

SAFETY PLANNING INFORMATION
DIRECTED TO EMERGENCY RESPONSE:
RESOURCE MANUAL

Created for

Division of Public Transit
West Virginia Department of Transportation
Charleston, West Virginia

By

John N. Balog
Vice President
Transportation Research, **P**lanning and Operations

October 13, 1994

KETRON Division of the Bionetics Corporation
350 Technology Drive
Malvern, **PA** 19355
(610)648-9000

NOTICE

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

NOTICE

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the objective of this report.

FOREWORD

This Resource Manual for the SPIDER Safety Training Workshop was prepared as part of a project to develop a set of safety materials for the West Virginia Department of Transportation, Division of Transit. Other materials originally developed specifically for the program included a participation handbook and a safety kit incorporating a variety of forms and resources for safety management.

Each component of the program has been designed to help you implement a complete Passenger, Vehicle and System Safety Program for your transportation service.

This page left intentionally blank.

ACKNOWLEDGEMENTS

The successful completion of every project is supported by a number of individuals and organizations who tend to serve without seeking direct attribution for their contributions.

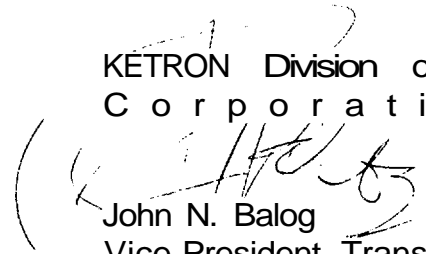
The development of the SPIDER Resource Manual, Safety Kit, and Participant Handbook was sponsored by the West Virginia Department of Transportation. Susan O'Connell, Director of the Division of Public Transit, was instrumental in the overall guidance of this effort. Cindy Fish, a Division professional, provided day-to-day assistance. The work was completed by the KETRON Division of the Bionetics Corporation while under contract with the West Virginia Department of Transportation.

Matthew C. Baird, a KETRON Division Paratransit Specialist, was responsible for development of some of the technical materials within the original SPIDER products under my direction. Revisions and additions in this new version of SPIDER were provided in part by KETRON professionals Mark M. Hood, John B. Morrison, Jennifer E. Rimmer, and Anne N. Schwarz. Julee Shuck, my Administrative Assistant was instrumental in word processing the Resource Manual. She was also responsible for the style and presentation of the graphics.

William T. Hathaway, Volpe National Transportation Systems Center, a recognized expert in safety and security, is a long time colleague and someone who has listened to my ideas and notions on safety over the years and who has always provided input.

Thanks to all of you.

KETRON Division of the Bionetics
C o r p o r a t i o n



John N. Balog
Vice President, Transportation
Research, Planning and Operations

This page left intentionally blank.

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
INTRODUCTION	vxii
SECTION 1 - PREVENTIVE MEASURES AND ANALYSIS	1-3
	SAFETY AND ACCIDENT REVIEW COMMITTEE	1-3
	ORGANIZING A SAFETY AND ACCIDENT REVIEW COMMITTEE	1-4
	COMMITTEE ACTIVITIES	1-4
	Goal Formation	1-5
	Procurement	1-5
	Training	1-5
	Safety Awards	1-5
	ACCIDENT REVIEWS	1-6
	Backing Accidents	1-6
	Wheelchair Lift Accidents	1-6
	Fixed-Object Collisions	1-7
	Lifting Accidents	1-7
	Wheelchair Lift Accidents	1-7
	Passenger Falls	1-9
	Industrial Accidents	1-9
	ASSISTANCE IN A LOCAL DISASTER	1-10
	EMERGENCY PREPAREDNESS NEEDS	1-11
	SIMULATED RESCUE EXERCISES	1-11
	EMERGENCY COMMUNICATIONS	1-11
	BLOODBORNE PATHOGENS	1-12
	EXPOSURE CONTROL PLAN	1-14
	HEPATITIS B VACCINATION PROGRAM	1-14
	AWARENESS TRAINING PROGRAM	1-15
	BIOHAZARD KITS AND THEIR USE	1-16
	BIOHAZARD KIT TRAINING	1-17
	SAMPLE INCIDENT REPORTING FORM	1-18
	INCIDENT REPORT FORM	1-19
	CLOSURE	1-19
	DRUG AND ALCOHOL TESTING (FTA)	1-21
	POLICY STATEMENT	1-21
	EDUCATION AND TRAINING	1-22
	ALCOHOL TESTING PROGRAM	1-22
	DRUG TESTING PROGRAM	1-24
	ADMINISTRATIVE REQUIREMENTS	1-26
	FACILITY SAFETY	1-26
	FACILITY SAFETY WORK SHEET	1-26
	HAZARDOUS MATERIAL STORAGE FORMS	1-27

HAZARDOUS MATERIALS	1-28
Written Hazard Communication Program	1-28
Labelling of Hazardous Chemicals	1-29
Material Safety Data Sheets	1-29
Employee Information and Training	1-29
FIRE SAFETY CHECKLISTS	1-30
FREON RECOVERY UNITS	1-30
Motor Vehicle Air Conditioners	1-31
Transit Bus Air Conditioners	1-33
UNDERGROUND STORAGE TANKS	1-35
Requirements for New USTS	1-36
Upgrading Existing UST Systems	1-37
Release Detection Methods for USTS	1-40
Release Reporting, Investigation, and Confirmation	1-40
Release Response and Corrective Action for UST Systems	
Containing Petroleum	1-41
Closure of UST Systems and Out-of-service Procedures ..	1-44
Financial Responsibility	1-45
FACILITY SAFETY CHECKLIST	1-48
ATTACHMENT 1-1	
HAZARD ASSESSMENT	1-51
ATTACHMENT 1-2	
VEHICLE ACCIDENT REVIEW	1-55
ATTACHMENT 1-3	
ACCIDENT PREVENTABILITY CRITERIA	1-57
ATTACHMENT 1-4	
ANTI-DRUG AND ALCOHOL MISUSE POLICIES	1-61
ATTACHMENT 1-5:	
INFORMATION SOURCES	1-69
ATTACHMENT 1-6	
STANDARD OF PURITY FOR USE IN MOBILE AIR-CONDITIONING	
SYSTEMS	1-71
ATTACHMENT 1-7	
SPECIFICATIONS FOR EXTRACTION AND RECYCLE EQUIPMENT	
FOR MOBILE AUTOMOTIVE AIR CONDITIONING SYSTEMS	1-73

ATTACHMENT 1-8
 SAE 1989 RECOMMENDED SERVICE PROCEDURE
 FOR THE CONTAINMENT OF R-12 1-79

ATTACHMENT 1-9
 FREON EVACUATION TABLES 1-85

ATTACHMENT 1-10
 PERFORMANCE OF REFRIGERANT RECOVERY,
 RECYCLING AND/OR RECLAIM EQUIPMENT 1-87

ATTACHMENT 1-11
 OVERVIEW OF UNDERGROUND STORAGE TANK REQUIREMENTS ... 1-97

ATTACHMENT 1-12
 METHODS OF RELEASE DETECTION FOR TANKS 1-99

ATTACHMENT 1-13
 METHODS OF RELEASE DETECTION FOR PIPING 1-105

ATTACHMENT 1-14
 OVERVIEW OF RELEASE DETECTION REQUIREMENTS
 FOR PETROLEUM TANKS 1-107

ATTACHMENT 1-15
 OVERVIEW OF RELEASE DETECTION REQUIREMENTS FOR PIPING . 1-109

ATTACHMENT 1-16
 LEAK CONFIRMATION DETECTION 1-111

SECTION 2 - STANDARD OPERATING PROCEDURES 2-3

 CLASS D LICENSE PROGRAM 2-3

 COMMERCIAL OPERATOR'S LICENSE 2-3

 DRIVER RESPONSIBILITIES 2-4

 General 2-4

 Notification of Previous Employment 2-5

 Accidents 2-5

 Disqualification and Cancellation 2-6

 Commercial Drivers Prohibited from Operating with any
 Alcohol in System 2-7

 Implied Consent and the Chemical Test 2-7

 Mandatory Revocation of License 2-8

 Driving While Revoked or Suspended 2-8

Employer Responsibilities	2-9
National System	2-9
INSURANCE	2-9
COMMUNICATIONS EQUIPMENT	2-10
DRIVER FORMS	2-11
PRE-TRIP VEHICLE INSPECTION SHEET	2-11
VEHICLE DEFECT SHEET	2-11
INCIDENT REPORT	2-12
DRIVER FORMS CHECKLIST	2-13
PREVENTIVE MAINTENANCE	2-13
MAINTENANCE RECORDS	2-14
SECTION 3 - EMERGENCY OPERATING PROCEDURES	3-3
SAFETY EQUIPMENT	3-3
ON-BOARD SAFETY EQUIPMENT	3-3
SUGGESTED VEHICLE EMERGENCY EQUIPMENT	3-4
Response Equipment	3-4
Cautionary Equipment	3-4
Maintenance Equipment	3-4
PASSENGER PROFILE CARD	3-5
OPERATOR ACCIDENT FORM	3-5
ACCIDENT PROCEDURE CHECKLIST	3-6
ACCIDENT INFORMATION CHECKLIST	3-6
EMERGENCY COMMUNICATION FORMS	3-6
PASSENGER CARDS	3-6
EMERGENCY RESPONSE MATERIALS	3-7
AGENCY PROFILE SHEET	3-7
VEHICLE PROFILE CARD	3-8
EMERGENCY LABELS	3-8
PASSENGER I.D. CARDS	3-8
EMERGENCY PLACARD	3-8
EMERGENCY RESPONSE CHECKLIST	3-8
EMERGENCY EVACUATIONS	3-8
PREPARATION	3-9
RESPONSE	3-9
ASSESSMENT	3-10
HAZARD CONTROL	3-10
SUPPORT ORGANIZATIONS	3-10
GAINING ACCESS	3-11
EMERGENCY CARE	3-11
DISENTANGLEMENT	3-11
REMOVAL AND TRANSFER	3-12
DEBRIEFING	3-13
ATTACHMENT 3-1	
LIST OF TYPICAL EMERGENCY RESCUE EQUIPMENT	3-17

SECTION 4 - PASSENGER, VEHICLE AND SYSTEM SAFETY PROGRAM FORMS 4-3

PART 1 - PREVENTIVE MEASURE FORMS 4-5

 FACILITY SAFETY WORK SHEET 4-5

 HAZARDOUS MATERIAL STORAGE FORM: INVENTORY SHEET 4-17

 HAZARDOUS MATERIAL STORAGE FORM: SITE REPORT 4-21

 MATERIAL SAFETY DATA SHEET 4-25

 NOTIFICATION FOR UNDERGROUND STORAGE TANKS 4-33

 LETTER FOR COMPLIANCE WITH FINANCIAL RESPONSIBILITY REQUIREMENTS THROUGH THE LOCAL GOVERNMENT BOND RATING TEST FOR GENERAL PURPOSE LOCAL GOVERNMENTS 4-39

 LETTER FOR COMPLIANCE WITH FINANCIAL RESPONSIBILITY REQUIREMENTS THROUGH THE LOCAL GOVERNMENT BOND RATING TEST FOR OWNERS/OPERATORS OTHER THAN GENERAL PURPOSE LOCAL GOVERNMENTS 4-43

 WORKSHEET FOR THE MUNICIPAL FINANCIAL TEST 4-47

 CERTIFICATION OF FINANCIAL RESPONSIBILITY 4-53

 FIRE EXTINGUISHER CHECKLIST 4-57

 SMOKE DETECTOR CHECKLIST 4-61

 CHECKLIST FOR FACILITY SAFETY 4-65

PART 2 - STANDARD PROCEDURE FORMS 4-69

 PRE-TRIP VEHICLE INSPECTION SHEET 4-69

 VEHICLE DEFECT SHEET 4-73

 INCIDENT REPORT 4-77

 CHECKLIST FOR DRIVER SAFETY 4-81

PART 3 - EMERGENCY PROCEDURES FORMS 4-85

 PASSENGER PROFILE CARD 4-85

 OPERATOR ACCIDENT FORM 4-89

 CHECKLIST FOR ACCIDENT PROCEDURES 4-99

 CHECKLIST FOR ACCIDENT INFORMATION 4-103

 EMERGENCY COMMUNICATION FORM 4-107

 PASSENGER CARD 4-113

 AGENCY PROFILE SHEET 4-117

 VEHICLE PROFILE CARD 4-121

 PASSENGER ID CARD 4-125

 EMERGENCY PLACARD 4-129

 CHECKLIST FOR EMERGENCY PROCEDURES 4-133

SECTION 5 - PASSENGER, VEHICLE AND SYSTEM SAFETY PLAN 5-1

This page left intentionally blank.

LIST OF FIGURES

<u>FIGURE</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
1-1	Hepatitis B Vaccine Declination	1-15
1-2	Bloodborne Pathogens and Other Potentially Infectious Materials: Exposure Incident Employees Reporting Form	1-20
1-3	Hazard Assessment Matrix	1-52

This page left intentionally blank.

LIST OF TABLES

<u>TABLE</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
1-1	Dispatcher Notification Sheet	1-13

This page left intentionally blank.

LIST OF EXHIBITS

<u>EXHIBIT</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
4-1	FACILITY SAFETY WORKSHEET	4-7
4-2	HAZARDOUS MATERIAL STORAGE FORM: INVENTORY SHEET	4-19
4-3	HAZARDOUS MATERIAL STORAGE FORM: SITE REPORT	4-23
4-4	MATERIAL SAFETY DATA SHEET	4-27
4-5	NOTIFICATION FOR UNDERGROUND STORAGE TANKS	4-35
4-6	LETTER FOR COMPLIANCE WITH FINANCIAL RESPONSIBILITY REQUIREMENTS THROUGH LOCAL GOVERNMENT BOND RATING TEST FOR GENERAL PURPOSE LOCAL GOVERNMENTS	4-41
4-7	LETTER FOR COMPLIANCE WITH FINANCIAL RESPONSIBILITY REQUIREMENTS THROUGH LOCAL GOVERNMENT BOND RATING TEST FOR OWNER/OPERATOR OTHER THAN A LOCAL GENERAL PURPOSE LOCAL GOVERNMENT	4-45
4-8	WORKSHEET FOR MUNICIPAL FINANCIAL TEST	4-49
4-9	CERTIFICATION FOR FINANCIAL RESPONSIBILITY	4-55
4-10	FIRE EXTINGUISHER CHECKLIST	4-59
4-11	SMOKE DETECTOR CHECKLIST	4-63
4-12	CHECKLIST FOR FACILITY SAFETY	4-67
4-13	PRE-TRIP INSPECTION SHEET	4-71
4-14	VEHICLE DEFECT SHEET	4-75
4-15	INCIDENT REPORT	4-79
4-16	CHECKLIST FOR DRIVER SAFETY	4-83
4-17	PASSENGER PROFILE CARD	4-87

LIST OF EXHIBITS (CONCLUDED)

4-18	OPERATOR ACCIDENT FORM	4-91
4-19	DMV ACCIDENT REPORT	4-97
4-20	CHECKLIST FOR ACCIDENT PROCEDURES	4-101
4-21	CHECKLIST FOR ACCIDENT INFORMATION	4-105
4-22	GOOD SAMARITAN CARD	4-111
4-23	PASSENGER CARD	4-115
4-24	AGENCY PROFILE SHEET	4-119
4-25	VEHICLE PROFILE CARD	4-123
4-26	PASSENGER ID CARD	4-127
4-27	EMERGENCY PLACARD	4-131
4-28	CHECKLIST FOR EMERGENCY PROCEDURES	4-135

INTRODUCTION

The purpose of this Resource Manual is to present information regarding some important transportation safety issues. It provides the building blocks for the formation of a Passenger, Vehicle and System (PVS) Safety Plan which should be an integral part of each transportation system's safety program.

Safety is an issue that affects every aspect of public transportation. Identifying and addressing potential hazards can save lives, reduce injuries, and reduce costs. Some of the areas where safety should be a primary concern are as follows:

- Policy Formation;
- Planning;
- Procurement;
- Finance (through insurance and risk management);
- Operations;
- Customer Relations; and
- Maintenance.

Because safety is an issue that is all encompassing, each transportation system, whether a large fixed-route bus system or a small rural provider, should designate safety as its top priority. The five sections of the Resource Manual and accompanying safety materials have been specifically designed to help achieve this goal.

SAFETY DEFINITIONS

A number of safety terms are used within this Resource Manual. The following definitions are included for consistency.

- Safety - Freedom from danger.
- Security - Freedom from intentional danger.
- Hazard - Any real or potential condition that can cause injury and/or damage to equipment or property.

- Accident - An unforeseen event or occurrence that endangers life and/or property.
- Incident- A disruption to the normal, safe operation of the transportation system that does not result in death, injury or significant property damage.
- Risk - Classification of a hazard or dangerous condition that encompasses both its potential severity and the likelihood of an accident occurring.
- Hazard Management - The practice of controlling, eliminating, or accepting potentially dangerous situations in an effort to reduce the level of risk.
- Safety Program - The sum total of all safety tasks and activities established to enhance organizational effectiveness through the prudent management and analysis of risk(s).
- Safety Plan - Document produced by the transportation system to identify, organize and prescribe activities associated with its Safety Program.

RESOURCE MANUAL ORGANIZATION

Three different page colors are used to present the information contained in this Resource Manual. The following is a listing of the page colors with their contents.

- White - Central text concerning safety topics and materials.
- Yellow - Directions on how to use the safety materials.
- Green - Additional information about safety topics contained in "Attachments" to sections of the Resource Manual.

The first section of this Resource Manual addresses preventive measures that can be implemented to effectively reduce risk exposure and increase safety levels. Actions such as the institution of a Safety and Accident Review Committee are preventive steps that can actively address potential hazards before they become accidents. All topics presented in this section revolve around the central issue of preparedness for emergency situations and accident analysis.

The standard procedures discussed in the second section involve safety issues that are basic to each safety program. They include complying with federal

requirements for operator licensing and fundamental maintenance and operations practices.

The third section addresses emergency procedures. Included are discussions of how transportation systems can prepare both themselves and local emergency preparedness response forces for accidents involving the system's vehicles.

The fourth section, safety forms, presents all of the forms associated with the Passenger, Vehicle and System (PVS) Safety Program. Accompanying each form is a set of instructions detailing the required information. The first set of forms relate to preventive activities; the second details standard procedures; and the third outlines emergency procedures.

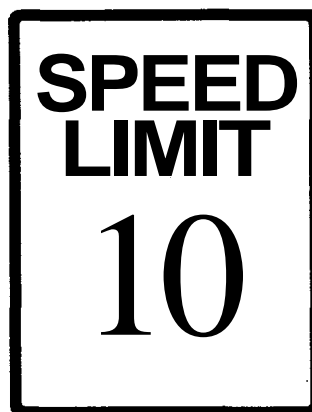
Information from all of the discussed safety topics should be used in the formation of the PVS Safety Plan presented in the fifth section. To make the preparation of the PVS Safety Plan easier, a generic plan is included. It can be tailored to reflect the local environment by inserting local transportation organization information in the blank spaces and setting up some basic organizational concepts. The yellow pages contain instructions to help make the process easier.

