variations in language. Be sure to offer no detrimental judgment.
 - (b) Ask him to show you what cleanup equipment he does have. Determine what he knows about use of the available equipment.
4. Determine his attitude towards oil spills.
 - (a) How much oil must be spilled before he considers it a spill.
 - (b) How concerned is he about spilling oil?
5. One tactic that is sometimes very successful is to ask him to explain the problems others have with their oil handling facilities and their spilling oil.
6. If the location seems overly conscious of the presence of an interviewer, do not openly take notes; jot down ideas when you have a chance.
7. If you are taking notes and he makes a recommendation, be sure and write it down.
8. Probably a minimum of 1/2 day at each facility will be required.
9. Take pictures of the facility and important features (with permission only).
10. Keep in mind the fundamental components of a description of target population: physical characteristics, education, motivation, interests, and attitudes.
11. In these visits, keep in mind that the two primary objectives are to:
 - (a) describe the target population
 - (b) refine course objectives.

Figure 1. Guidelines for site visits

3. Most company employees have long service with the company.
4. They like the company and its benefits.
5. Most company employees seem to be very reliable and very conscientious. They would make a good effort to do what is required of them.
6. At the present time, loyalty and morale may be down somewhat because of cost and manpower cuts that some employees feel are excessive. To others, however, this is a source of pride.

The amount of knowledge that the typical operator had concerning oil spill prevention and cleanup was also very important. The following generalizations were made in this area:

1. Those assigned to the wharf know how to transfer oil without spilling.
2. They know the importance of notification of company and government authorities.
3. They know the basic steps to take in response to an oil spill.
4. However, they are not completely certain of the actual physical steps to be taken to contain and clean up an oil spill.
5. They do not appreciate oil spill time sensitivity.
6. Most small operating locations do not have any spill containment and cleanup equipment. At many of the terminals which do have equipment, it is not readily available.
7. Not spilling oil takes extra time and is hard work. Incentives must be clear. Possible legal action seems to be the motivation most keenly felt by the wharfmen interviewed.
8. Oil spill probability is greatest where operators assume everything is in good order (shortcut procedures). Good procedures and follow-up to assure the use of proper procedures are probably the best preventatives. Operating check lists are effective ways to accomplish this.
9. Oil spills are always a series of "unlikely" events.

After compiling these generalizations, we were in a position to review them with line managers of oil transfer facilities. After making minor changes, these were then used for us to come to a final agreement on the objectives of the program. Again, these were stated in terms of behavior of the individual student at the end of

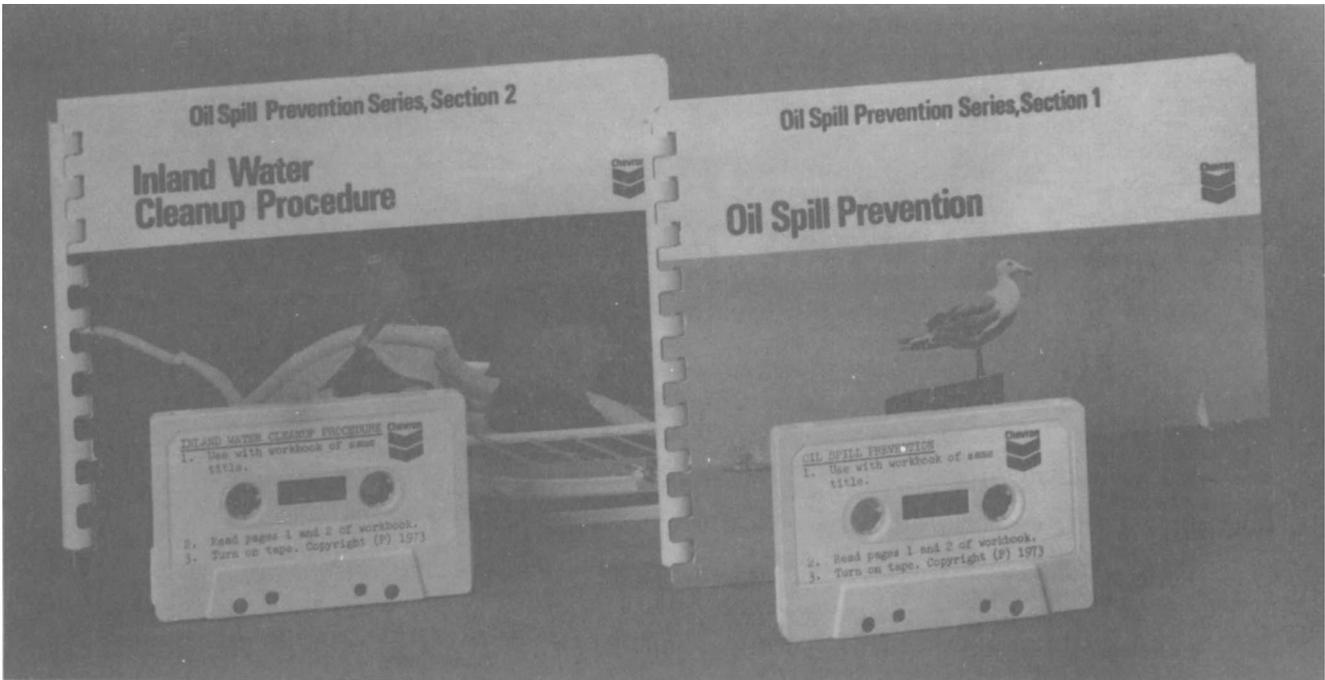


Figure 2. Finished Product—Section I Oil Spill Prevention—Section II Oil Spill Cleanup

the program so that we would be able to tell whether or not he could do the items that we felt were important. What follows is a list of the objectives which made up the course. They are listed under the subject areas.

