6.0 PREVENTION AND PLANNING

6.1 SPILL PREVENTION

6.1.1 Need For Prevention

An increased frequency of hazardous material spills in the NWT is expected as a result of community growth, increased exploration and production and construction activities. The reasons and causes for hazardous material spills are dis cussed in Section 2. Many of these spills are attributable to direct human error (fatigue, lack of training, etc.) and indirect human error (fire, explosion, equipment failure).

Spill prevention or the stopping of a spill before it occurs, falls into two categories, prevention "before the fact" and prevention "after the fact". Prevention before the fact is determination of potential causes of spills and implementing preventive measures to ensure that a spill does not occur. Prevention after the fact is determination of the cause of the spill and implementing measures to prevent its reoccurrence. Remember:

THE COST OF ACTING TO PREVENT A SPILL IS ALWAYS LESS THAN THE COST OF REACTING.

A spill prevention program would reduce the frequency of spills occurring in the Territories. To be effective, however, the program must be useful, practical, meaningful, cost-effective, reach large numbers of people, be accepted by the people reached and be consistent with the overall task. The cost of implementing such a program is considered small compared to the cost of response, clean-up and monitoring or spills.

6.1.2 Prevention Strategies

Effective spill prevention begins with an awareness of a potentially hazardous situation. Some of the methods or strategies that could be employed to initiate this awareness are:

A) Educate operators as to the hazards and consequences of spills and the methods of transfer, transportation and storage. This may be achieved through seminars, drills, practices and scenarios.

B) Develop check lists. Checklists outline the potentially hazardous areas of an operation to maintenance inspectors and operators, and thus, go hand-in- hand with inspections and quality control. Encourage the use of log books during regular inspections.

During the development of prevention checklists, the following areas of spill causes require consideration:

1. Natural Causes (heavy rains, snow, ice, high winds);
2. Equipment Failure (improper equipment, poor maintenance and condition of existing equipment); and
3. Human Error (carelessness, neglect, deliberate acts).

The following list (Basic, 1983) outlines some of the specific causes of spills which occur at bulk storage facilities. Examination of such causes is desirable when developing spill prevention checklists or strategies.

* Spills due to overfilling of tanks.
* Rupture of tanks.
* Leaks in pipes, valves, pumps, fittings, and other equipment.
* Leaks in containment dykes.
* Inadequate secondary containment systems.
* Oil flow from dyked area through open dyke valve.
* Piping and tank damage by collision with mobile equipment.
* Spills from water drawoff from tanks.
* Spills from tank bottom cleanout and sludge disposal.
* Poor maintenance of pipes, valves, pumps, fittings and other equipment.
* Spills from line flushing.
* Spills from pipe and tankage changes.
* Spills from underground storage tanks.
* Possible sabotage.

C) Incorporate anti-spill devices such as drip pans, interceptor drains, high-level sensors and one-way valves.

D) Develop an effective reporting system within facilities, municipalities and governments, for reporting potentially hazardous situations.

6.2 CONTINGENCY PLANNING

6.2.1 Need for Planning

Contingency planning is the development of a high level of preparedness which allows for efficient response to spill situations. In this manner, actual or potential health hazards and damage to property and the environment are reduced and clean up costs are minimized.

Contingency planning should be carried out at all levels of government and industry. An overall contingency plan for the Territories provides a framework upon which to base planning at the community level and to provide a basis for coordinating the roles of various government agencies and industry. Territorial wide contingency planning for all the potential spill scenarios which could occur considering all the potential approaches and organizations involved is, by necessity, general.

Detailed contingency plans can, however, be made for each facility or activity. Each contingency plan should clearly identify to the personnel the procedures for reporting and response, list the resources, personnel and equipment available, and define procedures for response and clean-up.

A contingency plan is a written outline of procedures to be followed in response to spills of oil or other hazardous materials. Distribution of a well thought-out plan to personnel who are likely to be involved in spill response and monitoring will result in a faster and more effective response. The contingency plan provides the following benefits:

Identifies the procedures for reporting the spill and includes the names, locations and telephone numbers of personnel who may be contacted for assistance.

Describes the immediate actions which should be undertaken to secure and contain the spill.

Lists the locations and types of manpower, equipment and resources available for material recovery and clean-up.

Provides general technical guidance to assist site personnel in assessing hazards and risks to workers and to the public.

Identifies the location of areas which must be protected such as community water supplies, streams, lakes...

Identifies the location and adequacy of facilities (landfills, lagoons, sewage treatment plants) and sites which may be suitable for the disposal of spill clean-up material.

The Territorial Government supports the development of local contingency plans and the Pollution Control Division will provide assistance in the development of community specific spill contingency plans.

6.2.2 Plan Development

Each contingency plan must be designed for a specific facility or activity. No two situations are identical; therefore, no two contingency plans should be identical.

There are, however, basic underlying guidelines which can be applied to contingency plan development. Two concerns must be addressed in any plan:

1. Public and Occupational Safety
   The dangers and hazards of handling the spilled material must be clearly understood by all personnel, and the safety of workers and the public, must be the first concern. Appendix A deals with these concerns.

2. Environmental Protection
   A general rule in spill response is that quick and effective actions are needed to contain spilled material and prevent its flow to water bodies where potential environmental impacts are greatest. Methods for such actions are discussed in Section 5.

A set of contingency plan guidelines - or "check list" has been developed by a joint government-industry forum, the Consortium on Spill Training which identifies pertinent contents of a contingency plan. These guidelines provide a foundation for development of such a plan and are presented in Table 8.

TABLE 8

CONTINGENCY PLANNING CHECK LIST

1. Notification and Alerting Procedure

(a) Notification List - Office and home telephone numbers

* Company: (i) Local Management
  (ii) Local Spill Team
  (iii) Regional Management
* Local co-operative members and alternatives
* Local clean-up contractors
* Government - Notification and Assistance
  * Federal
  * Territorial
  * Municipal

(b) Reporting Procedures

* What is to be reported and with what urgency?
* To whom is it reported?
* By whom is it reported. Use fan-out call list system to reduce the number of calls any one person must make
* Method of reporting - verbal or written

2. Specific Analysis of Plant Layout and Operations

* Always assume the worst (eg. product escapes plant site)
* Where could spill occur?
* How much product could be spilled?
* Where would spilled product go?
* How could it be contained and recovered?
* What equipment and manpower would be required and where would they be obtained?
* Are specific action steps outlined for the most probable or most serious incidents which might occur?

TABLE 8 [Continued]

3. Equipment Inventory List

* Identify own on-site equipment and exact location of it.
* Identify local co-op equipment, location of it and procedures to obtain.
* Identify back-up equipment - nearest company facilities and co-operatives, mobile vans, with procedures to obtain
* Identify equipment or services available from governments
* Obtain written schedule of charges or contract, in advance, from local contractors for men, materials and equipment, and commitment on availability.

4. Equipment Readiness

Establish routine procedures and responsibility for spill equipment stored on site:

* inspection
* maintenance
* physical presence inventory
* equipment loaned to others

5. Waste Disposal

Identify means of disposal of recovered product and contaminated debris

* location of disposal site
* method of transport
* waste disposal contractor
* Means of holding or accumulating product or debris pending disposal (open headed drums, buckets, tanks).
* Obtain approval, preferably in writing, of plans to dispose of recovered product and debris from all appropriate government agencies.
* Consider possibility and consequences of leaching if material is to be buried in ground, or on-site burning used.

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