In order for any plan to be effective, it must be referred to consistently and used as a benchmark to measure progress. The Passenger, Vehicle and System Safety Plan is no different. Its success will largely depend on the sustained effort the local transportation systems puts into it.

This page left intentionally blank.

SECTION 1

**PREVENTIVE MEASURES AND
ANALYSIS**



This page left intentionally blank.

SECTION 1 - PREVENTIVE MEASURES AND ANALYSIS



This section presents safety measures that can prevent accidents from occurring along with steps that can make the transportation system useful in the event of a local disaster. Each topic emphasizes an approach to transportation safety activities that strives to keep accidents from happening. Aggressive identification of safety needs and clear assessment of possible and actual hazards are the best means to control risk exposures.

The forms referred to in this part of the Resource Manual are presented in Section 4 - Passenger, Vehicle and System Safety Program Forms (Part 1).

SAFETY AND ACCIDENT REVIEW COMMITTEE

A transportation system's first step in improving safety should be to organize a Safety and Accident Review Committee. One of the main purposes of the Committee is to prevent accidents from occurring by:



- identifying possible hazardous conditions;
- working to alleviate or control hazardous conditions;
- establishing plans for emergency preparedness;
- preparing a comprehensive Passenger, Vehicle, and System Safety Plan; and
- conducting analyses of accidents.

The Committee should act as a forum to raise safety concerns and be an entity with the power to rectify dangerous situations. In addition, it should take steps to make safety a primary concern to all components of the organization. The Committee should demonstrate through enthusiasm and leadership that safety is an issue that should be important to everyone.

Because a complete Safety Program includes a careful analysis of accidents that do occur, the Committee includes this vital function as part of its many activities. By performing accident analyses, Committee members can pinpoint hazards and act to correct any safety deficiencies through facility/vehicle redesign, retraining of personnel and/or creation or modification of operating procedures.

ORGANIZING A SAFETY AND ACCIDENT REVIEW COMMITTEE

All levels of management (and delegates from every department in larger systems) should be represented on the Safety and Accident Review Committee. It is important that the System Manager or Project Director be an active participant (not necessarily as a leader) in the process to show that the program has support from the top. In addition, at least one full-time driver and one full-time mechanic (if applicable) should sit on the Committee. They can help raise safety concerns and convey information to other employees. The inclusion of drivers and mechanics on the Committee demonstrates that safety is a concern that transcends all job descriptions.

In addition to internal organizational representation, the Committee should include members of the local community. Outside or independent members could include:

- police officers;
- fire services personnel;
- civil defense leaders;
- Red Cross organizers;
- insurance adjusters; and/or
- community leaders.

The role of independent representatives is to provide assistance to the transit system and to give unbiased opinions on controversial issues.

COMMITTEE ACTIVITIES

There are two main functions of the Safety and Accident Review Committee. The first is to conduct Hazard Assessments of all situations that could possibly endanger the safe operation of the transportation system. A full discussion of Hazard Assessment, and a sample methodology are included as Attachment 1-1 (printed on green paper) located at the end of this section.

The second major function is to review vehicle accidents to assess whether or not they were preventable. A discussion of how accident reviews should be conducted and how to judge preventability are included as Attachments 1-2 and 1-3, respectively.

Goal Formation

It is important that the Committee establish goals and publicize the results (both good and bad). In addition, the Committee should promote safety enhancements by both individuals and groups to encourage others to do likewise.

Procurement

One of the functions of the Safety and Accident Review Committee should be to make recommendations on the purchasing of equipment from the standpoint of safety. Members of the Committee should review proposed major purchases to make sure that the equipment satisfies safety criteria. This role is especially important in the competitive bid process where the winning bidder may have compromised the safety level of the product. To prevent this from happening, the Committee should review all appropriate bid documents and make recommendations regarding safety standards.

Because the procurement process is frequently a long one, the Committee should make sure this work is conducted as quickly as possible. In many cases, a quick review will actually speed up purchases because it can give a sense of immediacy to the process. (Quick reviews also set an accelerated pace for the people doing the procuring.) Except for major purchases, such as vehicles, the entire committee should not have to approve each purchase.

Training

Another important role for the Committee is to review training programs for employees. These reviews should ensure that all training is comprehensive from a safety perspective and directly addresses hazards in the transportation system's operating or work environments.

Safety Awards

The Committee should be responsible for developing a safety awards program. Categories for such a program can include accident-free driving, no lost days due to injury, or other safety indicators. A major activity the Committee should implement is an annual bus/van rodeo with prizes such as gift certificates for the winners.

The Division's "Transit Excellence Awards Program" held annually, during the WV Public Transit Associations Annual Meeting, recognizes excellence in a number of areas, including safety, for transit and specialized operators.

ACCIDENT REVIEWS

One of the most important safety functions a transportation system can perform is the review of accidents (vehicle and non-vehicle) to establish preventive measures against a repeat of the same type of accident. This analysis should include accidents that have been experienced by the transportation system, and those that seem to be prevalent throughout the state or in other similar operations.

A crucial element of the review process is to propose and implement counter measures against identified accident types. For example, if there is an increase in backing accidents, the procedures for backing vehicles should be reviewed and changed. This means evaluating whether spotters are required under the current policy and if they are used. Another possibility is to assess whether guidelines should be established as to who is allowed to operate the vehicles in reverse and under what circumstances.

For every accident type, there are a variety of possible causes and corrective measures. The job of the people conducting the analysis is to correctly identify the problem and to implement the best solution. The person or group responsible for this activity is up to the discretion of each individual transportation system, but it may be easiest to make the members of the Safety and Accident Review Committee responsible for the review process.

Some common accident types and possible corrective measures are listed in the paragraphs that follow.

Backing Accidents

If backing accidents occur, the first question asked should be whether the reverse was necessary. In many cases, policies restricting putting vans or buses into reverse unless it is absolutely necessary alleviates many backing accidents. It is also important to determine whether backing accidents occur on the grounds of the facility during parking or maintenance activities or whether the accidents occur in service. In the case of on-site backing maneuvers, spotters should be used at all times. On-the-road backing accidents can be avoided by mandatory driver walk-around inspections before reversing the vehicle.

Wheelchair Lift Accidents

Many wheelchair lift accidents can be avoided by providing certified Passenger Assistance Techniques (PAT) instruction. In addition to proper training, re-training and field supervision can prevent drivers from developing bad habits. Due to the serious nature of wheelchair lift accidents, decision-makers should not wait until an accident occurs to take corrective measures to ensure that drivers use the proper techniques

and procedures for operating lift equipment. If accidents are due to a faulty lift design, the specification for the procurement of future lifts should be modified.

Fixed-Object Collisions

Repeated collisions with fixed objects, especially when parking or operating a vehicle on-site, cannot be tolerated. If accidents with fixed objects occur, one of the best remedies is to put drivers back into on-the-road training with a supervisor or onto a practice course. Practice courses can be set to varying degrees of difficulty and everyone can benefit from a practice session. Other ways to prevent fixed-object collisions are to have drivers deploy spotters and/or do vehicle walk-arounds in tight maneuvering situations.

Lifting Accidents

One of the most frequent causes of workman's compensation claims are back injuries associated with lifting. These claims can be avoided by instructing employees how to lift individuals in wheelchairs properly, by limiting to one the number of steps an operator is allowed to move a wheelchair and its occupant and by encouraging employee physical fitness.

Wheelchair Lift Accidents

Several kinds of accidents are reasonably common while loading/unloading passengers using wheelchair lifts. They include, but are not limited to:

- Passengers in wheelchairs rolling off the lift because the wheel locks were not set;
- Powered electric chairs which climb over the edge-barriers allowing passengers to fall;
- Injuries to passenger extremities caught in wheelchair lift mechanical components;
- Head injuries to tall passengers in wheelchairs from impact with the roof during boarding;
- Standing passengers who fall off the lift while boarding; and/or
- Three-wheeled scooters which tip over or fall off the lift while boarding.

All of these can be prevented as a result of effective training.

In addition, good preventive and general maintenance procedures can reduce accidents and injuries due to mechanical, electrical or hydraulic failures.

Lift maintenance is of prime importance from both a safety and operational viewpoint. Proper maintenance will prolong the operational life of a lift and decrease safety hazards.

The basic problem with lift equipment is that light machinery must be made to do very heavy-duty work while exposed to extremely destructive elements, especially temperature extremes, water, dirt, mud and gravel.

Lift equipment is also vulnerable to damage by improper operation, since the amount of force needed to lift a heavy wheelchair (up to 300 pounds or more) will quickly inflict serious damage if the operator makes a mistake.

Platform-type lifts having long hydraulic pistons can be damaged by allowing the platform to drive against the ground. Likewise, if any moving part is allowed to jam or bind, serious damage can result. On some equipment, care must be taken not to press two control buttons at once or a short-circuit could blow fuses.

Most of the lift machinery currently available can be made to give acceptable service if the operational and maintenance staff take into account the limitations of the machinery and the magnitude of the wear and tear it receives.

To keep lift machinery running reliably, three things must be done.

1. Be sure that the lift equipment is correctly installed. Unfortunately, the only method of doing this may be to return the vehicle to the vendor, or the vendor's authorized representative, to insure correct installation if chronic problems exist.
2. Train all drivers thoroughly in the proper operation of the lift and make sure that they all understand what will damage the equipment.
3. Exceed the manufacturer's specifications on cleaning and lubrication. Keep all parts properly tightened and adjusted.

Make all necessary repairs immediately. Do not use a lift in an unsafe condition.

The following daily safety check is recommended.

- Run the lift through one complete cycle to insure that it is operable before attempting to pick up a passenger. Also, thoroughly check for seal leakage and the binding of hardware.

- Check for frayed or damaged lift cables, hydraulic hoses, or chains.
- Check for physical damage and jerky operation. Look for hazardous protrusions, exposed edges, etc. Make sure that all protrusions are adequately padded and protected.
- Check all fasteners. All bolts should be snug.
- Make sure lift is properly secured to the vehicle when stored.
- Clean the lift completely of dirt, mud, gravel, and corrosive elements, such as salt.
- Make all necessary repairs immediately. Do not use a lift in an unsafe condition.

The following weekly safety check is also recommended.

- Lubricate all rubbing and bearing surfaces.
- Check and lubricate manual controls. (Only lubricate the lift with manufacturers' specified lubrication materials.)

The source of the information on wheelchair maintenance is: Caring for Your Wheelchair Lift-Montana Transit Newslines. Transit Section, Montana Department of Transportation, Winter, 1991.

Passenger Falls

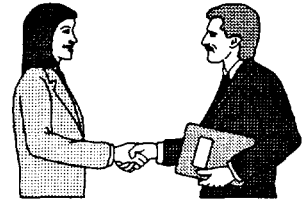
Passenger falling accidents usually occur because the driver starts to move the vehicle before all of its occupants have been seated. To prevent this problem, drivers must be trained properly, and checked upon repeatedly by on-the-road supervisors. Operators must be told that falling accidents are almost always preventable and disciplinary action to the operator will result.

Industrial Accidents

Employee accidents frequently occur due to neglect of standard operating procedures, such as the wearing of protective safety equipment at all times. In cases where an accident does occur without prior knowledge of the hazard, steps should be immediately taken to prevent similar accidents. These steps could include eliminating the hazard, controlling the hazard through installation of safety devices, adopting new employee safety protection requirements, or instituting new rules and procedures to prevent a similar accident in the future.

ASSISTANCE IN A LOCAL DISASTER

Organizations that provide paratransit or transit service can give unique assistance to emergency crews in the event of a local disaster. In the case of an area evacuation, transportation organizations, through their master passenger files, can assist by locating individuals who may be unable to leave their home without transportation assistance. Lift-equipped vehicles could then assist in evacuation efforts for those who are mobility impaired. In addition, all transportation systems can assist relief efforts by providing high-occupant capacity vehicles for transportation of emergency forces to the disaster area and for evacuation of victims.



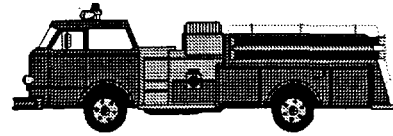
To provide the best assistance possible, every transportation organization should develop, in cooperation with local police, fire and ambulance forces, a disaster plan which defines all roles in the event of a local disaster. Such a plan should consider:

- possible emergency situations;
- communication capabilities;
- direction (chain of command);
- data on residents through passenger lists;
- vehicle sizes and capacities (passengers and cargo);
- clearances for vehicles on designated emergency routes (overpasses, bridges, ground clearances, etc.);
- driver first aid capabilities;
- maintenance and safety equipment; and
- refueling contingencies.

The transportation system should play an integral part in the formation of a local disaster response plan. Such a plan would bring together the available resources of the community including the transportation system's vehicles; emergency shelter sites and volunteers; and the primary response organizations (police, fire, paramedics, and hospitals). It would also include a catalogue of possible disasters including earthquakes, train derailments, toxic chemical leaks, or petroleum spills along with how they will be handled.

EMERGENCY PREPAREDNESS NEEDS

In order to be fully prepared in the event of a transportation emergency, local rescue forces (fire, police, paramedics) should be familiar with the vehicles operated by the transportation system and the characteristics of typical passengers. In addition, emergency communication procedures should be worked out before an emergency occurs.



SIMULATED RESCUE EXERCISES

Simulation exercises with emergency forces can assist rescue personnel in understanding the special needs of transportation emergencies. Many emergency crews are primarily familiar with automobile accidents, and do not know the basics of gaining access to a Transit/Paratransit vehicle, shutting off the engine or communicating with passengers who may have special needs. Performance in all of these areas can be improved with practice on assessing the vehicles and instruction on the uniqueness of transportation operations.

To conduct a mock rescue situation, emergency personnel should first be instructed on access points, possible passenger disabilities, engine shut-off procedures, and other pertinent rescue information. After the instruction is completed, they should try to respond to a simulated accident scene. Volunteers should be situated on the vehicle as accident victims. Each person should have attached to them a card outlining their condition and/or disability (if any). The volunteers should also be aware of their medical condition (i.e., unconscious, broken leg, blind, etc.). To prevent easy entry into the vehicle, notices can be posted to restrict access. An alternative is to position the vehicle used in the exercise adjacent to a wall, tree, or other vehicle to make the rescue process harder and more realistic.

When the rescue crews are dispatched to the scene of the accident their efforts should be timed and if possible recorded on video tape for later study. Perhaps the most important aspect of the simulation, to make it an effective exercise, is to fully discuss the accident afterwards with the emergency crews to learn what problems were encountered, what could have been done better and to answer questions.

EMERGENCY COMMUNICATIONS

Effective emergency communication starts long before an accident or other emergency situation actually occurs. Dispatchers, supervisors, and operators must know exactly what to do if an accident disrupts normal operating conditions. In addition, links of communication should already be established among a transportation system and emergency forces well in advance of an accident occurrence.

All emergency response organizations should know who the primary and secondary contact persons are at the transportation system. In addition to receiving the central number for the transportation system, emergency forces should also be given a listing of the home phone numbers of all important personnel. This information can be included on an Agency Profile Sheet (discussed in Section 3 and included as Exhibit 4-26) along with pertinent information on the characteristic of the vehicles operated by the transportation system.

In order to help rescue teams be effective in their response, the transportation system should clarify the needs of response forces in order to better prepare for emergency situations. For example, rescue crews will need precise information on the location of an accident in a rural area. This may, in turn, require transportation systems to work with each driver to make sure that they know how to communicate their exact location to the dispatcher at all times.

The most important job of a dispatcher in an emergency is to make sure they have all of the required information and that it is accurate. In many cases the person reporting an emergency will not relay information clearly. Therefore, the dispatcher must ask the right questions. Table 1-1 provides a listing of information required in emergency situations. For those transportation systems that do not have radios, Emergency Communications Forms (Exhibit 4-24) can help ensure that the proper information is accurately relayed to the dispatcher.

BLOODBORNE PATHOGENS

In recent years, the news media has done an excellent job in making everyone aware of the deadly impact of Aids. It is common knowledge that Aids leads to death for more than two-thirds of the infected persons. Despite this positive transmission of knowledge, most people do not have an adequate understanding of the biological hazards associated with the Aids virus and indeed other bloodborne pathogens. In the case of transportation, drivers, passengers, maintenance workers, and others can be exposed daily to situations which could lead to infection. This section is designed to increase your awareness of bloodborne pathogens and to provide information which, if put into practice, will effectively minimize the risk of becoming infected by bloodborne pathogens.



Microorganisms carried within the bloodstream that can cause serious and/or deadly diseases are labeled as bloodborne pathogens. Bloodborne pathogens most frequently found in the transit environment are:

- Hepatitis B Virus (HBV); and
- Human Immunodeficiency Virus (HIV)

**TABLE 1-1
DISPATCHER NOTIFICATION SHEET**

PLEASE POST

When an emergency is reported the dispatcher must ask the following:

- Vehicle number and driver name
- The exact location of the emergency
 - road
 - cross street
 - direction headed
 - landmarks
- The type of emergency
 - accident
 - fire
 - mechanical difficulty
 - health difficulty
- Number of possible injuries
- Extent of injuries
- Whether emergency personnel have been notified
- At what time did the emergency occur

The human immunodeficiency virus can lead to acquired immunodeficiency syndrome (Aids).

The HBV virus causes hepatitis and can result in serious potential liver disease and in some cases, death. Unlike a physical characteristic that is apparent to others, many individuals infected with HBV do not exhibit any visible symptoms. However, their blood and some body fluids can still be very contagious. In the bus transportation industry, HBV is considered to be more contagious than HIV.

The Aids virus prevents the natural capabilities of our bodies to defend illnesses. As a result, individuals with Aids almost always succumb to some illness over time.

Unfortunately there is no current cure for Aids. In addition, no vaccine has been produced to prevent individuals from acquiring HIV.

In contrast, a vaccination program is available to prevent the manifestation of Hepatitis B in individuals.

The Occupational Safety and Health Administration of the U.S. Department of Labor has developed regulations regarding bloodborne pathogens. They can be found in the Code of Federal Regulations (CFR) 1910.1030.

EXPOSURE CONTROL PLAN

The OSHA Regulations require each transit entity to develop and implement an Exposure Control Plan. The Plan should include, but is not limited to, the following:

- a free Hepatitis B vaccination program;
- a training program for drivers, mechanics, maintenance workers and others to increase their awareness and to teach them the characteristics of bloodborne pathogens;
- provision of biohazard kits on vehicles and in work locations where they might be needed;
- training for employees on how to protect themselves from bloodborne pathogens by properly using the biohazard kits; and
- an internal incident reporting form.

HEPATITIS B VACCINATION PROGRAM

All employees of transportation programs that might come into contact with bloodborne pathogens have to be provided the opportunity to accept a vaccination program which includes a series of three inoculations over a six month period. If an employee refuses to participate, you must ask them to sign a refusal form indicating that they do not want to participate in the inoculation program and accept the attendant responsibilities. A Hepatitis B Vaccine Declination Form is shown as Figure 1-1. However, they must also be made aware that if in the future they change their mind and want to become inoculated, they have that right.

