Foreword

This Emergency Manual was prepared by the Committee on Material Spills Hazardous to a Water Supply to assist your water utility in preventing spills and making preparations to respond to spill situations. The manual is also designed to assist your personnel in becoming familiar with hazardous materials and their removal and spill programs that can be of assistance to your organization in the event of an emergency.

EACH INDIVIDUAL WATER UTILITY IS ENCOURAGED TO REVIEW ITS OWN PARTICULAR SITUATION REGARDING POSSIBLE SPILL EMERGENCIES USING THIS MANUAL AND TO PREPARE ITS OWN UNIQUE PLAN OF ACTION BASED UPON THE CONDITIONS PECULIAR TO ITS OWN SITUATION.

The AWWA welcomes ideas, suggestions, and reports of experiences on the control of hazardous material spills developed by utility organizations, which would be useful in the water-supply field. Please communicate your ideas and forward accounts of hazardous material spills at your utility to

AWWA Committee On Material Spills
Hazardous to a Water Supply
c/o Asst. Executive Director
American Water Works Association
6666 W. Quincy Avenue
Denver, Colorado 80235

Table of Contents

Section 1

TAKING ACTION

When an emergency occurs you will want your people to be able to call for help—there and then. Time wasted looking for help can make the difference between a successful and a weak response to an emergency situation.

Several copies of an emergency action bulletin are provided on the following pages of this handbook. Fill them out and then have them displayed in appropriate places. If you require more of them, you can order multiples of a dozen from the American Water Works Association, 6666 W. Quincy Ave., Denver, Colorado 80235. The price is $1 per dozen, and the order number is 50001.

EMERGENCY !

WHO TO CALL
IN THE EVENT OF A
Hazardous Material Spill

OIL

Oil Company
Regional Oil Industry Assn.

HAZARDOUS CHEMICAL 800-424-9300

CHEMTREC–Manufacturing Chemists Assn. toll free!

PESTICIDE 800-424-9300

National Agricultural Chemicals Assn.
(for cleanup crews & information)

E.P.A. (Federal) Regional Office (Local)

[See Fig. 4.3(a)]