I. Prevention

A. Prevention

1. Objective: participant will be able to state fundamentals of oil spill prevention
2. Objective: participant will be able to recognize and state cause of spill given a situation description

B. Consequences of spilling oil (company policy and government regulations)

1. Objective: participant will be able to recognize the amount of oil considered a spill when given a situation description
2. Objective: participant will be able to state the intent of company policy regarding spills
3. Objective: Participant will be able to state to whom he should report a spill
4. Objective: participant will be able to state the following facts given a situation description
 - a. possible fines and jail terms
 - b. the person who could be fined and/or jailed
 - c. possible company discipline
 - d. possibility of losing operator's license
 - e. his rights under the law

C. Preparedness planning

1. Objective: participant will be able to define *contingency plan*.
2. Objective: participant will be able to state why such a plan is important to operators
3. Objective: participant will be able to describe the value of practice drills

D. Public relations

1. Objective: participant will be able to state operator's responsibility regarding communicating with public

E. Operator importance

1. Objective: participant will be able to explain the importance of person at transfer point (first line of defense, etc.).

II. Response: inland water cleanup

A. Basic response procedure

1. Objective: participant will be able to list the action steps, including specific cautions, required to respond to a spill. A situation description including the following data is given:

- a. product
- b. quantity
- c. water current velocity
- d. equipment available and time to activate

B. Containment and cleanup equipment

1. Objective: participant will be able to describe in general terms the physical characteristics, uses, and limitations of the following:

- a. containment boom
- b. mechanical skimming devices
- c. absorbent material
- d. treating agents

Production

Now, having a satisfactory description of the probable audience for the program and what they know now plus what we wanted them to know, we were ready to move into drafting the actual program. Given a clear understanding of the problems and objectives involved, the program draft went forward with very little problem. We proceeded with the fairly self-explanatory steps listed below.

1. Outline the subject matter to be presented in each unit.
2. Make a preliminary sequencing of the units.
3. Select training procedures.
4. Draft content.
5. Make final sequencing and layout.
6. Run trials of the program draft.
7. Revise per trial as necessary.
8. Produce the program.

Program features

Some comments about the selected training procedure and production are in order. An audio tape recording and supplemental workbook were chosen as the program vehicle (figure 2). The audio-tape carried the primary story. This was used because during the site

visits it was noted that the operators in general enjoyed reading magazines and newspapers, but rarely read books. Thus, it was decided to use only a small amount of written material in the program. In addition, audio cassette tapes were chosen since it was found that almost every location had access to an audio tape player. In any event, such an instrument is not very expensive.

Since studies have shown that only a small portion of what is heard is remembered, it was necessary to reinforce the important elements of the audiotape through other media. To keep the program simple and portable and individualized, a workbook was used to reinforce the main items. In addition, the workbook incorporated certain programmed learning aspects which further reinforced the material. Thus, many items were repeated in print, were shown in diagrams or photographs, and then put in question form where the participant was required to supply the material in his own words. Answers were provided on the next page to confirm or correct the participant's idea. Figure 3 shows a typical sequence. This procedure has been shown to provide the optimum retention for the learner. Thus, each workbook:

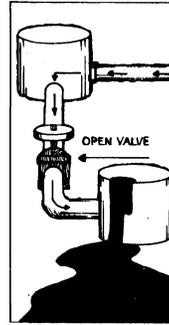
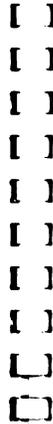
1. repeats the most important material in writing
2. has diagrams
3. has photographs (thus eliminating the need for slide projectors)
4. breaks down specific skills and knowledge to be learned into small steps
5. asks for active response from the participant at each step
6. gives participant immediate confirmation at each step
7. allows the participant to proceed at his own rate
8. provides the participant a resource for him to refer back to at another time for any of the material.

In the production of these learning materials, a number of items were considered. First, for the audiotape we had professional actors take the various speaking rolls. Although this was expensive, it was done to maintain the credibility of the program, recognizing that it must compete with television for credibility. Also, the program had to sound sincere and candid; the tape must not sound like a staff member from the home office or a college professor when it is directed to field operating personnel. We were fortunate to find a professional actor who sounded as if he could have been a wharf operator—one with a good command of English grammar.

We had one criterion for producing the workbook: its quality had to carry the correct message. Therefore, our end product tried to have sufficient quality to show that the company really did care about its program, but was not an extravagant spender.

Reception

The program was not distributed in the traditional sense. We offered it for sale at cost to organizations within our company. To date, just over 5,000 copies of each workbook have been purchased and used by our field locations. Their response has been uniformly



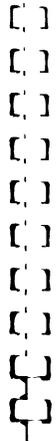
•The valves between two tanks are left open. The tank at the higher elevation is being filled. However, the oil runs down into the tank at the lower elevation which was already full. The lower tank overflows.

- Faulty design of facilities
- Poor maintenance
- Operator error
- Natural causes

February 1973

operator error.—Note: this description is of a very common type of spill.

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Figure 3. Typical page sequence

enthusiastic. Even some of the larger installations have used it as a review for experienced employees as well as training for new employees.

Since the fall of 1973 we have offered the program for sale outside of our company. Approximately 700 copies of each workbook have been purchased by more than 40 different organizations. A significant proportion of these have been in Canada where Gulf Oil Canada, Limited, translated it to French for use in their Ontario and Quebec Province operations.