Vaccination is an eligible claim for members of the Public Employees Insurance Agency (PEIA). Contact PEIA for further information.

**Figure 1-1
Hepatitis B Vaccine Declination
(Mandatory)**

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

Signature of Employee

Date: _____

Signature of Supervisor

Date: _____

Source: Walther, Erskine S., Managing Bloodborne Pathogens: Guidelines for Transit Managers, Management Information and Research, Greensboro, August, 1994.

AWARENESS TRAINING PROGRAM

The exposure control plan must include an awareness training program regarding bloodborne pathogens. It must include information on determining who is infected and how transmission can occur and result in infection. OSHA requires that training must be conducted annually.

It is impossible to know for sure if a passenger, employee, or other individual that the system might come into contact with is or is not infected. That is why it is so important for everyone to understand that all blood and other applicable body fluids must be considered infectious at all times and that all precautions be put in place to prevent contact with these fluids so as to minimize the probability of infection.

All bloodborne pathogens are carried in the blood. In addition, they can often be found in several different kinds of body fluids, including blood products such as those found in the drainage of wounds, vaginal secretions, semen, and saliva as a result of dental procedures. Normally less dangerous bodily fluids include tears, perspiration, vomit, urine, feces and saliva from drooling. However, if any of these bodily fluids contain visible blood, then they fall into the same class of potential infection agents as blood, blood products, etc.

Infection results from the intrusion of bloodborne pathogens into a person's body. Intrusion can incur through a variety of entry points including mucous membranes of the eyes, nose and mouth, via cuts or scratches in the skin or through skin which has been punctured by a contaminated sharp object such as broken glass. These could be the general pathways for infection of transit personnel and passengers during typical service delivery. Infection can also occur as a result of sexual contact and by the sharing of needles by drug users. It is believed that unless your transit system is atypical, the latter two routes of infection are probably not going to be common problem areas for you.

Ultimately as you might expect, the highest probably of exposure and the potential transmission of infection can and will occur as a result of an accident. However, an accident does not necessarily have to be a major collision. It could very well be something as simple as a bloody nose, or a cut caused by something that is broken or by vomit generated by someone having a reaction to chemotherapy or some other form of treatment.

It is most important to make the assumption that all blood and other bodily fluids are infectious so that all appropriate precautions can be taken to prevent transmission and eventual infection. OSHA considers this assumption to be an approach they label as Universal Precautions.

BIOHAZARD KITS AND THEIR USE

You should take steps to equip each of your vehicles with an appropriately stocked biohazard kit. You should also take steps to make sure that all employees are trained on how to use the equipment within the biohazard kit. A typical kit should contain at least the following items:

- disposable gloves to protect hands;
- an appropriate disinfectant spray (which may be considered a hazardous material) to prevent transmission and infection from occurring during any spill clean-up;
- absorbent paper towels appropriate for clean-up;

- absorbent powder for appropriate clean-up;
- approved puncture-resistant red bags with the biohazard symbol along with containers for the proper disposal of contaminated materials;
- a brush, dust pan, and tongs appropriate for mechanically picking up sharps (broken glass, needles, etc.); and
- towelettes containing disinfectant to be used for final cleanup after the disposal of contaminated gloves.

BIOHAZARD KIT TRAINING

Each employee should receive appropriate training on how to effectively utilize the materials in the biohazard kit. In the event that blood or bodily fluid with visible blood within it has to be cleaned up, specific steps should be taken. It will be necessary for you to train your employees.

The procedure should be as follows for the cleanup of all blood, blood products, and other body fluids visibly contaminated with blood. The disinfectant spray should be used to decontaminate the spill. After the disinfectant has been sprayed onto the infected area, clean up using paper towels and/or absorbent powder should be accomplished. Once the area is wiped clean, new disinfectant spray and towels or absorbent powder should again be used to collect any residue material. Any materials acquired by the towels in the cleanup and the towels must be placed carefully into a red biohazard bag. In addition, gloves worn by the employee during the cleanup must also be placed into the red biohazard bag. Any item which is saturated with blood or body fluids must go into a red biohazard bag.

Any material which you feel may be contaminated should be placed into a leakproof bag. It is probably a wise step to assume that all materials being cleaned up and discarded do contain blood or body fluids (with blood) and should be placed into the red biohazard bags.

If it is necessary to cleanup broken glass, needles, or other sharp objects known as "sharps" which could cut you, tear your gloves, or otherwise cause a problem, they should be handled strictly by mechanical means. This means the use of the brush, dustpan and tongs within the biohazard kit. Make sure that any "sharps" are put into a leakproof, puncture-proof container properly marked with the approved biohazard symbol. As a total precaution the brush, dustpan and tongs used to mechanically pick up "sharps" should also be discarded in the container.

The system should not attempt final disposal of biohazardous materials. Rather, the system should contract with a local hospital, clinic or medical waste disposal company for final and proper disposal of the biohazardous material. Even small

amounts of biohazardous materials must be disposed of in accordance with proper medical procedures. Never put biohazardous materials, no matter how little, into the regular trash.

- These labels shall be florescent orange or orange-red or predominantly so, with lettering or symbols in a contrasting color.
- Labels required by this paragraph shall either be an integral part of the container or shall be affixed as close as feasible to the container by string, wire, adhesive, or other method that prevents their loss or unintentional removal.
- Red bags or red containers may be substituted for labels.
- Individual containers of blood or other potentially infectious materials that are placed in a labeled container during storage, transport, shipment or disposal are exempted from the labeling requirement.
- Labels required for contaminated equipment shall be in accordance with this paragraph and shall also state which portions of the equipment remain contaminated.
- Regulated waste that has been decontaminated need not be labeled or color-coded.

The primary impacts on transit systems of the labeling requirements are the biohazard waste bags and the containers into which they are stored prior to final disposal.

SAMPLE INCIDENT REPORTING FORM

Following is a suggested internal form for reporting exposure incidents. The suggested form attempts to capture reasonably detailed information regarding the circumstances of a biohazardous spill and employee exposure incident. This form provides a base record for determining if additional information is necessary in order to properly evaluate the incident. You will want to modify, expand and/or supplement this form to meet your particular needs and in light of your experience.

The ultimate purpose of the form and of the investigation that follows is: 1) to identify and develop methods for preventing future such incidents and 2) provide background information for any medical follow-up. You are required to report and conduct a follow-up, including a report from the healthcare professional, when an employee may have been exposed to a bloodborne pathogen from exposure to blood or OPIM through needle sticks, to non-intact skin, cuts, or penetrations of the skin and/or splashes to the mucous membranes. Routine use of a biohazard kit to cleanup

a biohazardous spill does not trigger an investigation or medical follow-up unless there is reason to believe that an exposure may have occurred. While you may want a record of biohazard kit usage, you are only required to report and investigate when there is a reasonable probability that an employee has been exposed to a bloodborne pathogen.

The final step in the cleanup phase should be to thoroughly wash your hands with running water and an ample amount of good quality antiseptic soap. Through washing of your hands followed by a second through washing should prevent any potential for transmission and infection.

INCIDENT REPORT FORM

After every episode involving potential bloodborne pathogens, it will be necessary to fill out an incident report. You will need to construct one which includes, but is not limited to, such things as:

- a full description of the incident;
- the equipment within the biohazard kit which was worn and used in the cleanup;
- whether or not you feel you were exposed to bloodborne pathogens;
- a description of the passenger and anything relevant to the way they acted or what happened to them; and
- the status of your Hepatitis B vaccination program.

A sample Incident Report Form is included as Figure 1-2.

CLOSURE

This is a developing area of information and knowledge and the above text is not meant to be comprehensive. Some reference materials are available to help you. A program on bloodborne pathogen awareness entitled, "Your Ticket to Safety for Transit Professionals" includes a fifteen minute videotape and a small handbook. They are available from the Air and Transit Division, Office of Public Transportation, Park Fair Mall, 100 Euclid Avenue, Suite 7, De Moines, Iowa 50313. These materials were produced by the Iowa Department of Transportation and are available on a loan basis.

In addition, a number of consultants have also developed materials which are available. For example, a package called "Managing Bloodborne Pathogens: Guidelines for Transit Managers" is available from Management Information and Research, P.O. Box 29011, Greensboro, North Carolina, 27429-9011. They can also be reached at (910)379-0240 . They make copies of their package available at approximately \$50.00 each. Neither the West Virginia Department of Transportation nor KETRON endorses any of these products, rather it mentions them in order to make transit system operators aware of resources that are available to them.

FIGURE 1-2
BLOODBORNE PATHOGENS AND OTHER POTENTIALLY INFECTIOUS MATERIALS:
EXPOSURE INCIDENT EMPLOYEE REPORTING FORM

Date of Report:
Employee:
Approximate Time of Incident:
Date of Incident:
Location of Incident:
Other personnel at scene: Yes: ___ No: ___
List personnel:

Separate forms should be independently completed by all personnel who were exposed to blood or OPIM (Other Potentially Infectious Materials).

Source of exposure: Identified: Yes: ___ No: ___

Name of individual or Description of Source of Exposure:

Describe incident and events leading to incident, actions taken to contain incident and post-incident cleanup as appropriate:

Personal Protective Equipment in use at time of incident:

How could this incident have been prevented?

Name of Supervisor Notified of Incident:
Time of Notification: Date of Notification:

Signature of Employee Job Classification/Title

For supervisor follow-up:

Source individual contacted for possible testing: Yes: ___ No: ___
Comments/Status:

HBV vaccination: Recommended: Yes: ___ No: ___
Administered: Date:

Findings and Recommendations:

Date:
Signature of Supervisor

Source: Walther, Erskine S., Managing Bloodborne Pathogens: Guidelines For Transit Managers, Management Information and Research, Greensboro, August, 1994.

Both of these resources are available for loan from the West Virginia Department of Transportation.

DRUG AND ALCOHOL TESTING (FTA1)

Recent regulations instituted by the U.S. Department of Transportation (DOT) require providers of commercial transportation to test employees and volunteers involved in safety-sensitive positions for drug and alcohol use. Safety-sensitive positions include drivers, dispatchers, front-line supervisors, security personnel who operate firearms, and employees who repair vehicles or perform routine maintenance. Excluded from the regulations are Section 18 recipients' contract mechanics. The DOT drug and alcohol testing procedures rule (49 CFR Parts 653 and 654) sets forth the procedures for drug and alcohol testing in all the transportation industries. The DOT published rules mandating anti-drug and alcohol misuse prevention programs in February 1994. The Federal 1994 rules require implementation by transportation employers in areas with populations larger than 200,000 by January 1, 1995 and by January 1, 1996 for transportation employers in areas with populations smaller than 200,000. Included under the 1994 rule are all recipients (or subrecipients) of Sections 3, 9, or 18 financial assistance. State Section 18 recipients are responsible for compliance of their subrecipients. Operators are responsible for compliance of their contractors. Section 16 financial assistance recipients are not covered by the FTA Drug and Alcohol Testing Rule. However, the Federal Highway Administration's (FHWA) drug and alcohol requirements cover anyone holding a Commercial Driver's License (CDL). This means that many human service agencies will need to set up testing programs for their drivers who hold CDL's.



To effectively implement the drug and alcohol regulations, transportation systems should have in place by the appropriate deadline the following:

- a policy statement on drug and alcohol use in the work place;
- an employee and supervisor education and training program;
- a drug and alcohol testing program for employees and applicants for employment in safety-sensitive positions; and
- administrative actions for record-keeping, reporting, certification of compliance, and release of information.

POLICY STATEMENT

A policy statement should be drafted and approved by the transportation system's governing board. (Suggested requirements for a policy are included in Attachment 1-4. The document should clearly state that no employee be allowed to work in a safety-sensitive position while under the influence of prohibited substances. It should also state that employees are not permitted to work if they refuse to take a drug or alcohol test or fail one that is administered to them. Employees may return

to work in safety-sensitive positions when they pass a return to duty drug test and complete any required treatment.

EDUCATION AND TRAINING

The Drug and Alcohol Testing Rules require covered operators to provide an education and training program for all covered employees. This program must include distributing the employer's policies and procedures for the alcohol misuse program and the anti-drug program. These policies must be adopted by the Board and disseminated to every covered employee and to each employee organization. Employees covered by this rule must be provided with at least 60 minutes of training on the effects of prohibited drug use and the signs and symptoms that may indicate prohibited drug use. Supervisors who make determinations on drug and alcohol misuse must receive at least 60 minutes of training on the physical, behavioral, and performance indicators of probable drug use. These supervisors must also receive at least an additional 60 minutes of training on the physical, behavioral, speech, and performance indicators of alcohol use. This is to ensure that the transportation systems will be able to make proper judgements as to whether reasonable testing is required.

ALCOHOL TESTING PROGRAM

Performance of safety-sensitive functions is prohibited:

- while having an alcohol concentration of 0.02 or greater as indicated by an alcohol breath test;
- while using alcohol; or
- within four hours after using alcohol.

Also prohibited is for a transit employee to refuse to submit to an alcohol test and using alcohol within eight hours following an accident or before being tested.

The rules require breath testing using evidential breath testing devices (EBT) approved by the National Highway Traffic Safety Administration (NHTSA). Two breath tests are required to determine if a person has a prohibited alcohol concentration. A screening test should be conducted first. Any result less than 0.02 alcohol concentration is considered a "negative" test. If the alcohol concentration is 0.02 or greater, a second or confirmation test must be conducted. The confirmation test result determines any action to be taken.

The following alcohol tests are required for safety-sensitive transit employees:

- pre-employment;

- post-accident;
- reasonable suspicion;
- random;
- return-to-duty; and
- follow-up.

Pre-employment alcohol tests should be conducted before applicants are hired or after an offer to hire, but before actually performing safety-sensitive functions for the first time. Pre-employment alcohol testing is also required when employees are transferred to a safety-sensitive position unless 654.31 b1 and b2 apply.

Post-accident alcohol testing is required after accidents on employees whose performance could have contributed to the cause. All covered employees who receive a moving vehicle citation arising from the accident must be tested. If the accident involves a rail car, trolley car, or vessel, and the vehicle must be removed from revenue service as a result of the accident, all covered individuals on-board the vehicle must be tested except for covered employees whose performance can be completely discounted as a contributing factor to the accident. Additionally, all other covered employees whose performance could have contributed to the accident must be tested.

Reasonable suspicion alcohol testing is required when a trained supervisor observes behavior or appearance which is specific, contemporaneous, articulable manifestation of appearance, speech or body odors indicative of prohibitive alcohol use.

Random alcohol testing should be conducted on a random unannounced basis just before, during, or just after performance of safety-sensitive functions. All covered employees are subject to random alcohol testing at a rate of 25%. This rate is subject to modal-wide adjustments on an annual basis by DOT depending on the modal-wide rates of positive tests. Random selections shall be made by a scientifically valid method (e.g. computer random number generation or random number table). Random selections may be made either by the employer, through a service company, or by a consortium. Individuals remain in the random pool and shall have an equal chance of selection, whether or not the individual is ever tested.

An individual who fails or refuses an alcohol test shall be immediately removed from safety-sensitive duties and referred to a Substance Abuse Professional (SAP) for an evaluation. The regulation does not require the employer to offer the individual an opportunity for rehabilitation and reinstatement in the safety-sensitive duty. If the employer determines to retain the individual, the individual must successfully participate in a program of rehabilitation recommended by the SAP. Thereafter, the

individual will be required to pass a return to duty alcohol test before returning to safety-sensitive duties.

Follow-up alcohol testing should be conducted on a schedule recommended by the SAP when an individual who has violated the prohibited alcohol standard returns to performing safety-sensitive duties. Follow-up tests are unannounced and at least 6 tests must be conducted in the first 12 months after an employee returns to duty. Thereafter, testing may be required for a period of up to an additional four years at a frequency recommended by the SAP.

DRUG TESTING PROGRAM

The DOT requires transportation organizations to test for five types of drugs (or their metabolites):

- marijuana;
- cocaine;
- phencyclidine PCP;
- amphetamines, e.g., racemic, amphetamine; and
- opiates (including heroin, opium, dextroamphetamine and methamphetamine, morphine and codeine).

The drug rules prohibit any unauthorized use of controlled substances. Illicit use of drugs by safety-sensitive employees is prohibited on or off duty.

Drug testing is conducted by analyzing an employee's urine specimen. The analysis must be performed at laboratories certified and monitored by the Department of Health and Human Services (DHHS). If a positive result is found for one or more of the drugs, then a confirmation test is performed for the identified drug.

To comply with the regulations, transportation providers must test employees under six conditions:

- pre-employment;
- post-accident;
- reasonable suspicion;
- random;

- return-to-duty; and
- follow-up.

Pre-employment drug tests should be conducted before applicants are hired or after an offer to hire, but before actually performing safety-sensitive functions for the first time. Pre-employment drug testing is also required when employees are transferred to a safety-sensitive position.

Post-accident drug testing is required after accidents on employees whose performance could have contributed to the accident. All covered employees who receive a moving vehicle citation arising from the accident must be tested. If the accident involves a rail car, trolley car, or vessel, and the vehicle must be removed from revenue service as a result of the accident, all covered individuals on board the vehicle must be tested except for covered employees whose performance can be completely discounted as a contributing factor to the accident. Additionally, all other covered employees whose performance could have contributed to the accident must be tested.

Reasonable suspicion drug testing is required when a trained supervisor observes behavior or appearance which is specific, contemporaneous, articulable manifestation of appearance, speech or body odors indicative of prohibitive drug use.

Random drug testing should be conducted on a random unannounced basis just before, during, or just after performance of safety-sensitive functions. All covered employees are subject to random drug testing at a rate of 50%. This rate is subject to modal-wide adjustments on an annual basis by DOT depending on the modal-wide rates of positive tests. Random selections shall be made by a scientifically valid method (e.g. computer random number generation or random number table). Random selections may be made either by the employer or by a consortium. Individuals remain in the random pool and shall have an equal chance of selection, whether or not the individual is ever tested.

An individual who fails or refuses a drug test shall be immediately removed from safety-sensitive duties and referred to a SAP for an evaluation. The regulation does not require the employer to offer the individual an opportunity for rehabilitation and reinstatement in the safety-sensitive duty. If the employer determines to retain the individual, the individual must successfully participate in a program of rehabilitation recommended by the SAP. Thereafter, the individual will be required to pass a return to duty drug test before returning to safety-sensitive duties.

Follow-up drug testing should be conducted on a schedule recommended by the SAP when an individual who has violated the prohibited drug standard returns to performing safety-sensitive duties. Follow-up tests are unannounced and at least 6 tests must be conducted in the first 12 months after an employee returns to duty.

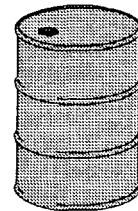
Thereafter, testing may be required for a period of up to an additional four years at a frequency recommended by the SAP.

ADMINISTRATIVE REQUIREMENTS

Employees who engage in prohibitive alcohol or drug conduct must be immediately removed from safety-sensitive functions. Employees who have engaged in alcohol or drug misuse cannot return to safety-sensitive duties until they have been evaluated by a SAP and have complied with any treatment recommendations to assist them with an alcohol problem. Transit systems must provide detailed information about alcohol and drug misuse, the employer's policy, the testing requirements, and how and where employees can get help for alcohol abuse. Employers are required to keep detailed records of their alcohol and drug misuse prevention programs.