U.S. COAST GUARD Duty Officer

(Environmental) Local District 800-424-8802
National Response Center

WATER QUALITY CONTROL BOARD

HEALTH DEPARTMENT

POLICE

FIRE

OTHER

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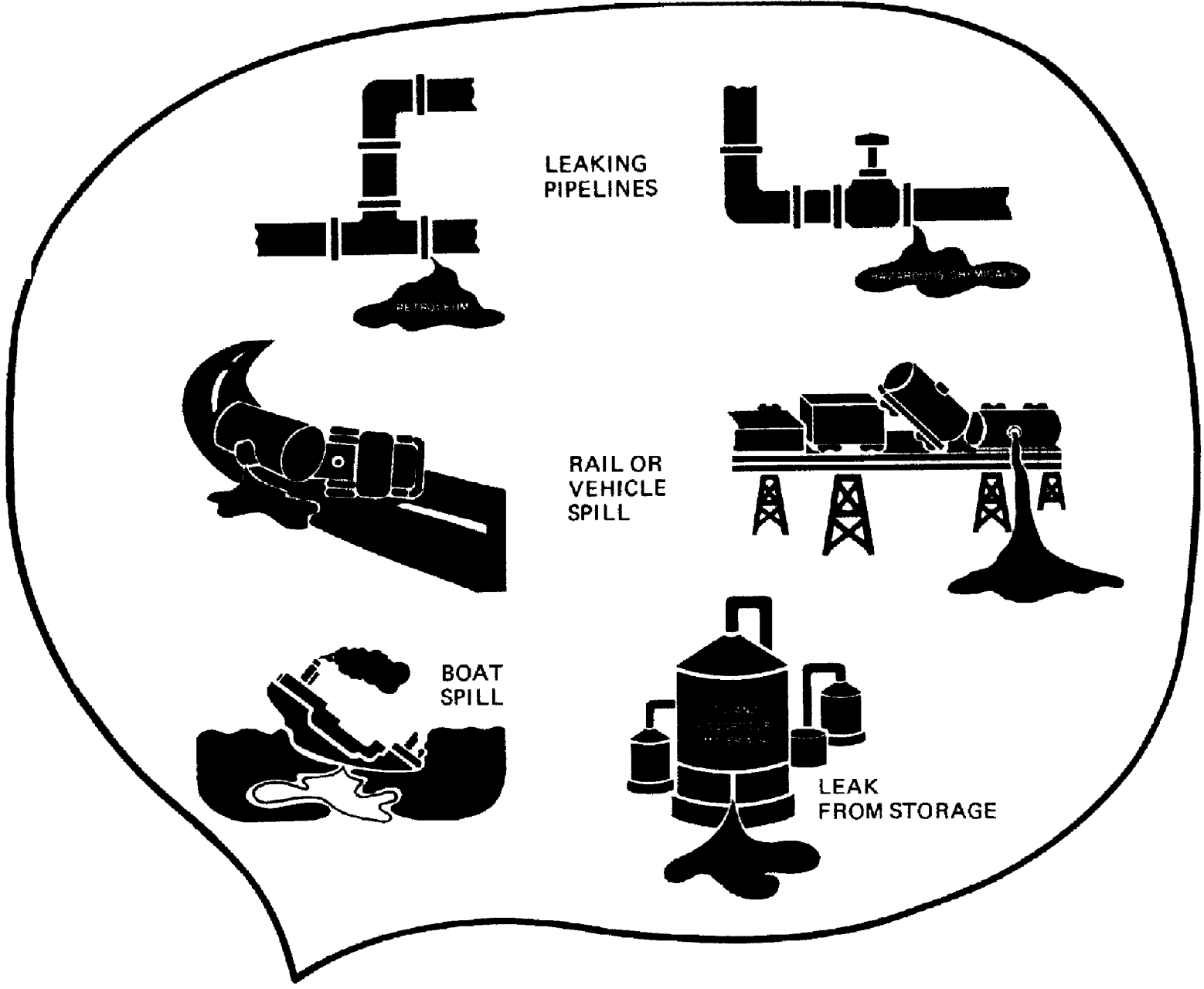


Section 2

Think Spills!

IT CAN HAPPEN TO YOU. .
MAKE VULNERABILITY SURVEY

Part A — Vulnerability Survey

The purpose of the vulnerability survey is to define clearly those areas of the water system that are vulnerable to hazardous material spills. The survey should be repeated at regular intervals to evaluate progress in implementing system improvements and to discover problem areas that may have developed since the previous survey.

A corrective program to eliminate or minimize system deficiencies determined by each survey should be developed and pursued.

The purpose of completing the survey forms is to assist the water utility in *preparing itself* to respond effectively in the event of a hazardous material spill and to aid in both the short- and long-range planning for changes to prevent the occurrence of spills into surface- or ground-water supplies or into the distribution system of the water utility.

Vulnerability survey guides are provided relating to the following.

1. Railroads
2. Highways
3. Pipelines
4. Waterborne transportation
5. Fixed-storage spills

In completing these forms particular stress should be placed upon those sources of pollution that are present in the area of your utility. Each utility should add additional items to its survey form to cover a potential local problem adequately.

A special map on which the utility has plotted the locations of significant exposures (railroads, bridges, etc.), past spill occurences, and equipment and materials available for corrective action may be helpful.

There is, of course, the added possibility that an air crash could occur on the watershed area. No survey is provided for this contingency because of the remoteness of such a crash seriously affecting a watershed, but later chapters in this manual do provide some suggestions about whom to call and possible actions to be taken.

