

SPILL PREVENTION: THE SPCC APPROACH

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ABSTRACT

The Oil Spill Prevention Program of the Environmental Protection Agency is discussed as it has evolved from the implementing legislation: section 311(j)(1)(C) of the Federal Water Pollution Control Act. The regulations apply to all non-transportation-related facilities with oil storage in excess of certain minimum amounts from which spilled oil could reasonably be expected to reach navigable waters. The prevention program centers around a requirement in the regulation that these facilities must prepare and implement a Spill Prevention Control and Countermeasure (SPCC) plan. The type of engineering analysis needed to prepare or review a plan is discussed along with an outline of what EPA considers to be the elements of a good plan. After the period for plan implementation is past, a facility must submit its SPCC plan to EPA for review if it experiences spill problems. After review, EPA may require revisions to the plan in the form of amendments, but there are several levels of technical appeal on amendments. The paper discusses EPA plan reviews, amendment procedures, appeals on amendments, and finally, penalty procedures and appeals from penalties.

INTRODUCTION

This paper could logically be considered a follow-up and an update of one given by Mr. H. D. Van Cleave at the 1973 Joint Conference on Prevention and Control of Oil Spills. Mr. Van Cleave's paper was entitled "Spill Prevention—Phase II."

In that paper, Mr. Van Cleave detailed the reasons that a spill prevention program is needed and outlined the format of a proposed federal regulation to respond to that need.

On July 27, 1973, shortly after the presentation of Mr. Van Cleave's paper, the regulation was published in the Federal Register as a proposed rulemaking. Comments were solicited and some eighty responses were received from corporations, trade associations, public interest groups, and individuals. Based on these comments, some revisions were made to the proposed regulation:

- a. A number of changes were made in the guidelines section of the regulation which presents good prevention engineering practices which have been successfully used in various segments of the affected industries.
- b. The exemption from the regulation for facilities with above-ground heating oil storage of 500 gallons or less was broadened to apply to all oils, and the quantity was increased to 660 gallons of storage in a single tank or 1,320 gallons in aggregate above-ground storage. The purpose of this change was to exempt most single family and small multiple family dwellings which store oil for home heating. The revised storage requirements were found to be compatible with fire codes limiting the amount of oil which can be stored for that purpose.

The final regulation was published on December 11, 1973, and became effective on January 11, 1974. Owners or operators of facilities subject to the regulation (non-transportation related facilities which could be reasonably expected to discharge oil to the navigable waters) were required to prepare Spill Prevention Control and Countermeasure (SPCC) plans by July 11, 1974. Also by that

date, the owner/operator was required to have his plan certified by a registered professional engineer as having been prepared in accordance with the regulation and good engineering practice. Following that, the owner/operator was given until January 11, 1975, to implement his plan. Implementation includes any construction or plant modifications, changes in operational, maintenance or administrative practices or training which are prescribed in the plan. A provision was added for extending this deadline wherever an owner or operator could show good cause.

The plans are to be maintained at the facility if it is normally manned and are to be available for EPA inspection during normal working hours. It should be emphasized, however, that except for plans which fail as defined in section 112.4 of the regulation, and except for plans which are clearly not in conformance with the regulation, EPA will not evaluate SPCC plans. The agency will rely on the engineering judgments of the owner/operator in conjunction with his engineer. Thus, EPA compliance inspectors will generally be limited to determining whether a plan exists for a given facility, whether it has been certified by a registered professional engineer, whether it is in fact an effort to prevent spills at the facility, and whether it has been implemented. Points of engineering judgment, unless flagrantly inadequate, will not be questioned on routine inspections. This gives the owner/operator some assurance once his plan has been certified that he can make monetary commitments to implement his plan and that even though the plan has not been reviewed by EPA, EPA will not require him to change it as long as it is effective in preventing spills.

If, however, after the plan has been prepared and implemented the facility experiences spill problems, the plan will be critically reviewed by EPA and by the appropriate state agency to determine its adequacy. Based on that review, EPA may require that the plan be amended to include additional preventive measures and specify those measures. The amendment procedure is contained in section 112.4 and requires that plans be submitted for review if the facility experiences:

- a. a single spill of 1,000 gallons or more, or
- b. any two reportable spills within a twelve month period.

After either of the above situations occurs, the owner/operator must submit his plan, along with other items of descriptive data called for in section 112.4, simultaneously to the state agency charged with water pollution control and to the appropriate regional office of EPA within sixty days.

With the exception of those facilities for which extensions of time for implementation have been granted as noted above, the time for implementation expired January 11, 1975. After this time, a triggering incident of a spill of over 1,000 gallons or a second reportable spill in twelve consecutive months from any existing facility subject to the regulation places the burden on the owner or operator of submitting his plan to EPA for review within 60 days. EPA expects to begin receiving plans for review during March 1975, and thus, it seems appropriate to devote the remainder of this paper to a discussion of what EPA considers the elements of a good plan to be, a discussion of the plan amendment procedure by which EPA will attempt to resolve any deficiencies in the plan at a technical level, and for when that fails, a description of the penalty procedures.

Elements of an SPCC plan

The format for an SPCC plan is covered in section 112.7 of the regulation. The title of that section is "Guidelines for the Preparation and Implementation of a Spill Prevention Control and Countermeasure Plan." While the bulk of the section is indeed guidelines, it can be somewhat confusing on first reading since there are some *shalls* (implying requirements) and some *shoulds* (implying recommendations) in this section. An owner/operator can go down the list of paragraphs 112.7(a), (b), (c), and (d) and then find the appropriate guideline paragraph in 112.7(e), if there is one, and discuss conformance with that section or discuss his alternate proposals. The owner or operator would then have an acceptable SPCC plan in terms of the regulation. Even though many owner/operators or engineers will go through these motions, the result will be many excellent plans and many poor plans, all of which have responded to every *shall* in the regulation. The quality of the plan is dependent on the thought process which the guidelines procedure has engendered in the person analyzing the facility. The quality of this thought process is something which cannot be legislated.