FACILITY SAFETY

The six separate forms described in this section assist safety personnel in conducting facility inspections. The first, and most comprehensive is the Facility Safety Work Sheet which reviews multiple categories of facility safety. Three review sheets pertain to the storage of hazardous materials. The first inventories the materials contained in storage areas. The second is a checklist to ensure dangerous substances are kept in safe environments. The third identifies chemicals currently being used by the system and their hazardous properties. The two final sheets are checklists to ensure that fire extinguishers and smoke detectors are appropriately placed and in working order. All forms referred to in this section are presented in Section 4 - Passenger, Vehicle and System Safety Program Forms.



FACILITY SAFETY WORK SHEET

Facility Safety Work Sheets are designed (in conjunction with the fire extinguisher, smoke detector, and hazardous material worksheets) to review potential hazards (Exhibit 4-1). The work sheet has separate sections that review the following fundamental safety areas:

- I. Basic Design Deficiencies;
- II. Inherent Hazards;
- III. Malfunctions;
- IV. Maintenance Hazards;
- V. Environmental Hazards; and
- VI. Human Factors.

Each section of the work sheet lists examples, causes, and control methods at the top of the sheet. Questions are then listed for each safety area outlining common safety problems. The respondent can either mark yes, no, or not applicable (n/a) to

each question asked. If steps are necessary to correct the safety problem, the reviewer writes down the location of the problem and the action that needs to be taken.

Sections of the Facility Safety Worksheet that do not apply to your operation can be removed and discarded. The walk-throughs or inspections should occur periodically depending on the size of your transportation system. In all cases they should occur at least once per year.

HAZARDOUS MATERIAL STORAGE FORMS

The Hazardous Material Storage Forms serve two purposes. The Inventory Sheet (Exhibit 4-2) is used to keep a hazardous material listing of the areas where hazardous materials are stored. The second sheet, the Site Report (Exhibit 4-3), is used to inspect and record the condition of the storage area and its suitability for hazardous material containment.

The Inventory Sheet establishes a record of the contents of storage areas for emergency purposes. For example, if a fire were to occur at a facility, the firemen responding to the call could be warned of dangerous conditions that might exist if the storage area were to be engulfed in fire. The Inventory Sheet should be kept at three separate locations:

- at the storage area (posted outside);
- in the Administrative Offices (filed); and
- at the local fire station (filed with other emergency information).

For each storage location, a separate sheet should be used. (Use more than one sheet if necessary.) Each form should list the hazardous substance, the type of danger it poses and the amount that is stored for each location. The categories to be used in classifying a possible hazard are:

- T - Toxic (harmful if inhaled or swallowed);
- F - Flammable (catches fire easily); and
- C - Caustic (burns skin if touched).

In order to keep an accurate record of which hazards might be present in a storage area, the listing should be compiled on an annual basis. For this reason, the date which the form was completed is crucial and should be filled out in the bottom right-hand corner of the sheet.

The Site Report (2nd sheet) should be compiled at the same time as the inventory, but should only be kept in the files of the lead Safety Officer. Each storage area should be evaluated for the criteria listed. If the storage of the materials fails to meet any one of the criteria, the problem should be noted in a comment section and resolved immediately. To ensure that the problem gets fixed, another inspection should be scheduled within six weeks after the first evaluation.

HAZARDOUS MATERIALS

All chemicals which employees may be exposed to under normal conditions of use or in a potential emergency must be evaluated for hazards. Chemical manufacturers and importers must evaluate chemicals they produce or import to determine if they are hazardous using available scientific evidence. Transportation systems are not required to evaluate chemicals unless they choose not to rely on the manufacturer or importer's evaluation. This chemical hazard information, as well as appropriate protective measures must be communicated to employees of the transportation system by the following methods:

- a written hazard communication program in the workplace, including lists of hazardous chemicals present;
- proper labelling of chemicals in the workplace;
- preparation and distribution of Material Safety Data Sheets (MSDS); and
- employee training regarding hazardous chemicals and proper safety measures.

These regulations are outlined in detail in 29 *CFR* 1910.1200.

Commonly found hazardous materials include batteries, paint, lubricants, antifreeze, cleaning materials, among others.

Written Hazard Communication Program

Transportation systems must develop a written hazard communication program which describes how proper labeling, completion and maintenance of MSDSs, and employee training is being completed. This program must include methods for informing employees of the hazards of non-routine tasks (if appropriate), and the hazards of chemicals in unlabeled pipes in their work area. This program must also include a list of all hazardous chemicals known to be present at the workplace, as described above in the Inventory Sheet (Exhibit 4-2). The written hazard communication program must be made available to a representative of the Assistant Secretary of Labor for Occupation Safety and Health (USDOL) or Director of the National Institute for Occupational Safety and Health (USDOHHS) upon request.

Labelling of Hazardous Chemicals

All containers of hazardous chemicals in the transportation system must be labeled in English with the identification of the chemical and appropriate hazard warnings. Portable containers for transferring hazardous chemicals do not need to be labelled. If the chemical is regulated by an OSHA substance-specific health standard, the labels must meet all requirements of that standard.

Material Safety Data Sheets

Material Safety Data Sheets (MSDS) must be maintained for each hazardous chemical used by the transportation system. Transportation systems will receive appropriate MSDS from the chemical manufacturer or importer with or just prior to an initial shipment of the chemical (or with the first shipment after a MSDS update). If it is not provided, the transportation system should obtain one as soon as possible. The information contained on the MSDS must accurately reflect all scientific evidence used when making the hazard determination. Any new information regarding the hazards of the chemical or ways to protect against the hazards must be added to the MSDS within three months of discovery.

MSDSs must be readily accessible to employees when they are at their work areas. If work is carried out at more than one location, the MSDSs may be kept at a central location within the facility. MSDSs may be kept in any form, including operating procedures, and may cover groups of chemicals instead of individual chemicals where hazards of a process are particularly important. However, the required information for each chemical must remain readily accessible. In addition, MSDSs must be made available upon request of representatives of the Assistant Secretary of Labor for Occupation Safety and Health (USDOL) or Director of the National Institute for Occupational Safety and Health (USDOHHS).

A sample MSDS and instructions on what the sheet should contain is included as Exhibit 4-4.

Employee Information and Training

The transportation system must train and inform employees regarding hazardous chemicals when they are initially assigned to a particular area, or when a new hazardous chemical is introduced. This training and information sharing must include, at a minimum:

- a description of the transportation system's requirements;
- ways to detect the presence of a hazardous chemical in their work area, such as visual appearances, odor, etc.;

- physical and health hazards of chemicals;
- appropriate work practices, emergency procedures, and personal protective equipment to be used when dealing with hazardous chemicals; and
- the location, availability, and description of the overall hazard communication program, including an explanation of the labelling system, material safety data sheets, inventory sheets, site report sheets, and how employees can obtain additional information about hazardous chemicals.

The transportation system may be interested in the list of information sources included in Attachment 1-5 , which are helpful in evaluating the hazards of chemicals that they use.

FIRE SAFETY CHECKLISTS

The Fire Extinguisher Checklist (Exhibit 4-10) and the Smoke Detector Checklist (Exhibit 4-11) should be used to periodically review the operating status of fire detection and prevention equipment. They can assist individuals conducting safety inspections by ensuring completeness and accuracy. In addition, the lists document necessary improvements and can be used to follow-up on delegated tasks.

The checklists contain a column for the location of units to be reviewed. A master copy of each checklist should be created listing the fire extinguisher and smoke detector locations throughout the facility. This master list can then be used as the basis for all subsequent checks.

Each checklist has a place to indicate the status of the unit being reviewed. An "A" indicates that the unit is fully operational. A "B" indicates that the unit needs service, and a "C" designates that the unit is missing. A box at the bottom of the sheet records actions taken to bring deficiencies up to standard. Checks should be run periodically and copies of each list should be filed.

FREON RECOVERY UNITS

The refrigerants used in motor vehicle air conditioners are known as controlled substances, and are classified as either Class I or Class II type contaminants. These contaminants, when released into the air, have a damaging affect on the stratospheric ozone. Motor vehicles such as small trucks and automobiles use a Class I type contaminant known as Freon-12 in their air conditioning systems. Freon-12 is also known as CFC-12, or simply R-12. Larger transit buses use a Class II type contaminant known as Freon-22 (a.k.a. HCFC-22 or R-22) in their air conditioning systems.

Every transportation system which services, maintains, or repairs air conditioning systems in their vehicles, needs to comply with applicable subparts of 40 CFR Part 82. This section implements portions of the Clean Air Act which address the protection of stratospheric ozone. More specifically, Subpart B addresses the servicing of motor vehicle air conditioners, and Subpart F addresses recycling and emissions reduction, including the servicing of transit bus air conditioners and appliances such as household air conditioners, refrigerators, freezers, etc. The equipment and procedures used when servicing vehicle air conditioners, depends on which type of refrigerant the air conditioner uses.

This section is partitioned into two main sections. The first, entitled motor vehicle air conditioners, addresses equipment, procedures, training, and certifications needed to service, maintain, or repair air conditioners which use R-12 refrigerant. This section includes most automobiles, light trucks, and paratransit vehicles. The second section, entitled transit bus air conditioners, addresses equipment, procedures, training, and certifications needed to service, maintain, or repair air conditioners which use R-22 refrigerant. This section includes most large transit buses.

Motor Vehicle Air Conditioners

The regulations state that persons cannot knowingly release or vent Class I or II type contaminants into the atmosphere because of their damaging affect on the stratospheric ozone. Because of this damaging affect, the recovery and recycling of R-12 refrigerant is required to reduce motor vehicle air conditioner system venting during normal service operations. Recovery of refrigerant means to remove the refrigerant in any condition from the air conditioner system, without necessarily testing or processing it. This is necessary when performing repairs on an air conditioning system. Recycling refrigerant means to remove and clean the refrigerant for reuse. Recycling refrigerant, usually completed on-site, is done using oil separation, and the reduction of moisture, acidity, and particulate matter. The standards for purity of recycled refrigerant to be reused in motor vehicle air conditioners are reproduced in Attachment 1-6.

Freon recovery units, R-12 refrigerant recovery and recycling equipment, must meet minimum specifications to ensure that the R-12 can be successfully recovered and successfully recycled to the required purity levels for efficient re-use in motor vehicle air conditioners. These equipment specifications are reproduced in Attachment 1-7. The regulations state that the freon recovery units must be certified by EPA or an independent standards testing organization to meet these specifications. Any recovery and recycling equipment purchased before September 4, 1991, will be certified if EPA determines that it is substantially similar to the equipment described in Attachment 1-7. EPA does maintain a list of approved equipment by manufacturer and model.

The recommended procedure for operating the certified refrigerant recovery and recycling equipment is outlined in Attachment 1 -8. This procedure provides guidelines for technicians who are performing repairs, servicing, or maintaining motor vehicle air conditioners. All technicians who are recovering R-12 from a motor vehicle air conditioner before disposing of the air conditioner must reduce system pressure to or below 102 mm of mercury vacuum using equipment described Attachment 1-7.

No person can perform repairs or service a motor vehicle air conditioner which involves the refrigerant without using properly certified equipment (as described above), and without being certified as a Type II technician or completing a technician certification program as described below. All persons involved in repairing or servicing motor vehicle air conditioners must certify that they have acquired and are properly using approved equipment, and that they are properly trained and certified to use the equipment. The technician certification program training that must be completed includes the recommended service procedures for the containment of refrigerant, extraction and recycle equipment, and the standard of purity of refrigerant in motor vehicles. It must also include information on future technological developments, such as HFC-134a refrigerant in new motor vehicle air conditioners, the environmental consequences of refrigerant release, adverse effects of stratospheric ozone depletion, and the requirements as imposed by Section 609 of the Clean Air Act. This training may be completed on-the-job, by self study of instructional material, or on-site with an instructor, video, and hands-on demonstrations.

Technicians who have passed the required test after the certification program will receive their own certification. Technicians who receive certification may be asked to demonstrate their ability to perform proper procedures for recovering and/or recycling refrigerant using certified equipment. If they fail to perform the required tasks correctly, their certification may be revoked. These technicians must be recertified before repairing or servicing any motor vehicle air conditioners.

Transportation Systems owning approved refrigerant recycling equipment must maintain records of the names and addresses of any facility to which refrigerant was sent, as well as records that demonstrate that all persons authorized to operate the equipment are certified under a training program as described above. These records must be kept on-site and for a minimum of three years. Representatives of the ERA must also be allowed access to the premises and files upon request. Furthermore, systems who employ any person who repairs or services motor vehicle air conditioners have to certify in the form of a statement to EPA that those persons have acquired, and are properly using approved equipment and that they are properly authorized, trained and certified to use that equipment. Information that must be included is the name of the purchaser of the equipment, where the equipment is located, the equipment manufacturer's name, and equipment serial number and date of manufacture. All entities must send these certifications to: MVACs Recycling Program Manager, Stratospheric Ozone Protection Branch (6202-J). U.S. Environment Protection Agency, 401 M Street SW, Washington, D.C. 20460.

Transit Bus Air Conditioners

Transit buses use HCFC-22 (R-22) refrigerant to cool the passenger seating area of the bus. R-22, like R-12, also has a damaging affect on the ozone layer, so proper recovery of the refrigerant during service, repair, or maintenance is required using approved equipment which meets certain specifications. However, because transit buses use a different type of refrigerant than that in motor vehicles, the regulations regarding equipment and procedures for recovery and recycling are different. For example, unlike the refrigerants in motor vehicle air conditioners, refrigerants used in transit bus air conditioners may be returned to the system from which they were recovered without being recycled or reclaimed.

All recycling or recovery equipment used for refrigerant in transit bus air conditioners must be used in accordance with manufacturer's instructions unless those directions conflict with the federal requirements. It should be noted that system dependent equipment cannot be used with transit bus air conditioners containing more than 15 pounds of refrigerant. System dependent equipment is equipment that requires the assistance of components contained in the air conditioner to remove the refrigerant from the air conditioner. Any recycling and recovery equipment for transit bus air conditioners has to be certified by an approved equipment testing organization to meet all applicable regulations, including those listed below.

If the equipment was manufactured on or after November 15, 1993:

- it must be capable of achieving the level of evacuation specified in Table 1 in Attachment 1-9 under conditions specified in ARI 740-1993, a copy of which is included in Attachment 1-10;
- it must meet the minimum requirements outlined in ARI 740-1993 (Attachment 1-10);
- if the equipment has a noncondensable purge device, it cannot release more than 3% of the quantity of refrigerant being recycled through the noncondensable purging under the conditions of ARI 740-1993 (Attachment 1-10);
- it must have low loss fittings on all hoses; and
- it must have its liquid and vapor recovery rates measured under the conditions outlined in ARI 740-1993 (Attachment 1-10).

If the equipment was manufactured before November 15, 1993, it must be capable of achieving the level of evacuation specified in Table 2 in Attachment 1-9. This level of evacuation must be tested using a properly calibrated pressure gauge. All equipment must be properly labeled in a readily visible location with the date of

manufacture and serial number. The label must also contain the following statement: "This equipment has been certified by [Approved Equipment Testing Organization] to Meet ERA Requirements for Recycling or Recovery Equipment Intended for Use With [Appropriate Category of Appliance]." The label must be permanent and legible for the life of the equipment. All equipment must periodically be retested (at least once every three years after first certification) by approved testing organizations to ensure the equipment is recycling or recovering refrigerant according to specifications. As ERA maintains a list of approved equipment by manufacturer and model, the approved testing organization may also inspect all recovery and recycling equipment to ensure that the manufacturer's product line continues to meet the certification criteria.

All transportation systems who service, repair, maintain, or dispose of transit bus air conditioners must have at least one certified, self-contained recovery unit in their service facility. Any service person who will be opening a transit bus air conditioner for service, maintenance, or repair must be properly certified and must evacuate the refrigerant in the entire unit, or the part to be serviced, into a recovery or recycling machine that meets all the requirements as described above. Before opening the air conditioner unit, service personnel must evacuate to the levels shown in Tables 1 or 2 in Attachment 1-9 as applicable. However, if the maintenance, service, or repair does not involve the removal of the compressor, condenser, evaporator, or auxiliary heat exchanger coil, and if the evacuation of the transit bus air conditioner is not to be performed after the completion of the maintenance, the air conditioner must be evacuated to a pressure no higher than 0 psig before it is opened. In addition, if the levels in Table 1 in Attachment 1-9 are not attainable because leaks in the air conditioner would cause refrigerant contamination, persons servicing the air conditioner must isolate the leaking components, evacuate non-leaking components to required levels, and evacuate leaking components to the lowest level possible provided it is less than 0 psig. Note: psig, pounds per square inch gauge, is a measure of how many more pounds of pressure a gas is exerting on a container than the atmosphere exerts at sea level. For example, 0 psig is atmospheric pressure (the pressure the atmosphere exerts at sea level), and 1 psig is 1 psi above atmospheric pressure.

Any service person who will be disposing of the transit bus air conditioner system must evacuate all refrigerant in the entire unit into a recovery or recycling machine that meets all the requirements as described above. Also before disposal, technicians must evacuate the air conditioners to the levels described in the Tables 1 or 2 in Attachment 1-9, as applicable.

Persons who maintain, service, or repair transit bus air conditioners (a high pressure appliance) must be certified as a Type II technician. In order to become certified, they must complete an approved technician certification program, and pass an exam on the following subjects: Environmental impact of Type I and II contaminants such as CFCs and HCFCs, applicable laws and regulations, changing industry outlook, leak detection, recovery techniques, safety, shipping, and disposal.

Each technician who passes the required tests will receive certification, a copy of which must be kept at their place of business. Technicians who receive certification may be asked to demonstrate their ability to perform proper procedures for recovering and/or recycling refrigerant. Failure to perform adequately will result in a loss or suspension of certification.

Any owner of recovery and recycling equipment must certify to ERA in the form of a statement that they have acquired adequate approved equipment, have certified technicians operating the equipment, and are meeting all of the applicable service requirements. Information on the certification must include the name of the purchaser of the equipment, where the equipment will be located, the equipment manufacturer's name, equipment serial number and date of manufacture, and a statement that the equipment will be properly used in servicing and disposing of air conditioners and other similar appliances. West Virginia entities must send these certifications to: CAA Section 608 Enforcement Contact, EPA Region III, Mail Code 3AT21, 841 Chestnut Building, Philadelphia, PA 19107. In addition, owners of air conditioners or other appliances containing 50 or more pounds of refrigerant must keep servicing records of refrigerant purchases and additions.

UNDERGROUND STORAGE TANKS

The Hazardous and Solid Waste Amendments of 1984 extended and strengthened the provisions of the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (RCRA) of 1976. Subtitle I of RCRA provides for the development and implementation of a comprehensive regulatory program for underground storage tanks (UST) which contain controlled substances. Subtitle I also addresses releases of these substances into the environment. A controlled/regulated substance includes, but is not limited to petroleum and petroleum based substances. It does not include any hazardous waste.