Water-Utility Vulnerability Survey Guide
I. Materials Transported via Railroads

Checklist	Railroad Co.	Railroad Co.
A. Name and location of railroads crossing watersheds or water supplies		
B. Title and telephone number of company office to contact in event of emergency (24-hr coverage)		
C. Location of railroad on maps showing water utility's water supplies and tributaries		
D Location of railroad's nearest cleanup crew		
E. Hazardous materials commonly transported		
F. Nature of hazardous materials transported (petroleum or chemical type, toxic or nontoxic, special hazards)		
G. Protective features or equipment provided by railroad to protect water utility in event of spill		
H. Improvements planned by railroad or water company to reduce vulnerability of utility to spills		
I. Nature of additional investigations required to reduce vulnerability		
J Other factors		

Water-Utility Vulnerability Survey Guide
II. Materials Transported via Highway

Checklist	Information or Contact
A. Information on interstate, US, and major state highways with respect to watershed or source of water supply is available in company files as follows:	
1. Maps showing the routing of major highways on the watershed and near water-utility facilities	_____
2. Maps showing drainage patterns from major highways with respect to watershed and water utility facilities	_____
B. For carriers of hazardous materials dispatched locally, title and telephone number of office to be notified in event of an accident. (24-hr coverage)	_____
C. Hazardous materials commonly transported	_____
D. Nature of hazardous materials transported (petroleum or chemical type, toxic or nontoxic, special hazards)	_____
E. Highway authorities to contact regarding elimination of local highway conditions that could cause spillage accidents	_____

Water-Utility Vulnerability Survey Guide
III. Materials Transported in Pipelines

Checklist	Information
A. Name and location of company owning pipelines crossing watersheds or water supplies	
B. Name and telephone number of company office to contact in event of emergency (24-hr coverage)	
C. Materials being transported	
D. Nature of material (petroleum or chemical type, toxic or nontoxic, special hazards)	
E. Drawings of pipeline routing showing line valving (May be plotted on base maps for railroads, etc.)	
F. Line size and installation date	
G. Frequency of line testing	
H. Determination that owner has an acceptable shutdown procedure	
I. Public agency responsible for line safety	
J. Pipeline leaks in last ten years that have endangered water supply	
K. Determination that pipelines carrying hazardous materials on watershed are cathodically protected	

Water-Utility Vulnerability Survey Guide
IV. Materials Tranported via Waterborne Carriers

Checklist	Information
A. Name and location of companies transporting hazardous materials on navigable waterways that supply your water utility	
B. Names and telephone numbers of shipping-company office to contact in event of an emergency (24-hr coverage)	
C. Materials being shipped	
D. Nature of materials shipped (petroleum or chemical type, toxic or nontoxic, special hazards)	
E. Status of "response teams" for emergency assistance from companies identified in "A" and "B" above in the event of a spill	
F. Name and address of "On Scene Coordinator" (OSC) for waterway spills, which are available from the local district office of the US Coast Guard or from the Regional Office of the Environmental Protection Agency	
G. Location, method, and adequacy of waste disposal from cleaning barges or other waterborne carriers	

Water-Utility Vulnerability Survey Guide
V. Fixed-Storage Facilities for Hazardous Materials

Checklist	Information
A. Name and location of company with liquid-product storage facilities for hazardous materials on your water supply	
B. Name and telephone number of company office to contact in an emergency (24-hr coverage)	
C. Materials being stored	
D. Nature of materials stored (petroleum or chemical type, toxic or nontoxic, special hazards)	
E. For tanks storing hazardous materials installed underground such that a leak could pollute the ground-water supply: determination that tanks are cathodically protected and periodically leak tested.	
F. Determination whether drainage from the storage site is safely conveyed off the watershed or treated before disposal	
G. Check for overflow alarms installed on hazardous materials storage tanks	
H. Check of catchment basins for hazardous-material spills for suitable containment dikes	
I. Adequate protection by local ordinances against deficiencies in storage facilities that handle hazardous materials should be verified.	
J. Check of local building department's making periodic inspections of storage facilities handling hazardous materials for conformance to applicable regulations	

Part B — Is a Plan Necessary?

Proper consideration of the question posed in this section's title will lead to recognition of a number of situations that need to be changed to prevent *spills.*

Factors that bear upon the need for an active preventive improvement program and individual spill plan for your utility are listed below. Other pertinent factors should be added in arriving at a decision as to the need for a plan.