The thought process which will hopefully be engendered will be a critical engineering analysis of a facility which may not have been originally designed with spill prevention as a very high priority. The objective of that analysis should be to identify facility weaknesses and find those engineering modifications which will significantly raise the level of spill prevention in the overall facility design.

The engineering documentation of that thought process is an excellent, nonregulatory definition of an SPCC plan.

Following such a thought process through a hypothetical facility would seem to point to at least three major sections: description of the facility, identification of potential spillage areas, and engineering description of the corrective actions to be taken to either prevent failures or if the failure occurs, to contain the potential flow of oil before it reaches navigable water or shorelines. No elaborate format is needed. The most ideal method of presentation may well be that of a narrative engineering report with supporting simple maps and drawings.

The description of the facility should be straightforward and probably revolve around a plot plan or plat of the facility or, in the case of a complicated facility, possibly a breakdown of the facility into subdivisions based on functional or drainage areas.

The identification of potential spillage areas requires considerable engineering judgment as well as reliance on previous experience. Obviously, every remotely conceivable source of potential spillage needs not be considered. As with most engineering judgments, a careful trade-off is required in this case between the probability for spill occurrences, on the one hand, and the magnitude of the probable spill size on the other. The guidelines section of the regulation (section 112.7) gives one some insight into the results of some of EPA's engineers thinking about these trade-offs. Still, these thoughts are based on generalized classes of facilities and neither the owner/operator preparing the plan nor the EPA engineer reviewing the plan should feel bound by these guidelines when the situation seems to dictate otherwise.

After defining the course of potential spills, the predicted maximum quantity and rate of spillage should be estimated, and using topographic data, a prediction should be made of the direction and rate of flow.

An analysis of previous spills or failures, if any have occurred at the facility, will be very valuable in identifying potential spill areas, volumes, and probable direction of flow.

Finally, a systematic approach would lead to proposing some sort of preventive measure for each predicted source of spillage. Some solutions may overlap; in some cases one solution may solve all of the potential problems. The solutions will vary widely: in some cases the solution may be one which will significantly reduce the probability of spillage, while in others, where the potential spill size is large enough or the facility a simple one, the only solution may be some sort of secondary containment (diking, culverting, ditching, etc.) with some attention to storm water drainage from the contained areas.

The prevention techniques which the engineer decides on should reflect an analytical process where consideration has been given to

the need to prevent spills, to the individual peculiarities of the facility, and to the cost effectiveness of various options.

As stated earlier, whatever approach best documents the engineering thought process is the best format for the SPCC plan. EPA does, however, think that the systematic approach reflected in section 112.7 is a good one and has developed a training course, in conjunction with Rice University, for EPA engineers who will be reviewing and considering amendments to plans. The course emphasizes the systematic approach to plan review and preparation, including field trips, through several representative facilities.

Amendment procedure: technical level (section 112.4)

When a plan fails it will be reviewed by state personnel as well as regional EPA engineers. The recommendations of the state and regional EPA engineer will be brought together by the EPA regional administrator, or his designee, who will require changes to the plan in the form of amendments. Upon receipt of the regional administrator's requirements, the owner/operator has 30 days to decide whether he agrees with them. If he agrees, he amends his plan to incorporate the requirements and begins to implement them. Implementation must ordinarily be completed within 6 months unless the regional administrator specifies another period of time as more appropriate. If, however, the owner/operator disagrees, section 112.4 provides a procedure whereby the differences can be aired at a technical level.

If the owner or operator disagrees with the regional administrator's requirements, he can, within 30 days, submit his written arguments supporting his reasons for disagreement to the regional administrator. After reviewing the arguments, the regional administrator will either rescind the notice requiring amendments or uphold it. If the owner/operator continues to disagree with the judgment of the regional administrator, he has a further technical appeal to the administrator of the Environmental Protection Agency. The administrator also may rescind the notice or require the amendment and must render his decision within 60 days.

It should be emphasized that requirements for amendments and appeals from these requirements are technical issues, and the opinions and judgments given on both sides are engineering ones. Up to the point that the EPA administrator accepts or rejects the requirement as indicated above, no violation of the regulation has occurred, and consequently, no fine has been assessed. The above procedure was instituted so that all technical issues can be aired in a free and open forum.

Penalty procedure (section 112.6)

Violations of the regulation will occur if no plan is prepared or if the plan is not certified by a registered professional engineer; if a plan is not amended as required or the amendment is not implemented; or for several other reasons. A separate regulation has been promulgated outlining the penalty procedure and specifying what constitutes a violation of the regulation. That regulation is 40 CFR Part 114 and was promulgated as an interim regulation on August 29, 1974. Again, as with amendment procedures at the technical level, the owner/operator has the right of an appeal to the administrator of EPA when he is of the opinion that an unjust penalty has been imposed by a regional hearing officer. It is important to understand the concept of dual avenues of appeal. One avenue is the technical one. Engineering modifications in the form of plan amendments may be required of facilities whose plans have failed. The appeal provisions of the amendment procedure allow the owner or operator to disagree with and ask for reconsideration of a technical requirement without violating the regulation. The second avenue is a legal one which allows the owner or operator to appeal a finding or penalty handed down by a hearing officer which he feels to be unjust.

The thrust of this regulation is not a punitive one. EPA is interested in good prevention engineering, not in amassing a long list of violations and civil penalties. Oil spill prevention, like fire prevention, is something that engineers can achieve if we put our minds to it. That is what EPA's spill prevention program is all about.