Any underground storage tanks that a transportation system may own to hold petroleum or other regulated substances must meet certain performance standards. These requirements were developed in order to prevent releases due to structural failure, corrosion, spills, or overflows. EPA regulations require that by December 22, 1998, all existing UST systems must either be closed or comply with all requirements outlined for new UST systems and have a field installed cathodic protection system designed by a corrosion expert. So, all substandard UST systems must be replaced with new UST systems, upgraded according to the requirements, or closed. A summarized version of the UST requirements is shown in the flowchart in Attachment 1-11.

All owners of USTs must submit the "Notification for Underground Storage Tank" form (Exhibit 4-5) to the applicable state agency. In West Virginia, the agency is:

UST Notification
Solid and Hazardous Waste
Ground Water Branch
West Virginia Department of Natural Resources
1201 Greenbriar Street
Charleston, WV, 25311

As part of completing this form, owners and operators of UST systems must certify that proper installation procedures were followed and identify how installation was accomplished. Installation of piping and tanks must be in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory and in accordance with manufacturer's instructions. Other information that needs to be provided on the form includes certification of compliance with release detection, cathodic protection, and financial responsibility.

Requirements for New USTS

EPA requires that all new underground storage tanks and associated piping that routinely contains regulated substances and is in contact with the ground be designed, constructed, and protected from corrosion according to standards of a nationally recognized organization or an independent testing laboratory. The three fabrication techniques for new USTs are: fiberglass-reinforced plastic, steel-fiberglass-reinforced plastic composite, or coated and cathodically protected steel. Fiberglass-reinforced plastic and cathodically protected steel are appropriate for piping. Concrete, stainless steel, and other techniques may be used as long as their corrosion protection and construction methods prevent the release of materials in a manner that is no less protective of the environment than the specific techniques mentioned above. In addition, metal tanks and piping without additional corrosion protection are allowed provided they are installed at a site that has been determined by a corrosion expert not to be corrosive enough to cause a release due to corrosion during the tank's operating life.

All steel tanks and piping must be cathodically protected with a suitable dielectric material. This protection system must be designed by a corrosion expert. The cathodic protection system must be operated and maintained to provide corrosion protection to all metal parts of the UST system that routinely contain regulated substances and are in contact with the ground. The cathodic protection systems must be tested within 6 months of installation and at least every three years following. The criteria used to determine that the corrosion protection system is adequate must be in accordance with a code of practice developed by a nationally recognized organization. Steel tanks and piping with an impressed current cathodic protection system must be designed to allow inspection, and must be inspected every 60 days to ensure that the equipment is running properly. Adequate records of the results of inspections must be maintained to demonstrate compliance with the regulations.

LIST systems must have spill and overfill protection equipment to prevent any spilling and overfilling associated with product transfer to the LIST system. The owner and operator of the UST must ensure that the volume available in the tank is greater than the volume of product being transferred to the tank, before the transfer is made. The transfer process must also be constantly monitored. The equipment must include the following components:

- spill prevention equipment that will prevent the release of product to the environment when the transfer hose is detached from the fill pipe (e.g. a spill catchment basin); and
- overfill protection equipment that
 - shuts off flow into the tank when the tank is no more than 95% full, or
 - alerts the transfer operator when the tank is no more than 90% full by restricting flow or triggering an alarm, or
 - restricts flow 30 minutes prior to overfilling, alerts the operator via alarm one minute prior to overfilling, or automatically shuts off filling such that none of the top fittings are exposed to product.

Alternative equipment may be used if it is shown to be no less protective. In addition, the equipment does not need to be used if the UST is filled with transfers of 25 gallons or less.

If a spill or overflow of petroleum does occur that causes a sheen on nearby surface water or is more than 25 gallons, it must be immediately contained and cleaned up, reported to the ERA within 24 hours, and corrective action started. If the spill or overflow of petroleum is less than 25 gallons, it must be immediately contained and cleaned up. If clean up cannot be accomplished within 24 hours, the ERA must be notified immediately.

Upgrading Existing UST Systems

If an existing UST will not be replaced with a new tank or permanently closed, it must be upgraded to meet a number of requirements. Piping and spill and overfill equipment must be upgraded to conform with all new UST system requirements discussed earlier. Steel tanks must be upgraded by interior lining, cathodic protection, or internal lining combined with cathodic protection.

If the UST will be upgraded by cathodic protection, the cathodic protection system must meet all requirements for new UST systems, and the integrity of the tank must be ensured by one of the following methods:

- internal inspection for structural soundness and lack of corrosion holes prior to the installation of the cathodic protection system; or
- if the tank has been installed for less than 10 years, monthly monitoring for releases using automatic tank gauging, vapor monitoring, ground water monitoring, interstitial monitoring, or other approved methods (refer to Attachment 1-12, D-H); or
- if the tank has been installed for less than 10 years and is checked for corrosion holes by conducting two tightness tests (refer to Attachment 1-12, C), one before the cathodic protection system is installed, and one between 3 and 6 months following its first operation; or
- by some other method determined by EPA to prevent releases as effectively as the three previously mentioned methods.

If upgrading will be completed by lining, the lining must be compatible with the substance being stored, and within 10 years of installation (and every 5 years thereafter), it must be internally inspected, found structurally sound, and meeting all design performance specifications. The installation of the lining must meet all requirements for repairs made to LIST systems which are outlined below:

- metal pipes and fitting that have released product must be replaced, while fiberglass may be repaired;
- repaired tanks and piping must be tightness tested (refer to Attachment 1-12, C and Attachment 1-13, B) within 30 days of being repaired unless the repaired tank is internally inspected, or the repaired portion is monitored and tested monthly for releases (refer to Attachment 1-12, D-H), or another test method approved by the implementing agency to be no less protective;
- within 6 months following the repair of any cathodically protected UST system, the cathodic protection system must be tested as described previously;
- UST system owners and operators must maintain records of each repair for the remainder of the operating life of the UST system.
- repairs must be conducted according to a code of practice developed by a nationally recognized association or an independent testing laboratory, and in the case of fiberglass-reinforced plastic tanks repairs may be made by the manufacturer's authorized representative.

If the UST will be upgraded by internal lining combined with cathodic protection, the cathodic protection system must meet all requirements for new UST systems, and the lining must be installed and meet the requirement for repairs made to UST systems.

Owners and operators of UST systems must fully cooperate with inspections, monitoring, and testing conducted by the EPA, as well as requests for document submission, testing, and monitoring by the owner. Owners and operators must submit the following information to the EPA:

- notification for all UST systems (Exhibit 4-5);
- reports of all suspected and confirmed releases, spills, and overflows;
- corrective actions taken, including initial abatement measures, initial site characterization, free product removal, investigation of soil and groundwater cleanup, and corrective action plan; and
- notification before permanent closure.

Owners and operators must also maintain the following information:

- a corrosion expert's analysis of site corrosion potential if corrosion protection is not used
- documentation of operation of corrosion protection equipment;
- documentation of UST system repairs;
- compliance with release detection requirements, including written performance claims and testing for five years, results of sampling, monitoring, or testing for at least 1 year (except tank tightness testing which must be kept until the next test), documentation of all calibration, maintenance, and repair of release detection equipment for at least one year after servicing, and schedules of required maintenance and calibration for five years from the date of installation; and
- results of the site investigation conducted for a permanent UST closure.

This information must be maintained on-site or at a readily available alternative site. In case of permanent closure, closure records may be mailed to the EPA.

Release Detection Methods for USTS

Owners and operators of all UST systems must provide a method for detecting releases from any portion of the tank or underground piping that contains product. Detection equipment must be installed, calibrated, operated (including maintenance and service checks) according to manufacturer's instructions. Any UST system that cannot meet the release detection system requirements must be closed immediately. Performance requirements for different release detection methods can be found in Attachment 1-12.

Tanks containing petroleum must be monitored for release according to the flowchart shown in Attachment 1-14. Monthly release detection may be accomplished using any one of methods D-H listed in Attachment 1-12. New or upgraded UST systems containing petroleum that meet the monthly inventory control requirements listed in A of Attachment 1-12, may use monthly release detection or tank tightness testing (C) at least every 5 years until December 22, 1998, or until 10 years after the tank is installed, whichever is later. After 10 years, monthly release detection is required. UST systems containing petroleum which have not been upgraded and are still substandard, must use either monthly release detection, or monthly inventory control requirements listed in A of Attachment 1-12, and annual tank tightness testing (C) until December 22, 1998, when the tank must be completely upgraded or permanently closed. USTs with a capacity of 550 gallons or less may use weekly tank gauging (B).

The underground piping portion of petroleum USTs must be monitored for release according to the flowchart in Attachment 1-15. Release detection methods for piping are found in Attachment 1-13. Pressurized piping must be equipped with an automatic line leak detector (A) and have an annual line tightness test (B) or monthly monitoring (C). Suction piping must have a line tightness test (B) at least every three years, or monthly monitoring (C). No release detection is required for suction piping that:

- operates below grade at less than atmospheric pressure;
- operates below grade and is sloped so that contents will drain into the tank with a release of suction (European construction); and
- has only one check valve in each suction line which is located directly below and as close to the suction pump as practical.

Release Reporting, Investigation, and Confirmation

Owners and operators must notify the EPA within 24 hours if one of the following situations occurs:

- the discovery of the regulated substance at the LIST site or in the surrounding area (this includes free product or vapors in the soil, basements, sewers, utility lines, and nearby surface water); or
- unusual operating conditions, such as erratic behavior of product dispensing equipment, sudden loss of product from the UST system, or the unexplained presence of water in the tank; or
- the release detection system indicates a release of material, unless the monitoring device is found to be defective and immediate replacement does not confirm the results, or a second month of inventory results does not confirm initial reports of a leak.

Unless corrective action is taken immediately for an obvious leak, owners and operators must immediately investigate and confirm all suspected releases within seven days. In addition, if off-site impacts such as free product or vapors in the soil, basements, sewers, utility lines, and nearby surface or drinking water, are observed, ERA may require the owners of UST systems to investigate whether leaks in their UST systems are the cause.

In order to confirm a suspected leak, tank and line tightness tests must be performed according to the requirements in Attachments 1-12 and 1-13. If a leak is found in the system, corrective action must be taken immediately. If the tests do not confirm a leak, and environmental contamination is not the cause for the investigation, no further investigation is necessary. However, if the tests do not confirm a leak, but environmental contamination is the basis for suspecting a leak, a site check must be performed. For a site check, owners and operators must measure for the presence of a release where contamination is most likely to be present at a UST site. Factors to be considered include type of backfill, nature of stored substance, depth of ground water, and type of initial alarm. If the test results from UST site investigation indicate a release, corrective action must be taken immediately. If the tests do not confirm a release, no further investigation is necessary. These procedures are summarized in the flowchart in Attachment 1-16.

Release Response and Corrective Action for UST Systems Containing Petroleum

If a release of petroleum or other regulated substance from a UST has been confirmed, the owners and operators must report the release to EPA via telephone or E-mail, take immediate action to prevent any further release, and identify and minimize fire, explosion, and vapor hazards. These initial steps must be completed within 24 hours of release.

The next set of steps, known as the initial abatement steps, include the following:

- remove as much of the substance from the UST to prevent further release;
- visually inspect aboveground and exposed below ground releases and prevent further spread of the substance into the soil and groundwater;
- continue to identify and minimize fire, explosion, and vapor hazards posed by the substance that has entered subsurface structures (sewers, basements, etc.);
- treat or dispose of contaminated soils (must follow state and local requirements for treatment or disposal of soils);
- measure for the presence of a release where contamination is most likely to be present at a UST site, unless the source has been determined by an earlier site check; and
- investigate and begin removing free product as soon as practicable.

Within 20 days after release confirmation, the owners and operators must submit a report to EPA summarizing their initial abatement steps.

Within 45 days of release confirmation, the owners and operators of the UST must submit to the EPA an applicable and technically adequate report that includes the following information about the site and nature of the release:

- all information gained while confirming the release and completing the initial abatement measures;
- data on the nature and estimated quantity of release;
- data from available sources and/or site investigations concerning surrounding populations, water quality, use and location of wells potentially affected by the release, subsurface soil conditions, locations of subsurface sewers, climatological conditions, and land use;
- results of completed site checks; and
- results of free product investigations.

If free product has been detected, as much of it as possible must be removed. At a minimum, the spread of the free product should be eliminated. Owners and operators must minimize the spread of the product using recovery and disposal techniques applicable to site hydrogeologic conditions that treat, discharge, or dispose of recovery by-products in compliance with all local, state, and federal regulations.

Flammable products should be handled to prevent fires or explosions. Within 45 days of release confirmation, the owners and operators of the UST must submit to the EPA a report that includes the following information:

- name of the person responsible for free product removal;
- estimated quantity, type and thickness of free product observed or measured in wells, boreholes, or excavations;
- whether discharge will take place on or off-site during recovery, and where discharge will be located;
- type of free product recovery system used;
- the type of treatment applied to and effluent quality expected from any discharge;
- steps taken or previously taken to obtain discharge permits; and
- disposition of the recovered free product.

The owners and operators must also submit a report as soon as practicable, or in accordance with a schedule set by EPA that determines the full extent of contamination in soil and groundwater, if any of the following conditions exists:

- groundwater wells have been affected by the release;
- free product needs to be recovered;
- there is evidence that contaminated soils are in contact with groundwater;
- EPA requests an investigation on the potential affect of contaminated soil or groundwater on nearby surface water or ground water sources.

After reviewing information submitted to their offices, the EPA may determine that the owner and operator must submit a plan for corrective action regarding contaminated soils and groundwater. If EPA determines that a corrective action plan (CAP) is necessary, the owner and operator of the UST system must submit a plan in EPA's specified format that provides for the "adequate protection of human health and the environment." This plan must be reviewed and approved by the EPA. The owner and operator must implement the plan with any modifications that EPA provides as soon as it has been approved. The owner and operator may start cleanup before approval of the CAP, as long as EPA is notified, and the process complies with all applicable EPA regulations.

Closure of UST Systems and Out-of-service Procedures

By December 22, 1998, all UST systems must be replaced or upgraded to meet the requirements outlined above for new UST systems, or be permanently closed. EPA must be notified within 30 days if a UST will be permanently closed or if a change-in-service will be made. A change-in-service occurs when the UST will remain in service to store a non-regulated substance instead of being closed.

After notifying EPA, but before permanent closure or change-in-service is completed, the owner and operator must perform a site assessment to measure for the presence of a release. If either the vapor monitoring or groundwater monitoring release detection methods described in Attachment 1-12 E and F are performed, and no release is detected, the requirements are satisfied. If contaminated soils, groundwater, or vapor is detected, release response and corrective action measures must be taken.

In order to permanently close a tank, all liquids and accumulated sludge must be removed from the tank, and the tank must be filled with an inert solid material or completely removed from the ground. In the case of a change-in-service, the tank must be thoroughly cleaned and emptied of all liquids and accumulated sludge. In both cases, a site assessment must be conducted before the procedures are complete.

When directed by EPA, the owner and operator of a UST system permanently closed before December 22, 1988 (inception date of the legislation), must assess and close the UST using the process described above. This will usually only be done if releases pose a current or potential threat to human health and the environment.

If the UST is to be permanently closed, the owner and operator must maintain records demonstrating compliance with the closing requirements. The results of the site assessment must be kept for at least three years after closure. This documentation must be kept by the owners and operators of the UST, the new owners of the closed UST site, or mailed to EPA.

If a UST system is to be closed only temporarily, owners and operators still need to comply with the corrosion protection and release detection requirements described earlier. If the UST system is empty (there is no more than 2.5 cm of residue in the tank or less .3% by weight of the total capacity of the tank remains), release detection requirements do not need to be met. If the UST is to be closed for more than 3 months, vent lines must be open and functioning while other lines, pumps, manways, and other equipment must be capped and secured. If the UST will be closed for more than 12 months, the owners and operators must permanently close the tank unless it meets all requirements of new or upgraded UST systems, excluding spill and overflow equipment. Owner? and operators of temporarily closed substandard USTs may apply to EPA for an extension for permanent closure at the end of the 12 month period and after a site assessment has been completed.

Financial Responsibility

Either the owners or operators of UST systems that contain petroleum must demonstrate financial responsibility. That is, they must show that they can pay for corrective actions, such as cleanups, and third-party damages for bodily injury and property damage that may result from sudden accidental releases as well as nonsudden accidental releases from their UST systems. This requirement applies to all transit authorities. Transportation systems must show that they have at least \$1 million "per occurrence" coverage and annual aggregate coverage of \$1 to \$2 million based on the number of tanks that they own/operate (\$1 million for 1 to 100 tanks or \$2 million for 101 or more tanks). Financial responsibility for the total required amount must be maintained at all times.

Financial responsibility may be accomplished and demonstrated through insurance coverage or other acceptable financial mechanisms. Owners/operators may use combinations of mechanisms to meet the financial requirements. These mechanisms include the following:

- « financial test of self insurance for firms/entities that have a tangible net worth of over \$10 million to show that costs of potential spills can be met;
- insurance coverage from a private insurer or risk retention group;
- a guarantee from a corporate relative or another firm with whom you have a substantial business relationship that can pass the financial test for self-insurance plus a standby trust fund;
- a surety bond for the proper amount plus a standby trust fund;
- a letter of credit plus a standby trust fund; and
- a fully funded trust fund.

Unfortunately, many of these mechanisms are not appropriate for transportation systems. The financial test, for example, is not applicable because it uses a net worth indicator, which is unavailable or inappropriate for local government agencies, including transit authorities, or does not measure financial strength in the same way it does for private firms. The corporate financial test also requires reporting to the U.S. Securities Commission (SEC) or Dun and Bradstreet which is not applicable to government entities.

In response to this problem, ERA has developed four alternate mechanisms that local governments, including transit authorities, may use to demonstrate financial

responsibility. These mechanisms, which may be combined or substituted to meet the total financial amount needed, are as follows:

- **Local Government Bond Rating Test.** Any general purpose local governments with outstanding issues of general obligation bonds rated by Standard and Poor's or Moody's as "investment grade" may self-insure as long as the outstanding bonds are \$1 million or more. Similarly, special districts, such as transit authorities, that do not have the authority to issue general obligation bonds may self-insure if they have a minimum of \$1 million in outstanding revenue bonds rated "investment grade". In order to demonstrate compliance with this test, the CFO of general purpose local government owner or operator (or CFO of local government owner or operator other than a general purpose government) must sign a letter worded exactly as shown in Exhibits 4-6 or 4-7 as appropriate, with relevant information replacing bracketed areas. A copy of the bond rating within the last 12 months by Moody's or Standard and Poor's must also be maintained. If EPA determines that the local government owner or operator no longer meets the local government bond rating test requirements, the local government must find alternative coverage within 30 days. If the local government owner or operator determines that it no longer meets the local government bond rating test requirements, the local government must find alternative coverage within 150 days.