In part "I" that follows, the self-rating will largely be subjective. Your judgment will be used in evaluating whether your utility is poorly equipped or well equipped to handle spills. And in evaluating your capability to handle spills, you will be using the information entered into the vulnerability survey.

After you have studied the following information in parts I, II, and III, you should form a judgment as to whether or not your utility requires a spill plan. Chances are that your utility, in commonality with many others, will have to establish a working program in order to cope effectively with potential spill dangers.

Self Survey

I. Results of Vulnerability Survey

A. Present ability to react to spills caused by

	Existing Protection Against Pollution due to Spills is			
	Excellent	Good	Fair	Poor
Railroads				
Highways				
Pipelines				
Waterborne carriers				
Fixed storage				

B. Future condition

Do you anticipate that industrial growth in the next ten years will adversely affect the above rating?

II. Alternative Sources of Water Supply

A. How could normal service be maintained if some of present sources were inactivated because of pollution?

B. Alternative sources not now being utilized:

III. History of Spills Affecting Your Utility

A. History

Date	Location	Pollution Damage of Supply	Pollution Damage of Distribution	Cost of Cleanup

B. Public Inconvenience Due to Past Spills

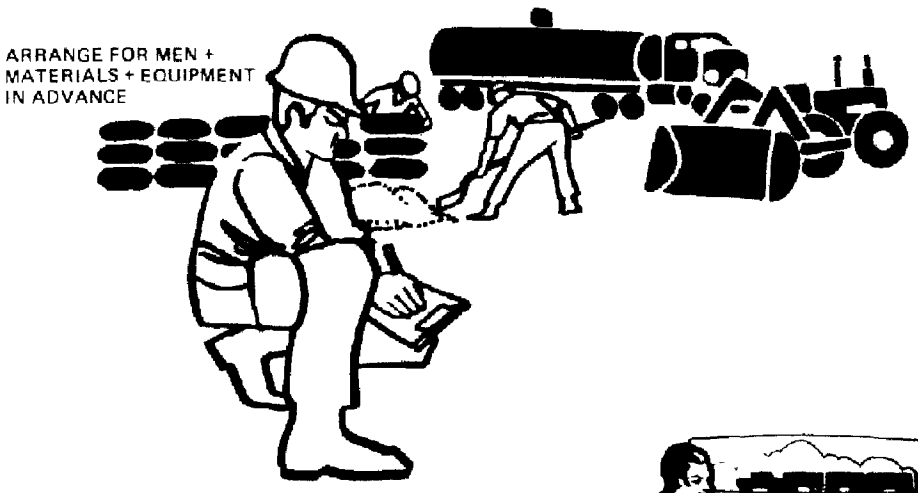
IV. Decision (enter self judgment)

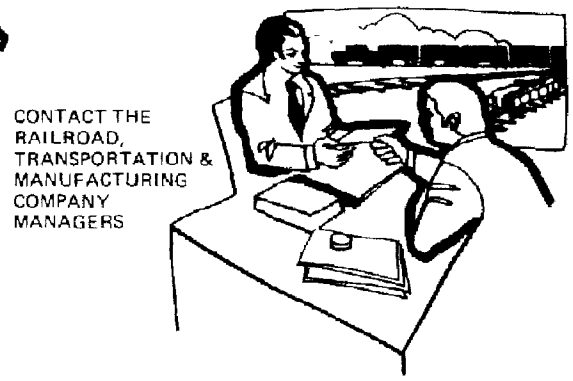
Section 3

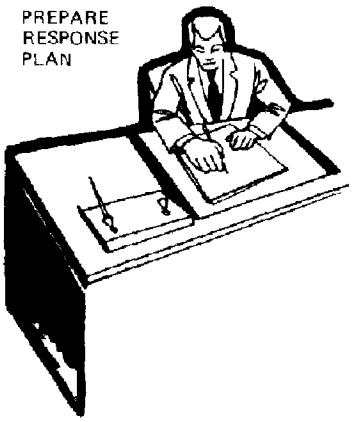
Being Prepared and Spill Response Plan

Part A

Preparations for Spill Emergencies







The following instructions are arranged in three types of activities that are necessary for maintaining good contingency protection. The first of the lists is not complete until you have supplied the necessary information.