- **Local Government Financial Test.** A worksheet (included in Exhibit 4-8) has been developed that recognizes the unique financial structure of government entities. After completing the worksheet, entities above a given score will be allowed to self-insure. In order to demonstrate compliance with this test, the CFO of the local government owner or operator must sign a letter worded exactly as shown in 40 *CFR* Part 280 Subpart H, Section 280.105, with relevant information replacing bracketed areas. This must be signed within 120 days of the close of the financial reporting year. If EPA determines that the local government owner or operator no longer meets the local government bond rating test requirements, the local government must find alternative coverage within 30 days. If the local government owner or operator determines that it no longer meets the local government bond rating test requirements, the local government must find alternative coverage within 150 days.

- **Local Government Guarantee.** A local government obtains a guarantee from its state or another local government with which it has a "substantial governmental relationship." In other words a business relationship to such an extent that a guarantee contract incident to the relationship is valid and enforceable. The state or other local government submit documentation that it qualifies as a guarantor using the local

government financial test, the local government bond rating test, or the local government fund test. If the local government guarantor cannot demonstrate financial assurance, the government entity must find alternative coverage within 120 days (termination of guarantee). The local government guarantee must be worded exactly as shown in the applicable section of 40 *CFR* Part 280 Subpart H, Section 280.106, with relevant information replacing bracketed areas.

- Local Government Fund. A local government owner may self-administer a dedicated LIST response fund as long as the fund is dedicated:
 - to pay for taking corrective action and for compensating third parties for bodily injury and property damage caused by accidental releases from USTs and is funded for the full amount of required coverage or part of the required coverage and is combined with other mechanisms; or
 - as a contingency fund for general emergencies including taking corrective action and for compensating third parties for bodily injury and property damage cause by accidental releases from USTs and is funded for five times the full amount of required coverage or part of the required coverage and is combined with other mechanisms; or
 - to pay for taking corrective action and for compensating third parties for bodily injury and property damage cause by accidental releases from USTs and a payment is made to the fund once every year for 7 years until the fund is fully funded for the full amount.

In order to demonstrate compliance with the requirements of the local government fund, the CFO of the local government owner or operator must sign a letter worded exactly as shown in 40 *CFR* Part 280 Subpart H, Section 280.107, with relevant information replacing bracketed areas.

If the provider of financial responsibility (local government guarantee, surety bond, letter of credit, etc) cancels coverage or fails to renew coverage for any reason other than bankruptcy) through a notice of termination by certified mail, alternate coverage must be obtained within 60 days after receipt of notice of termination. If alternative coverage is not obtained in 60 days, the owner/operator must notify EPA and submit:

- the name and address of the provider of financial assurance;
- effective date of termination; and

- evidence of the financial assistance mechanism subject to termination.

All transportation systems which own USTs must maintain all significant and necessary records and documents applicable to the type of coverage you are using, as well as a copy of a certification of financial responsibility found in Exhibit 4-9. These documents must be kept until the LIST is closed. These records need to be filed with ERA under the following conditions:

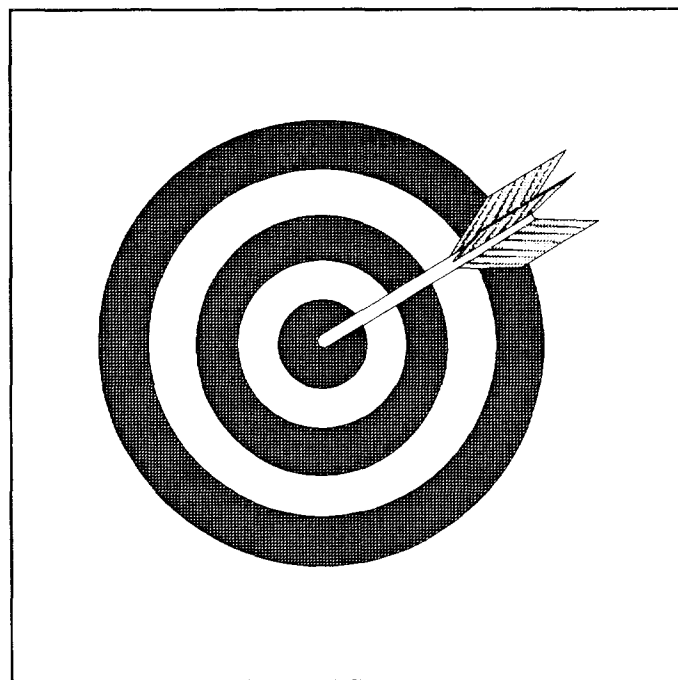
- a new UST is installed;
- within 30 days after a leak in the UST has been confirmed;
- notification is received that the current method of coverage will be canceled, or will not provide sufficient coverage, and you are unable to get other coverage; or
- ERA or a state agency requests the records.

FACILITY SAFETY CHECKLIST

A checklist covering the various activities to be conducted for this portion of the safety program is included as Exhibit 4-12. It is a top level checklist intended to help you make sure all activities have been completed.

SECTION 1

ATTACHMENTS



This page left intentionally blank.

ATTACHMENT 1-1 HAZARD ASSESSMENT

Although it is impossible to accurately identify and correct every dangerous situation, many accidents can be avoided through careful prior analysis. This practice is called Hazard Assessment, and it has two important components.



The first component is to determine the likelihood that the hazard could produce an accident. This process entails a full evaluation of how frequently the hazard is encountered. For example, low head clearance on one type of vehicle could be encountered frequently by both passengers and the driver. Another, less likely, hazard could involve the combustion of hazardous materials in a storage area due to extreme heat. In either case, an accurate determination of the possibility that an accident could occur is crucial to assessing the hazard correctly.

The second component of performing Hazard Assessment is the determination of the potential severity of an accident. This process involves carefully estimating the potential effects of an accident caused by the hazard. In the two examples used previously, the severity of each would be very different. In the case of the low head clearance, it is possible that a passenger or employee might get a concussion. The second example (the combustion of hazardous materials) has the potential for death or serious injury.

The practice of hazard assessment combines these two components (likelihood and potential severity) to form an overall determination of the hazard. A complete safety program therefore incorporates this type of analysis into its activities.

SAMPLE HAZARD IDENTIFICATION AND ANALYSIS METHODOLOGY

One way to conduct hazard assessments is to use a Hazard Assessment Matrix (Figure 1-1). The Matrix condenses hazard assessment into a chart and prioritizes those hazards that are evaluated.

Two hazard severity categories are used to designate the magnitude of the "worst case" potential effects of the hazard.

- **Category I - Critical**

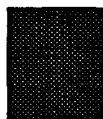
Hazard can result in severe injuries or death to passengers, employees, or others who come into contact with the Transportation System and/or cause major property damage.

FREQUENCY OF OCCURRENCE	HAZARD CATEGORIES	
	CRITICAL I	MARGINAL II
A FREQUENT	IA	IIA
B REMOTE	IB	IIB

HAZARD RISK INDEX

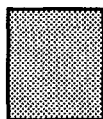
CRITERIA

IA



UNACCEPTABLE OR UNDESIRABLE
(MANAGEMENT DECISION NECESSARY)

IIA, IB



ACCEPTABLE WITH MANAGEMENT REVIEW

MB



ACCEPTABLE WITHOUT MANAGEMENT REVIEW

**FIGURE 1-3
HAZARD ASSESSMENT MATRIX**

- **Category II - Marginal**

Hazard can result in minor injury or negligible property damage.

After hazards are assessed for their potential severity, they can be examined to determine the probability that they may lead to an accident. As an increase in knowledge about safety is established through the course of the PVS Safety Program, prior accident information can be factored into the probability analysis if it is appropriate to do so. The following two categories are used to determine the probability of a hazard.

- **A - Frequent**

The hazard is likely to cause an accident on a recurrent basis.

- **B - Remote**

An accident is unlikely but possible during the life of the hazard.

HAZARD RESOLUTION METHODS

After the magnitude and likelihood of possible accidents due to apparent hazards have been assessed, the list will be prioritized into risk categories. As illustrated in the Hazard Assessment Matrix, each hazard will be judged to be:

- unacceptable or undesirable (management decision required);
- acceptable with management review; or
- acceptable without management review.

Investigators should report back to the Committee a description of the hazard, along with a recommendation on how the potential hazard should be categorized. This assessment should be recorded and become part of the permanent record of the Safety and Accident Review Committee's activities. In addition, investigators are to be prepared to discuss several alternative solutions to each safety problem and their associated costs. These procedures are established to expedite the process of implementing solutions.

The order of priority in finding solutions for potential hazards are: elimination of the hazard; control of the hazard; and acceptance of the hazard. Measures that may be recommended by the Safety and Accident Review Committee to counteract

potential hazards can include:

- design changes;
- safety devices;
- warning devices; and/or
- safety procedures.

When attempting to mitigate a potentially hazardous situation, members of the Safety and Accident Review Committee must conduct trade-off analyses that take into account safety issues, along with costs, potential losses and service impacts. For this reason resolution strategies must be flexible to match an appropriate solution to each situation.

**ATTACHMENT 1-2
VEHICLE ACCIDENT REVIEW**

Members of the Safety and Accident Review Committee are responsible for evaluating an accident that has already occurred to determine whether the accident was "preventable". The group that meets for this purpose should be composed of at least one member each from both management and the vehicle operators, plus an independent evaluator.



The independent evaluator could be an insurance adjuster, police official or another person familiar with vehicle accidents. The most important criteria, however, is independence so that the committee's decisions cannot be questioned by either side. A member of the transportation system's Board of Directors, for example, would not be an appropriate person to serve on the committee as an independent voice.

In some small systems the system manager serves on the committee. In larger systems the head of operations may assume the responsibility of representing management. In either case the management representative has the dual role of making sure that management's interest in discouraging accidents is represented while at the same time maintaining a sense of fairness throughout the evaluation process.

DRIVER REPRESENTATION

Drivers should be chosen to serve as part of the accident review group by, above all else, their accident history. Ideally, drivers who assist in accident reviews should not have any accidents on their record and should currently be driving for the transportation system. In cases where this is not possible, transportation systems will have to use their best judgement from the people available. Many times the safest drivers are neither the most vocal nor most popular. However, the reason drivers with accident-free records should be chosen is that they have a critical eye towards accident prevention (defensive driving). This perspective is different than the leadership qualities that both management and employees would like to see in a supervisor. Therefore, it is important to choose drivers who have a proven record of safety.

ACCIDENT REVIEW PROCEDURES

The committee should review accidents at a frequency that is comparable to the rate of accidents. If the system is small, accidents may occur infrequently. In such cases, it is a good idea to have the committee review the criteria for judging accidents at least once a year.

Disciplinary action is the responsibility of management once the committee reaches a decision on each accident. Final determination obviously rests in the hands of the manager of the transportation system. For this reason, it is best if that person is separated from the assessment process.

ATTACHMENT 1-3 ACCIDENT PREVENTABILITY CRITERIA

In order to judge the preventability of an accident, the accident review group should use criteria that have been developed by the National Safety Council. The basic rule is that a preventable accident is one in which the driver failed to do everything he or she could reasonably have done to avoid it. A non-preventable accident, one in which the driver did everything he or she could to prevent it. In order to clarify what is and is not preventable, the National Safety Council has prepared the following list of preventable accidents.



INTERSECTIONS

It is the responsibility of professional drivers to approach, enter, and cross intersections prepared to avoid accidents that might occur through the action(s) of other drivers. Complex traffic movement, blind intersections, or failure of the other driver to conform to the law or traffic control devices will not automatically discharge an accident as non-preventable. Intersection accidents are preventable even though the professional driver has not violated traffic regulations. His/her failure to take precautionary measures prior to entering the intersection are factors to be studied in making a decision. Professional drivers should be held accountable for avoiding intersection collisions due to the poor decisions or driving skills of others. Lane crossings, excessive speed, and sudden emergencies from blind spots by other drivers do not alter the fact that the accident could have been prevented.

VEHICLE AHEAD

Regardless of the abrupt or unexpected stop of the vehicle ahead, drivers can prevent rear-end collisions by maintaining a safe following distance at all times. This includes being prepared for possible obstructions on the highway, either in plain view or hidden by the crest of a hill or the curve of a roadway. Overdriving headlights at night is a common cause of rear-end collisions. Night speed should not be greater than that which will permit the vehicle to come to a stop within the forward distance illuminated by the vehicle's headlights.

VEHICLE BEHIND

Investigation often discloses that drivers risk being struck from behind by failing to maintain a margin of safety in his/her own following distance. Rear-end collisions preceded by a roll-back, an abrupt stop at a grade crossing, when a traffic signal changes, or when a driver fails to signal a turn at an intersection, should be charged preventable. Failure to signal intentions or to slow down gradually should be considered preventable.

PASSING

Failure to pass safely indicates faulty judgement and the possible failure to consider one or more of the important factors a driver must observe before attempting a maneuver. Unusual actions of the driver being passed or of oncoming traffic might appear to exonerate a driver involved in a passing accident; however, the entire passing maneuver is voluntary and the driver's responsibility.

BEING PASSED

Sideswipes and cut-offs involving a professional driver while he or she is being passed are preventable when he or she fails to yield to the passing vehicle by slowing down or moving to the right where possible.

ONCOMING

It is extremely important to review the action of the driver when involved in a head-on or sideswipe accident with a vehicle approaching from the opposite direction. Exact location of vehicles, prior to and at the point of impact, must be carefully verified. Even though an opposing vehicle enters a driver's traffic lane it may be possible for the driver to avoid a collision. For example, if the opposing vehicle was in a passing maneuver and the driver failed to slow down, stop, or move to the right to allow the vehicle to re-enter his/her own lane, he/she has failed to take action to prevent the occurrence. Failing to signal the opposing driver by flicking the headlights or sounding the horn should also be taken into account.

FIXED OBJECTS

Collisions with fixed objects are preventable. They usually involve failure to check or properly judge clearance. New routes, staged delivery points, resurfaced pavements under viaducts, inclined entrances to docks, marquees projecting over the traveled section of road, and similar situations are not, in themselves, valid reasons for excusing the driver from being involved. He or she must be constantly on the lookout for such conditions and make the necessary allowances.

PEDESTRIANS

Traffic regulations and court decisions generally favor the pedestrian hit by a moving vehicle. An unusual route of a pedestrian at mid-block or from between parked vehicles does not necessarily relieve a driver from taking precautions to prevent such accidents. Whether speed limits are imposed in the area or not, speed too fast for conditions may be involved. School zones, shopping areas, residential streets, and other areas with special pedestrian traffic must be traveled at reduced speeds designed for the particular situation. Bicycles, motor scooters, and similar equipment are often operated by young and inexperienced operators who can cause transit

drivers problems. The driver who fails to reduce his or her speed when these kinds of vehicles are on the road has failed to take the necessary precautions to prevent an accident. Keeping within posted speed limits is not taking the proper precaution when unusual conditions call for voluntary reduction of speed.

PRIVATE PROPERTY

When a driver is expected to make pick-ups or drop-offs at unusual locations, or on driveways not built to support heavy paratransit or transit vehicles, it is his/her responsibility to discuss the operation with transportation management and to obtain permission prior to entering the area.

PASSENGER ACCIDENTS

Passenger accidents in any type of vehicle are preventable when they are caused by faulty operation of the vehicle. Even though the incident did not involve a collision of the vehicle, it must be considered preventable when your driver stops, turns, or accelerates abruptly. Emergency action by the driver to avoid a collision that results in passenger injury should be checked to determine if proper driving prior to the emergency would have eliminated the need for the evasive maneuver.

NON-COLLISION

Many accidents, such as overturning, or running off the road, may or may not result from emergency action by the driver to preclude being involved in a collision. Examination of his/her driving procedure prior to the incident may reveal speed too fast for conditions, or other factors. The driver's actions prior to involvement should be examined for possible errors or lack of defensive driving practices.

FAILURE TO ADJUST FOR CONDITIONS

Adverse weather conditions are not a valid excuse for being involved in an accident. Rain, snow, fog, sleet, or icy pavements have never caused an accident. These conditions merely increase the hazards of driving. Failure to adjust driving to the prevailing weather conditions, should be cause for labeling an accident preventable. Failure to use safety devices such as chains, sanders, etc., provided by the transportation system, should be cause for a preventable decision when it is reasonable to expect the driver to use such devices.

MISCELLANEOUS

Improper use of side or rear doors, or passenger accidents resulting from passengers hanging out of windows are preventable by the driver.

This page left intentionally blank.

ATTACHMENT 1-4 ANTI-DRUG AND ALCOHOL MISUSE POLICIES

PURPOSE

The purpose of the policy should be to ensure compliance with the U.S. DOT regulations and to support the goal of a drug and alcohol-free workplace. The presence of drugs and alcohol in the body at levels exceeding established thresholds and detectable by the required testing is prohibited. Any use of prohibited drugs or alcohol creates the potential for degradation of job performance. Some suggestions to help you formulate an effective anti-drug and alcohol policy are as follows.



- The policy should reflect management commitment to a drug- and alcohol-free transit operation.
- The policy should be designed to help people, not hurt them.
- The policy should be designed to protect employees and the public from injury and economic loss due to the prohibited actions of covered individuals.
- The policy should help to create a deterrent environment discouraging use, possession, and sale of drugs and alcohol on or off the operator's property.
- The policy should be designed to provide information to those who want it, offer help to those who need it, and develop skills in those who need to apply them.
- The policy should provide a consistent process for disciplinary action (including termination) when necessary.
- The policy should not place moral definitions on use and abuse.
- The policy should not place all employees under a cloud of suspicion or coercion.
- The policy should not attempt to do the job of law enforcement authorities.

SUGGESTED ELEMENTS OF AN EFFECTIVE ANTI-DRUG AND ALCOHOL MISUSE POLICY

Two FTA Anti-Drug and Alcohol Misuse regulations encourage operators to develop a consolidated statement if they can. However, because the Alcohol Misuse Policy requirements have additional elements not required in the Anti-Drug Policy, consolidation into a single policy may be difficult. The text below presents the required elements of the Anti-Drug Policy and also the Alcohol Misuse Policy.

POLICY STATEMENT CONTENTS

The policy statement shall be adopted by the local governing board of the employer or operator, be made available to each covered employee, and shall include, at a minimum, detailed discussion of the following.

- The identity of the person designated by the employer to answer employee questions about the anti-drug program.
- The categories of employees who are subject to the provisions.
- Specific information concerning the behavior that is prohibited.
- The specific circumstances under which a covered employee will be tested for prohibited drugs under the provisions.
- The procedures that will be used to test for the presence of drugs, protect the employee and the integrity of the drug testing process, safeguard the validity of the test results, and ensure the test results are attributed to the correct covered employee.
- The requirement that a covered employee submit to drug testing.
- A description of the kind of behavior that constitutes a refusal to take a drug test and a statement that such a refusal constitutes a verified positive drug test result.
- The consequences for a covered employee who has a verified positive drug test result or refuses to submit to a drug test, including the mandatory requirements that the covered employee be removed immediately from his or her safety-sensitive function and be evaluated by a substance abuse professional.
- If the employer implements additional elements of an anti-drug program, the employer shall give each covered employee specific information concerning which provisions are mandated and which are not.

Requirement to Disseminate Policy

Each employer shall provide written notice to every covered employee and to representatives of employees' organizations of the employer's anti-drug policies and procedures.

Education and Training Programs

Each employer shall establish an employee education and training program for all covered employees, including the following.

- Education. The education component shall include display and distribution to every covered employee of: informational material and a community service hot-line telephone number for employee assistance, if available.

- Training.
 - Covered employee. Covered employees must receive at least 60 minutes of training on the effects and consequences of prohibited drug use on personal health, safety, and the work environment, and on the signs and symptoms which may indicate prohibitive drug use.

 - Supervisors. Supervisors who may make reasonable suspicion determination shall receive at least 60 minutes of training on the physical, behavioral, and performance indicators of probable drug use.

The following statements are recommended for inclusion in your written anti-drug policy, in addition to the basic U.S. DOT requirements¹.

- The Transit system's Senior Management is committed to a drug and alcohol-free workplace, which protects the operations most valuable resource, its employees, as well as the safety and health of the public.

- The manufacture, use, sale, distribution, possession, or presence in the body of prohibited drugs in the workplace may result in termination.

- The legitimate use of controlled substances prescribed by a licensed

¹ Partial Sources: Implementation Guidelines for Anti-Drug Programs in Mass Transit, U.S. Department of Transportation, Urban Mass Transportation Administration. UMTA-IT-06-0190-89-1, March 1989; Federal Register. February 15, 1994; and Implementation Guidelines for Drug and Alcohol Regulations in Mass Transit, U.S. Department of Transportation, Federal Transit Administration. April, 1994.

physician is not prohibited. Employees in sensitive-safety positions should inquire of their physicians, and notify the appropriate employer representative, of the effect of the use of prescription medications which may adversely affect job performance.

- All employees in sensitive-safety positions shall be subject to urine drug testing prior to employment or assignment from a non-safety sensitive to a safety sensitive position, for reasonable suspicion, following an accident, on an unannounced random basis, and prior to return to duty if they fail to pass a test.
- Any person who fails to pass a required drug test shall be subject to disciplinary action, up to and including termination.
- Any person who refuses a drug test may be subject to termination.
- Employees are encouraged to voluntarily utilize the services of the employee assistance program (if provided) to deal with drug use before it affects on-the-job performance. However, voluntary self-referral to the employee assistance program shall not relieve the employee from responsibility for adequate job performance. Self-referral after notification of a required drug test will not eliminate the requirements to take such a test, nor will it preclude the taking of disciplinary action against an individual who fails a required test.

Required Elements of an Anti-drug Testing Program

An anti-drug program shall include the following.

- A statement describing the employer's policy on prohibited drug use in the workplace, including the consequences associated with prohibited drug use. This policy statement shall include all of the elements specified and shall be disseminated.
- An education and training program.
- A testing program.
- Procedures for assessing the covered employee who has a verified positive drug test result.

For Further Information

For program issues, contact Judy Z. Meade, Office of Safety and Security, Federal Transit Administration, DOT, 400 Seventh Street, SW, Room 6432,

Washington DC 20590. Telephone: 202-366-2896. For legal questions, contact Nancy Zaczek or Daniel Duff, Office of the Chief Council, Federal Transit Administration, DOT, 400 Seventh Street, SW, Room 9316, Washington DC 20590. Telephone: 202-366-4011. (voice) 202-366-2979 (TDD). Copies of the regulation are available in alternative formats upon request.

SUGGESTED ELEMENTS OF AN EFFECTIVE ALCOHOL MISUSE POLICY

Policy Statement Contents

The policy statement shall be adopted by the local governing board of the employer or operator, be made available to each covered employee, and shall include, at a minimum, detailed discussion of the following.

- General requirements. Each employer shall provide educational materials that explain the requirements and the employer's policies and procedures with respect to meeting those requirements. The policy shall be adopted by the employer's governing board.
 - The employer shall ensure that a copy of these materials is distributed to each covered employee prior to the start of alcohol testing under this section of the employer's alcohol misuse prevention program and to each person subsequently hired or transferred to a covered position.
 - Each employer shall provide written notice to every covered employee and to representatives of employee organizations of the availability of this information.
- Required content. The materials to be made available to covered employees shall include detailed discussion of at least the following.
 - The identity of the person designated by the employer to answer employee questions about materials.
 - The categories of employees who are subject to the provisions of this part.
 - Sufficient information about the safety-sensitive functions performed by those employees to make clear what period of the work day the covered employee is required to be in compliance with this part.
 - Specific information concerning employee conduct that is prohibited by this part.

- The circumstances under which a covered employee will be tested for alcohol under this part.
 - The procedures that will be used to test for the presence of alcohol, protect the employee and the integrity of the breath testing process, safeguard the validity of the test results, and ensure that those results are attributed to the correct employee.
 - The requirement that a covered employee submit to alcohol tests.
 - An explanation of what constitutes a refusal to submit to an alcohol test and the attendant consequences.
 - The consequences for covered employees found to have violated the prohibitions, including the requirements that the employee be removed immediately from safety-related functions.
 - The consequences for covered employees found to have alcohol concentration of 0.02 or greater but less than 0.04.
 - Information concerning the affects of alcohol misuse on an individual's health, work, and personal life; signs and symptoms of an alcohol problem (the employee's or a coworker's); and available methods of intervening when an alcohol problem is suspected.
- Optional provisions. The materials supplied to covered employees may also include information on additional employer policies with respect to the use of possession of alcohol, including any consequences for an employee found to have a specified alcohol concentration, that are based on the employer's authority independent of this part. Any such additional policies or consequences shall be clearly and obviously described as being based on independent authority.

Alcohol-Related Conduct

No employer shall permit a covered employee tested under the provisions who is found to have an alcohol concentration of 0.02 or greater but less than 0.04 to perform or continue to perform safety-related functions, until:

- the employee's alcohol concentration measures less than 0.02; or
- the start of the employee's next regularly scheduled duty period, but not less than eight hours following administration of the test.

Except as provided above, no employer shall take any action against an employee based solely on test results showing an alcohol concentration less than 0.04. This does not prohibit an employer with authority independent of the regulations from taking any action otherwise consistent with law.

Training for Supervisors

Every employer shall ensure that supervisors designated to determine whether reasonable suspicion exists to require a covered employee to undergo alcohol testing receive at least 60 minutes of training on the physical, behavioral, speech, and performance indicators of probable alcohol misuse.

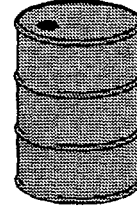
Referral, Evaluation, and Treatment

Each covered employee who has engaged in prohibited conduct shall be advised by the employer of the resources available to the employee in evaluating and resolving problems associated with the misuse of alcohol, including the names, addresses, and telephone numbers of substance abuse professionals and counseling and treatment programs.

This page left intentionally blank.

ATTACHMENT 1-5: INFORMATION SOURCES

The following is a list of available data sources which the transportation system may wish to consult to evaluate the hazards of any chemical. This is not a comprehensive list.



- 4 Any information at the transportation system, such as toxicity testing results or illness experience of company employees.
- 4 Any information obtained from the supplier of the chemical, such as MSDS or product safety bulletins.
- 4 Any pertinent information from the following source list.

Burgess, William A. *Recognition of Health Hazards in Industry*, John Wiley and Sons, 605 Third Avenue, New York, NY 10158.

Clinical Toxicology of Commercial Products, Gleason, Gosselin, and Hodge.

Condensed Chemical Dictionary, Van Nostrand Reinhold Co., 135 West 50th Street, New York, NY 10020.

Doull, Klassen, and Amdur. *Casarett and Doull's Technology; The Basic Science of Poisons*, Macmillan Publishing Co., Inc., New York, NY.

Grant, W, Morton. *Toxicology of the Eye*, Charles C. Thomas, 301-327 East Lawrence Avenue, Springfield, IL.

Hamilton, Alice and Harriet L. Hardy. *Industrial Technology*, Publishing Sciences Group, Inc., Acton, MA.

Handbook of Chemistry and Physics, Chemical Rubber Company, 18901 Cranwood Parkway, Cleveland, OH 44128,

IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer, 1972-present. (Multivolume work). Summaries are available in supplemental volumes. 49 Sheridan Street, Albany, NY 12210.

² 29 CFR Chapter XVD, Section 1910.1200, Appendix C.

Information on the physical hazards of chemicals may be found in publications of the National Fire Protection Agency, Boston, MA.

Miscellaneous Documents published by NIOSH, such as criteria documents, special hazard reviews, occupational hazard assessments, and current intelligence bulletins.

NIOSH Pocket Guide to Chemical Hazards, NIOSH Pub. No. 85-114.

NTP Annual Report on Carcinogens and Summary of the Annual Report on Carcinogens, National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161.

Occupational Health Guidelines, NIOSH/OSHA (NIOSH PUB. No. 81-123).

OSHA's General Industry Standards, 29 CFR Part 1910.

Patty, F.A. *Industrial Hygiene and Toxicology*, John Wiley and Sons, Inc., New York, NY (Multivolume work).

Proctor, Nick H. and James J. Hughes. *Chemical Hazards of the Workplace*, J.P. Lippincott Company, 6 Winchester Terrace, New York, NY 10022.

Registry of Toxic Effects of Chemical Substances, NIOSH Pub. No. 80-102.

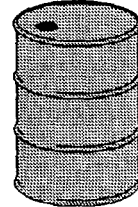
The Merck Index: An Encyclopedia of Chemicals and Drugs, Merck and Company, Inc., 126 E. Lincoln Ave., Rahway, NJ 07065.

Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment and Biological Exposure Indices with Intended Changes, American Conference of Governmental Hygienists (ACGIH). 6500 Glenway Avenue, Bldg. D-5, Cincinnati, OH 45211.

**ATTACHMENT 1-6
STANDARD OF PURITY FOR USE
IN MOBILE AIR-CONDITIONING SYSTEMS³**

1. Purpose

The purpose of this standard is to establish the specific minimum levels of R-12 purity required for recycled R-12 removed from mobile automotive air-conditioning systems.



2. Scope

This information applies to refrigerant used to service automobiles, light trucks, and other vehicles with similar CFC-12 systems. Systems that use HCFC-22 refrigerant are not covered in this section.

3. Purity Specification

The refrigerant in this document shall have been directly removed from, and intended to be returned to a mobile air-conditioning system. The contaminant in this recycled refrigerant CFC-12 shall be limited to moisture, refrigerant oil, and noncondensable gases, which shall not exceed the following level:

- 3.1 Moisture: 15 ppm by weight.
- 3.2 Refrigerant Oil: 4000 ppm by weight.
- 3.3 Noncondensable Gases (air): 330 ppm by weight.

4. Refrigeration Recycle Equipment Used in Direct Mobile Air-Conditioning Service Operations Requirement

- 4.1 The equipment shall meet SAE J1900, which covers additional moisture, acid, and filter requirements.
- 4.2 The equipment shall have a label indicating that it is certified to meet this document.

5. Purity Specification of Recycled R-12 Refrigerant Supplied in Containers From Other Recycle Sources

Purity specification of recycled R-12 refrigerant supplied in containers from other recycle sources, for service of mobile air-conditioning systems, shall meet ARI Standard 700-88 (Air conditioning and Refrigeration Institute).

³ Taken from Appendix A of 40 *CFR* Part 82, Subpart B.

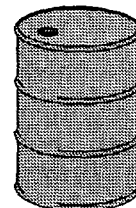
6. Operation of the Recycle Equipment

This shall be done in accordance with SAE J1989, included in Attachment 1-8.

ATTACHMENT 1-7
SPECIFICATIONS FOR EXTRACTION AND RECYCLE EQUIPMENT
FOR MOBILE AUTOMOTIVE AIR CONDITIONING
SYSTEMS⁴

1. Purpose

The purpose of this section is to establish the minimum equipment specification required for recycle of R-12 that has been directly removed from mobile systems for reuse in mobile automotive air-conditioning systems.



2. Scope

The scope of this document is to provide equipment specifications for CFC-12 (R-12) recycling equipment. This information applies to equipment used to service automobiles, light trucks, and other vehicles with similar CFC-12 air-conditioning systems. The equipment in this document is intended for use with refrigerant that has been directly removed from, and intended to be directly returned to a mobile air-conditioning system. Should other revisions due to operational or technical requirements occur, this Regulation may be amended. Systems that use HCFC-22 refrigerant are also not covered.

3. Specification and General Description

- 3.1 The equipment must be able to extract and process CFC-12 from mobile air-conditioning systems. The equipment shall process the contaminated R-12 samples as defined in 8.4 and shall clean the refrigerant to the level as defined in SAE J1991.
- 3.2 The equipment shall be suitable for use in an automotive service environment and be capable of continuous operation in ambients from 10 to 49°C.
- 3.3 The equipment must be certified by Underwriters Laboratories or an equivalent certifying laboratory.
- 3.4 The equipment shall have a label "Design Certified by (Company Name) to meet SAE J1991." The minimum letter size shall be bold type 3 mm in height.

⁴ Taken from Appendix A of 40 CFR Part 82, Subpart B.

4. Refrigeration Recycle Equipment Requirements
 - 4.1 Moisture and Acid - The equipment shall incorporate a desiccant package that must be replaced before saturated with moisture and whose mineral acid capacity is at least 5% by weight of total system dry desiccant.
 - 4.1.1 The equipment shall be provided with a moisture detection device that will reliably indicate when moisture in the CFC-12 exceeds the allowable level and requires the filter/dryer replacement.
 - 4.2 Filter - The equipment shall incorporate an in-line filter that will trap particulates of 15 μm or greater.
 - 4.3 Noncondensable Gas.
 - 4.3.1 The equipment shall either automatically purge noncondensables (NCGs) if the acceptable level is exceeded or incorporate a device to alert the operator that NCG level has been exceeded. NCG removal must be part of normal operation of the equipment and instructions must be provided to enable the task to be accomplished within 30 minutes.
 - 4.3.2 Refrigerant loss from noncondensable gas purging during testing described in Section 8 shall not exceed five percent (5%) by weight of the total contaminated refrigerant removed from the test system.
 - 4.3.3 Transfer of Recycled Refrigerant- Recycled refrigerant for recharging and transfer shall be taken from the liquid phase only.
5. Safety Requirements.
 - 5.1 The equipment must comply with applicable federal, state, and local requirements on equipment related to the handling of R-12 material. Safety precautions or notices related to the safe operation of the equipment shall be prominently displayed on the equipment and should also state "Caution-Should Be Operated By Qualified Personnel."
6. Operating Instructions
 - 6.1 The equipment manufacturer must provide operating instructions, necessary maintenance procedures and source information for replacement parts and repair.
 - 6.2 The equipment must prominently display the manufacturer's name, address, and any items that require maintenance or replacement that affect the proper operation of the equipment. Operation manuals must

cover information for complete maintenance of the equipment to assure proper operation.

7. Functional Description

7.1 The equipment must be capable of ensuring recovery of the R-12 from the system being serviced, by reducing the system pressure below atmospheric to a minimum of 102 mm of mercury.

7.2 To prevent overcharge, the equipment must be equipped to protect the tank used to store the recycled refrigerant with a shutoff device and a mechanical pressure relief valve.

7.3 Portable refillable tanks or containers used in conjunction with this equipment must meet applicable Department of Transportation (DOT) or Underwriters Laboratories (UL) Standards and be adaptable to existing refrigerant service and charging equipment.

7.4 During operation, the equipment shall provide overfill protection to assure the storage container, internal or external, liquid fill does not exceed 80% of the tank's rated volume at 21.1 °C (70°F) per DOT standards, CFR title 49, §173.304 and American Society of Mechanical Engineers.

7.4.1 Additional Storage Tank Requirements.

7.4.1.1 The cylinder valve shall comply with the standard for cylinder valves, UL 1769.

7.4.1.2 The pressure relief device shall comply with the Pressure Relief Device Standard Part 1 - Cylinders for Compressed Gases, CGA Pamphlet S-1.1.

7.4.1.3 The tank assembly shall be marked to indicate the first date of manufacture. The marking shall indicate that retest must be performed every subsequent five years. The marking shall be in letter at least 1/4 inch high.

7.5 All flexible hoses must meet SAE J2196 hose specification effective January 1, 1992.

7.6 Service hoses must have shutoff devices located within 30 cm (12 inches) of the connection point to the system being serviced to minimize introduction of noncondensable gases into the recovery equipment and the release of the refrigerant when being disconnected.

- 7.7 The equipment must be able to separate the lubricant from the recovered refrigerant and accurately indicate the amount removed during the process, in 30 ml units. Refrigerant dissolves in lubricant sample. This creates the illusion that more lubricant has been recovered than actually has been. The equipment lubricant measuring system must take in account such dissolved refrigerant to prevent overcharging the vehicle system with lubricant. Note: Use only new lubricant to replace the amount removed during the recycling process. Used lubricant should be discarded per applicable federal, state, and local requirements.
- 7.8 The equipment must be capable of continuous operation in ambient of 10 to 49°C (50 to 120°F).
- 7.9 The equipment should be compatible with leak detection material that may be present in the mobile AC systems.

8. Testing.

This test procedure and the requirement are used for evaluation of the equipment for its ability to clean the contaminated R-12 refrigerant.

- 8.1 The equipment shall clean the contaminated R-12 refrigerant to the minimum purity level as defined in SAE J1991, when tested in accordance with the following conditions:
 - 8.2 For test validation, the equipment is to be operated according to the manufacturer's instructions.
 - 8.3 The equipment must be preconditioned with 13.6 kg (30 lb) of the standard contaminated R-12 at an ambient of 21 °C (70°F) before starting the test cycle. Sample amounts are not to exceed 1.13 kg (2.5 lb) with sample amounts to be repeated every five minutes. The sample method fixture, defined in Fig. 1, shall be operated at 24°C (75°F).
- 8.4 Contaminated R-12 Samples.
 - 8.4.1 Standard contaminated R-12 refrigerant shall consist of liquid R-12 with 100 ppm (by weight) moisture at 21 °C (70°F) and 45,000 ppm (by weight) mineral oil 525 suspension nominal and 770 ppm by weight of noncondensable gases (air).
 - 8.4.2 High moisture contaminated sample shall consist of R-12 vapor with 1,000 ppm (by weight) moisture.

8.4.3 High oil contaminated sample shall consist of R-12 with 200,000 ppm (by weight) mineral oil 525 suspension viscosity nominal.

8.5 Test Cycle.

8.5.1 After preconditioning as stated in 8.3, the test cycle is started, processing the following contaminated samples through the equipment:

8.5.1.1 3013.6 kg (30 lb) of standard contaminated R-12.

8.5.1.2 1 kg (2.2 lb) of high oil contaminated R-12.

8.5.1.3 4.5 kg (10 lb) of standard contaminated R-12.

8.5.1.4 1 kg (2.2 lb) of high moisture contaminated R-12.

8.6 Equipment Operating Ambient.

8.6.1 The R-12 is to be cleaned to the minimum purity level, as defined in SAE J1991 with the equipment operating in a stable ambient of 10, 21, and 49°C (50, 70, and 120°F) and processing the samples as defined in 8.5.

8.7 Sample Analysis.

8.7.1 The processed contaminated sample shall be analyzed according to the following procedure.

8.8 Quantitative Determination of Moisture.

8.8.1 The recycled liquid phase sample of CFC-12 shall be analyzed for moisture content via Karl Fisher coulometer titration or an equivalent method. The Karl Fisher apparatus is an instrument for precise determination of small amounts of water dissolved in liquid and/or gas samples.