Location and Description
I. Arrange for Men and Materials for Spill Emergencies

Steps to Take	Location and Description	Contact
A. Obtain names and addresses of local commercial cleanup crews.		
B. Determine location and list of emergency equipment and materials available to water utility from within the utility or from private contractors (civil defense, etc.). Include		
1. Earth-moving equipment to build temporary dams, dikes and other structures (bulldozers, road graders, backhoes, dump trucks, construction materials, etc.)		
2. Containment devices to entrap oil and other floating materials (oil booms, boats, skimming pumps, etc.)		
3. Chemicals for a. Neutralization (acids, bases, etc.)		
b. Adsorption (activated carbon, clays, etc.)		
c. Dispersing, coagulating, emulsifying, etc.		
C. Provide instructions to water-plant personnel in their handling of locally carried hazardous materials.		

II. Arrange Communication With Transportation and Storage Companies Who Handle Hazardous Materials

A. The water utility should arrange to be notified as soon as possible when a spill occurs. Arrangements should be made, where possible, with public agencies and with carriers and processors of hazardous materials, including

1. Railroad dispatchers of local rail lines. The dispatcher and the water utility should have maps clearly defining those areas that the railroad crosses that would be of concern to the water utility in the event of an accident.
2. Law-enforcement agencies concerned with highway regulation and protection (state-highway patrol, sheriffs department, local police and fire departments, etc.). Personnel of these agencies should be requested to notify a responsible official of the water utility immediately of any spill that may enter the water supply.
3. Pipeline companies owning local pipelines. Contacts should be established in the water utility and the pipeline company for reporting line leaks. The pipeline company should be furnished maps clearly defining those areas where a spill would be subject to entering the utility's water supply, either surface or ground water.
4. Waterborne carriers of hazardous materials locally transported.
5. Owners of local fixed-storage facilities for hazardous materials.

B. The water utility should have readily available a listing of emergency phone numbers that it may need for notifications. Copies of the Action Bulletin from this manual, which lists emergency phone numbers, should be posted in appropriate places for ready reference.

C. The water-utility should promote public awareness of the need of protecting water-supply areas, and inform the public of the problems that can be caused by industry and other sources of significant accidental spills, through all available news media (newspapers, radio, television, etc.).

III. Arrange for Periodic Reviews of Emergency Procedures

A. Review procedures for dispatching emergency equipment to scene after the appropriate course of action has been determined.
B. Review procedures for containing spilled material to prevent its entering water-supply tributaries (construct earthen dams, excavate catchment basin, etc.).
C. Review the possibility of utilizing existing downstream impoundments (fish ponds, irrigation ponds, etc.) to contain the material by previously lowering of water level or raising the elevation of the overflow control device.
D. Review procedures for using oil booms or skimmer-type devices for spilled materials that float on water.
E. Review and update the information on the Action Bulletin.
F. Review procedures for protection of ground-water sources in the event of a spill into nearby surface streams or upon the ground surface, including special quality monitoring of pumping wells, field investigation, and operational changes necessary if wells have to be shutdown.
G. Check above procedures with state water pollution control agencies and state departments responsible for drinking-water quality.

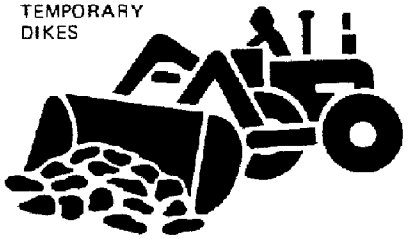
Section 3 — Part B

Take Emergency Action

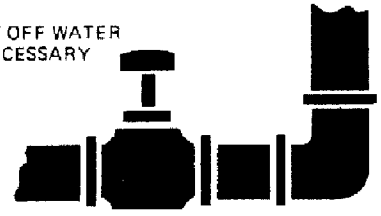
NOTIFY UTILITY COORDINATOR

IMPLEMENT SPILL RESPONSE PLAN

MAKE TEMPORARY DIKES



SHUT OFF WATER IF NECESSARY



CALL FOR HELP (USE EMERGENCY ACTION BULLETIN SECTION 1)

The following typical local response plan is presented as a guide to be used by the local water utility in developing its own plan for use during a spill emergency until such time as the spill is cleaned up or cleanup jurisdiction is allocated to another agency.

3.0. Purpose. The purpose of this plan is to establish a procedure to direct and coordinate the efforts of water-utility and contractor personnel in the event of a hazardous material spill in any location that could affect water-supply operations.

3.1. Hazardous material spill (defined). Any significant discharge of hazardous material from any manufacturing or storage facility or pipeline, truck, ship or other conveyance, whether accidental or otherwise, in an area where said material could gain access to the surface or underground supply or the distribution system of the water utility represents a hazardous material spill. The type of materials hazardous to a water supply are reviewed in Sect. 5 of this manual.

3.2. Local water utility hazardous material spill coordinator. Designate a local water-utility hazardous material spill coordinator, hereinafter called the "utility coordinator."

The utility coordinator should be contacted in the event of a spill. If the utility coordinator is not available, contact one of his alternates. Set up a chart as indicated below.

	Phone Number	
Name	During Business Hours	After Business Hours
Utility Coordinator:		
Alternate:		
Alternate:		
Alternate:		

3.3. Duties of the utility coordinator

3.3.1 The primary function of the utility coordinator is to work with any state or federal on-scene spill coordinator (OSC) and to direct and coordinate the investigation, evaluation, and the cleanup efforts in areas that could affect water quality of the potable supply. In emergency situations, the utility coordinator is authorized to take prudent steps to prevent serious damage or pollution of water-utility facilities, which steps may include the direction of water-utility and public-service personnel and the employment of the services of commercial cleanup companies. The state and federal governments may provide OSCs who will be in charge of the overall operation as it effects the general health and welfare of the community and the environment.

3.3.2. Upon being notified of a hazardous material spill, the utility coordinator will promptly investigate and evaluate the hazard involved. A field investigation will be conducted immediately by the utility coordinator or his designated representative. Upon completion of the cleanup effort, the utility coordinator will prepare a summary report.

3.3.3. Corrective Action

a. The utility coordinator should notify the key persons within the water-utility organization of the nature and location of the spill as soon as possible. A list of these persons should be prepared (see below).

Name	Phone Number During Business Hours	Phone Number After Business Hours

b. The utility coordinator should order appropriate water-treatment personnel to the spill scene immediately.

c. If pollution of the water supply is threatened by a hazardous material spill and the owner of the material, the shipper, or other responsible party cannot be located or cannot and/or will not provide remedial action as quickly as needed in the judgment of the utility coordinator, he may employ whatever prudent means are necessary, including the employment of commercial cleanup crews which should be entered onto a form similar to that shown in Fig. 3.1. Reimbursement for cleanup costs will be determined later, subject to applicable regulations, which when working with the state and federal OSC should minimize the problem.

d. The utility coordinator should contact as soon as possible the owner, his representative, or the shipper of the spilled hazardous materials. A list of phone contacts of the various possible sources of spills should be prepared, maintained, and periodically updated. A form that is suitable for such use is shown in Fig. 3.2. For other emergency phone-number listings see emergency action bulletin, part 1 of this manual.

e. The utility coordinator should notify the local fire department if a fire or asphyxiation hazard exists in addition to the pollution problem.

f. The utility coordinator will work with fire department personnel, as necessary, to determine whether confinment or flushing of a spill should be employed in a given situation.

g. The utility coordinator will arrange for periodic briefings and provide training materials to water-utility personnel concerned with operations. These materials will concern proper handling and response to hazardous material spills under emergency conditions. Special attention in safety training to take effective remedial action when dealing with hazardous materials should be provided.

h. The utility coordinator will periodically review preparations for spill emergencies by the water utility as outlined in part A, Sect. 3.

3.4. Delivery of inferior water quality that is due to a spill.

In an emergency situation where alternative sources of water are not available and a community water system has become contaminated by a spill of a material that is not adequately removed in the treatment plant, it may be necessary to consider delivery of such water to the public *even though it does not meet drinking water standards.*

In such a situation, the water utility should work closely with the state health department and the regional office of the USEPA to obtain their *guidance* and *approval* on

a. The level of restrictions that must be placed on the use of this water by the public
b. Whether the water should be limited to certain users
c. The information to give the public in the use of this water
d. The means by which the public will be informed

COMMERCIAL CLEANUP COMPANIES

The following local companies are available for assistance in emergency spill situations:

	Name and Address	Contact	Phone No.
1)			
2)			
3)			
4)			
5)			
6)			

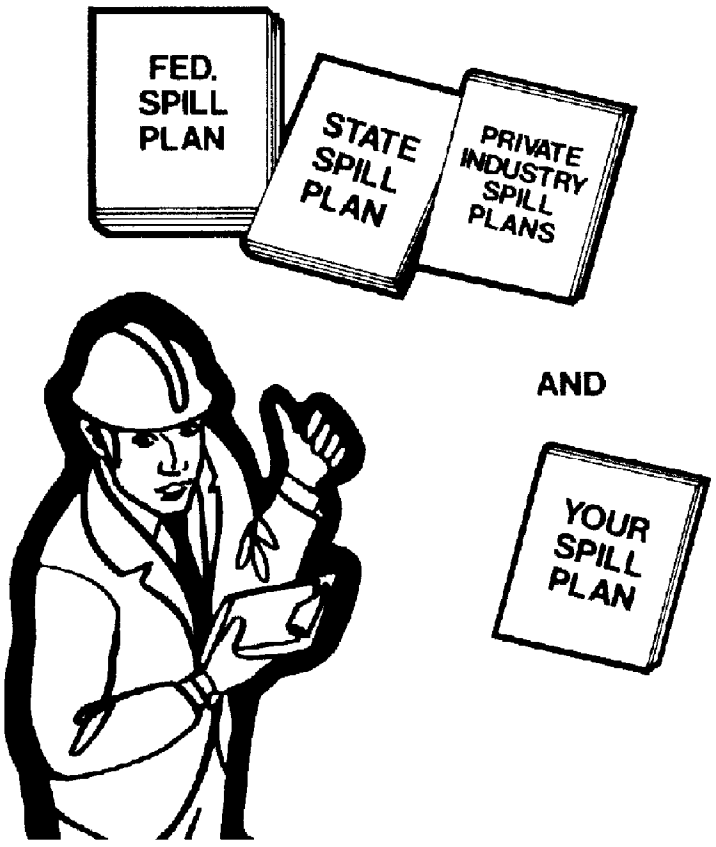
Fig. 3.1

Spill Source	Company or Name	Contact	Phone Number During Business Hours	Phone Number After Business Hours
Railroad				
"				
"				
Pipeline				
"				
"				
Truck-	Highway Patrol			
Truck-	Police Dept.			
Truck-	Fire Dept.			
Ship-	Coast Guard			
Ship- Local Shipping Co.				
Mfr. Owner Storage Facility				

****FOR OTHER EMERGENCY PHONE NUMBERS — SEE EMERGENCY ACTION BULLETIN, SECTION 1 OF THIS HANDBOOK****

Fig. 3.2

Section 4



CURRENT SPILL PLANS TO HELP YOU

The following spill programs have been established and are available for use as described in the text:

- **National Spill Program.** The federal program for recovery from major spills, coordinated by an appropriate regional office of EPA and district offices of the USGS
- **State Spill Plan.** In existence in some states
- **CHEMTREC Plan.** Chemical Transportation Emergency Center of the Manufacturing Chemists Assn.
- **Pesticide Safety Team Network.** Agency of the National Agricultural Chemicals Assn. (NACA)