8.8.2 In conducting the test, a weighed sample of 30 to 130 grams is vaporized directly into the Karl Fisher analyte. A coulometer titration is conducted and the results are calculated and displayed as parts per million moisture (weight).

8.9 Determination of Percent Lubricant.

8.9.1 The amount of oil in the recycled sample of CFC-12 is to be determined by gravimetric analysis.

8.9.2 Following venting of noncondensable, in accordance with the manufacturer's operating instructions, the refrigerant container shall be shaken for five minutes prior to extracting samples for test.

8.9.3 A weighted sample of 175 to 225 grams of liquid CF-12 is allowed to evaporate at room temperature. The percent oil is to be calculated from the weight of the original sample and the residue remaining after the evaporation.

8.10 Noncondensable Gas.

8.10.1 The amount of noncondensable gas is to be determined by gas chromatography. A sample of vaporized refrigerant liquid shall be separated and analyzed by gas chromatography. A Porapak Q column at 130°C and a hot wire detector may be used for analysis.

8.10.2 This test shall be conducted on recycled refrigerant (taken from the liquid phase) within 30 minutes after the proper venting of noncondensable.

8.10.3 Samples shall be shaken for eight hours prior to retesting while at a temperature of 24 ± 2.8 °C (75 ± 5 °F). Known volumes of refrigerant vapor are to be injected for separation and analysis by means of gas chromatography. A Porapak Q column at 130°C (266°F) and a hot wire detector are to be used for the analysis.

8.10.4 This test shall be conducted at 21 and 49°C and may be performed in conjunction with the testing defined in Section 8.6. The equipment shall process at least 13.6 kg of standard contaminated refrigerant for this test.

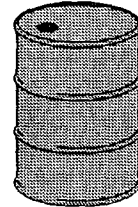
8.11 Sample Requirements.

8.11.1 The sample shall be tested as defined in 8.7, 8.8, 8.9, and 8.10 at ambient temperatures of 10, 21, and 49°C (50, 70, and 120°F) as defined in 8.6.1.

ATTACHMENT 1-8
SAE 1989 RECOMMENDED SERVICE PROCEDURE
FOR THE CONTAINMENT OF R-12⁵

1. Scope

During service of mobile air-conditioning systems, containment of the refrigerant is important. This procedure provides service guidelines for technicians when repairing vehicles and operating equipment defined in SAE J1990.



2. Refrigerant Recovery Procedure

2.1 Connect the recovery unit service hoses which shall have shutoff valves within 12 inches (30 cm) of the service ends, to the vehicle air-conditioning system service ports.

2.2 Operate the recovery equipment as covered by the equipment manufacturer's recommended procedure.

2.2.1 Start the recovery process and remove the refrigerant from the vehicle AC system. Operate the recovery unit until the vehicle system has been reduced from a pressure to a vacuum. With the recovery unit shut off for at least five minutes, determine that there is no refrigerant remaining in the vehicle AC system. If the vehicle system has pressure, additional recovery operation is required to remove the remaining refrigerant. Repeat the operation until the vehicle AC system vacuum level remains stable for two minutes.

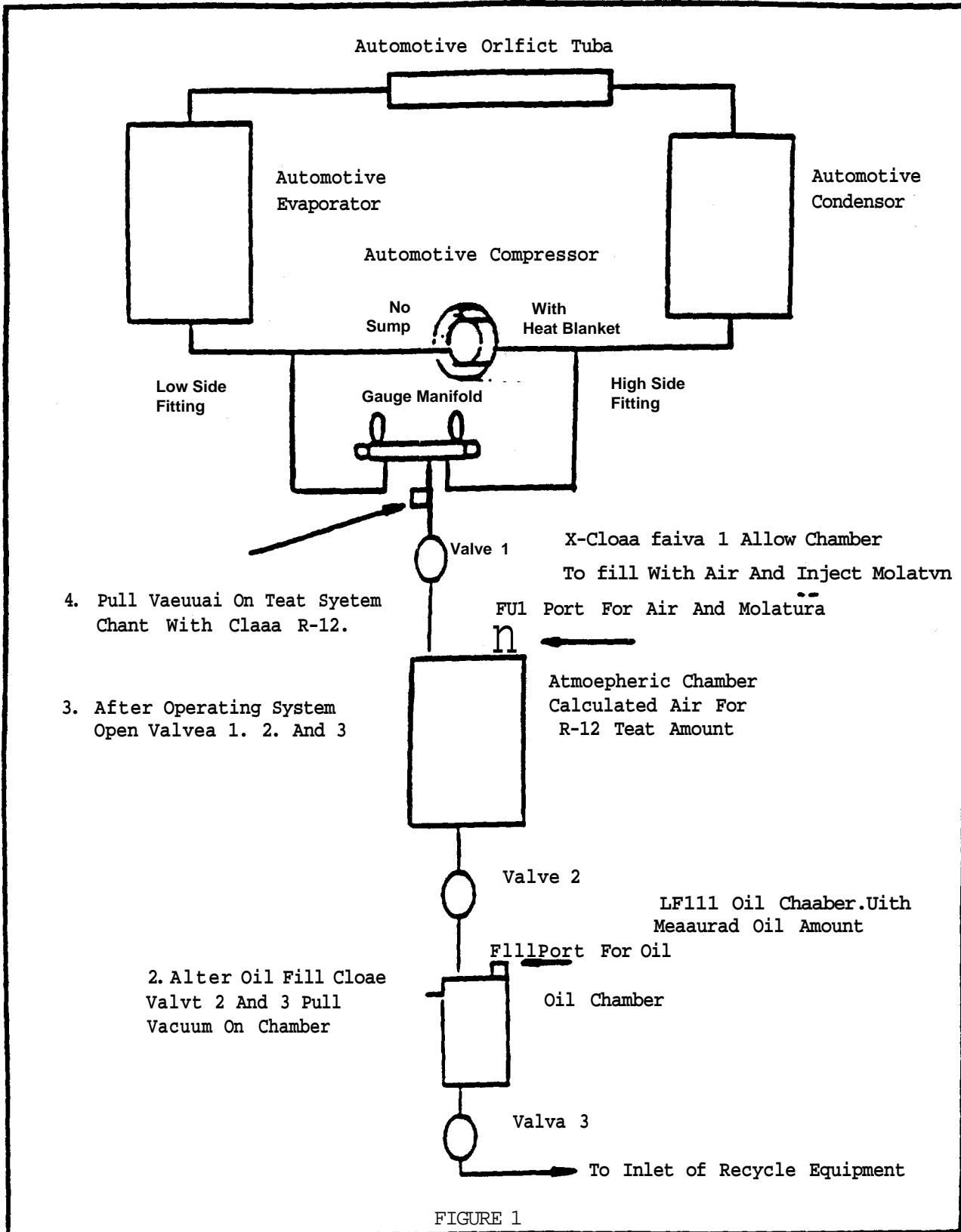
2.3 Close the valves in the service lines and then remove the service lines from the vehicle system. Proceed with the repair/service. If the recovery equipment has automatic closing valves, be sure they are properly operating.

3. Service with Manifold Gage Set

3.1 Service hoses must have shutoff valves in the high, low, and center service hoses within 12 inches (30 cm) of the service ends. Valves must be closed prior to hose removal from the air-conditioning system. This will reduce the volume of refrigerant contained in the service hose that would otherwise be vented to atmosphere.

⁵ Taken from Appendix A of 40 CFR Part 82, Subpart B.

- 3.2 During all service operations, the valves should be closed until connected to the vehicle air-conditioning system or the charging source to avoid introduction of air and to contain the refrigerant rather than vent open to atmosphere.
- 3.3 When the manifold gage set is disconnected from the air-conditioning system or when the center hose is moved to another device which cannot accept refrigerant pressure, the gage set hoses should first be attached to the reclaim equipment to recover the refrigerant from the hoses.
4. Recycled Refrigerant Checking Procedure for Stored Portable Auxiliary Container
 - 4.1 To determine if the recycled refrigerant container has excess noncondensable gases (air), the container must be stored at a temperature of 65°F (18.3°C) or above for a period of time. 12 hours, protected from direct sun.
 - 4.2 Install a calibrated pressure gage, with 1 psig divisions (0.07 kg), to the container and determine the container pressure.
 - 4.3 With a calibrated thermometer, measure the air temperature within 4 inches (10 cm) of the container surface.
 - 4.4 Compare the observed container pressure and air temperature to determine if the container exceeds the pressure limits found on Table 1, e.g., air temperature 70°F (21 °C) pressure must not exceed 80 psig (5.62 kg/cm²).
 - 4.5 If the container pressure is less than the Table 1 value and has been recycled, limits of noncondensable gases (air) have not been exceeded and the refrigerant may be used.
 - 4.6 If the pressure is greater than the range and the container contains recycled material, slowly vent from the top of the container a small amount of vapor into the recycle equipment until the pressure is less than the pressure shown in Table 1.
 - 4.7 If the container still exceeds the pressure shown on Table 1, the entire contents of the container should be recycled.



SPI-KETRON-JNB-94-003

TABLE 1

Temp*F	Psig	Temp F	Psig	Temp*F	Psig	Temp*F	Psig	Temp 'F	Psig
65	74	75	87	85	102	95	118	105	136
66	75	76	88	86	103	96	120	106	138
67	76	77	90	87	105	97	122	107	140
68	78	78	92	88	107	98	124	108	142
69	79	79	94	89	108	99	125	109	144
70	80	60	96	90	110	100	127	110	146
71	82	61	98	91	111	101	129	111	148
72	83	82	99	92	113	102	130	112	150
73	84	83	100	93	115	103	132	113	152
74	86	84	101	94	116	104	134	114	154

TABLE 1 (METRIC)

Temp*C	Pres	Temp*C	Pres	Twnp'C	Pres	Temp*C	Pres	Temp*C	PRreS
18.3	5.20	23.9	6.11	29.4	7.17	35.0	8.29	40.5	9.56
18.8	5.27	24.4	6.16	30.0	7.24	35.5	6.43	41.1	9.70
19.4	5.34	25.0	6.32	30.5	7.38	36.1	6.57	41.6	9.84
20.0	5.48	25.5	6.46	31.1	7.52	36.6	8.71	42.2	9.98
20.5	5.55	26.1	6.60	31.6	7.59	37.2	8.78	42.7	10.12
21.1	5.62	26.6	6.74	32.2	7.73	37.7	8.92	43.3	10.26
21.6	5.76	27.2	6.88	32.7	7.80	38.3	9.06	43.9	10.40
22.2	5.83	27.7	6.95	33.3	7.94	38.8	9.13	44.4	10.54
22.7	5.90	28.3	7.03	33.9	8.08	39.4	9.27	45.0	10.68
23.3	6.04	28.9	7.10	34.4	8.15	40.0	9.42	45.5	10.82

Pres kp/sq cm.

5. Containers for Storage of Recycled

- 5.1 Recycled refrigerant should not be salvaged or stored in disposable refrigerant containers. This is the type of container in which virgin refrigerant is sold. Use only DOT CFR title 49 or UL approved storage containers for recycled refrigerant.
- 5.2 Any container of recycled refrigerant that has been stored or transferred must be checked prior to use as defined in section 4.

6. Transfer of Recycled Refrigerant

- 6.1 When external portable containers are used for transfer, the container must be evacuated at least 27 inches of vacuum (75 mm Hg absolute pressure) prior to transfer of the recycled refrigerant. External portable containers must meet DOT and UL standards.
- 6.2 To prevent on-site overfilling when transferring to external containers, the safe filling level must be controlled by weight and must not exceed 60% of container gross weight rating.

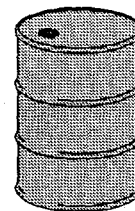
7. Disposal of Empty/Near Empty Containers

- 7.1 Since all the refrigerant may not be removed from disposable refrigerant containers during normal system charging procedures, empty/near empty container contents should be reclaimed prior to disposal of the container.
- 7.2 Attach the container to the recovery unit and remove the remaining refrigerant. When the container has been reduced from a pressure to a vacuum, the container should be marked empty and is ready for disposal.

This page left intentionally blank.

**ATTACHMENT 1-9
FREON EVACUATION TABLES***

TABLE 1: Required levels of Evacuation for Transit Bus Air Conditioners and Other Applicable Appliances [Not for Motor Vehicle Air Conditioners] when using recovery or recycling equipment manufactured or imported on or after November 15, 1993.



APPLIANCE WITH WHICH RECYCLE/RECOVERY EQUIPMENT WILL BE USED	INCHES OF Hg VACUUM**
HCFC appliances, or isolated component of such appliances, normally containing less than 200 lbs. of refrigerant	0
HCFC appliances, or isolated component of such appliances, normally containing 200 lbs. of refrigerant or more	10
Very high-pressure appliances	0
Other high-pressure appliances, or isolated component of such appliances, normally containing less than 200 lbs. of refrigerant	10
Other high-pressure appliances, or isolated component of such appliances, normally containing 200 lbs. of refrigerant or more	15
Low-pressure appliances	25

** relative to atmospheric pressure of 29.9 in. Hg absolute

TABLE 2: Required levels of Evacuation for Transit Bus Air Conditioners and Other Applicable Appliances [Not for Motor Vehicle Air Conditioners] when using recovery or recycling equipment manufactured or imported before November 15, 1993.

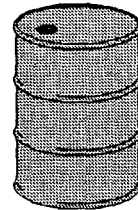
APPLIANCE WITH WHICH RECYCLE/RECOVERY EQUIPMENT WILL BE USED	INCHES OF Hg VACUUM**
HCFC appliances, or isolated component of such appliances, normally containing less than 200 lbs. of refrigerant	0
HCFC appliances, or isolated component of such appliances, normally containing 200 lbs. of refrigerant or more	4

APPLIANCE WITH WHICH RECYCLE/RECOVERY EQUIPMENT WILL BE USED	INCHES OF Hg VACUUM**
Very high-pressure appliances	0
Other high-pressure appliances, or isolated component of such appliances, normally containing less than 200 lbs. of refrigerant	4
Other high-pressure appliances, or isolated component of such appliances, normally containing 200 lbs. of refrigerant or more	4
Low-pressure appliances	25

* Tables taken from 40 *CFR* Part 82, Subpart F, Section 158.

** relative to atmospheric pressure of 29.9 in. Hg absolute

**ATTACHMENT 1-10
PERFORMANCE OF REFRIGERANT RECOVERY,
RECYCLING AND/OR RECLAIM EQUIPMENT***



APPENDIX B TO PART 82 SUBPART F—
PERFORMANCE OF REFRIGERANT RE-
COVERY, RECYCLING AND/OR RECLAIM
EQUIPMENT

This appendix is based on Air-Conditioning
and Refrigeration Institute Standard 740-91.

REFRIGERANT RECOVERY/RECYCLING
EQUIPMENT

Section J. *Purpose*

1.1 Purpose. The purpose of this standard is to establish methods of testing for rating and evaluating the performance of refrigerant recovery, and/or recycling equipment, and general equipment requirements (herein referred to as "equipment") for containment or purity levels, capacity, speed, and purge loss to minimize emission into the atmosphere of designated refrigerants.

* Taken from Appendix B of 40 *CFR* Part 82, Subpart F.

1.1.1 This standard is intended for the guidance of the industry, including manufacturers, refrigerant reclaimers, repackagers, distributors, installers, servicemen, contractors and for consumers.

1.1.2 This standard is not intended to be used as a guide in defining maximum levels of contaminants in recycled or reclaimed refrigerants used in various applications.

1.2 *Review and Amendment.* This standard is subject to review and amendment as the technology advances.

Section 2. Scope

2.1 *Scope.* This standard defines general equipment requirements and the test apparatus, test mixtures, sampling and analysis techniques that will be used to determine the performance of recovery and/or recycling equipment for various refrigerants including R11, R12, R13, R22, R113, R114, R123, R134a, R500, R502, and R503, as referenced in the ANSI/A8HRAE Standard 34-1992, "Number Designation of Refrigerants" (American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc.).

Section 3. Definitions

3.1 *Recovered refrigerant.* Refrigerant that has been removed from a system for the purpose of storage, recycling, reclamation or transportation.

3.2 *Recover.* To remove refrigerant in any condition from a system and store it in an external container without necessarily testing or processing it in any way.

3.3 *Recycle.* To reduce contaminants in used refrigerant by oil separation, non-condensable removal and single or multiple passes through devices which reduce moisture, acidity and particulate matter, such as replaceable core filter-driers. This term usually applies to procedures implemented at the field job site or in a local service shop.

3.4 *Reclaim.* To reprocess refrigerant to new product specifications by means which may include distillation. Chemical analysis of the refrigerant is required to determine that appropriate product specifications are met. The identification of contaminants, required chemical analysis, and acceptable contaminant levels will be established in the latest edition of ARI Standard 700 "Specifications of Fluorocarbon and other Refrigerants." This term usually implies the use of processes or procedures available only at a reprocessing or manufacturing facility.

3.5 *Standard Contaminated Refrigerant Sample.* A mixture of new and/or reclaimed re-

frigerant and specified Quantities of identified contaminants which are representative of field obtained, used refrigerant samples and which constitute the mixture to be processed by the equipment under test.

3.6 *Push/Pull Method.* The push/pull refrigerant recovery method is defined as the process of transferring liquid refrigerant from a refrigeration system to a receiving vessel by lowering the pressure in the vessel and raising the pressure in the system, and by connecting a separate line between the system liquid port and the receiving vessel.

3.7 *Recycle Rate.* The amount of refrigerant processed (in pounds) divided by the time elapsed in the recycling mode in pounds per minute. For equipment which uses a separate recycling sequence, the recycle rate does not include the recovery rate (or elapsed time). For equipment which does not use a separate recycling sequence, the recycle rate is a maximum rate based solely on the higher of the liquid or vapor recovery rate, by which the rated, contaminant levels can be achieved.

3.8 *Equipment Classification.*

3.8.1 *Self Contained Equipment.* A refrigerant recovery or recycling system which is capable of refrigerant extraction without the assistance of components contained within an air conditioning or refrigeration system.

3.8.2 *System Dependent Equipment.* Refrigerant recovery equipment which requires for its operation the assistance of components contained in an air conditioning or refrigeration system.

3.9 *"Shall". "Should". "Recommended" or "It is Recommended". "Shall" "Should", "recommended", or "it is recommended" shall be interpreted as follows:*

3.9.1 *Shall.* Where "shall" or "shall not" is used for a provision specified, that provision is mandatory if compliance with the standard is claimed.

3.9.2 *Should. Recommended, or (is Recommended.* "Should", "recommended", is

used to indicate provisions which are not mandatory but which are desirable as good practice.

Section 4. *General Equipment Requirements*

4.1 The equipment manufacturer shall provide operating Instructions, necessary maintenance procedures, and source information for replacement parts and repair.

4.2 The equipment shall indicate when any filter/drier(s) needs replacement. This requirement can be met by use of a moisture transducer and indicator light, by use of a sight glass/moisture indicator, or by some measurement of the amount of refrigerant processed such as a flow meter or hour meter. Written Instructions such as "to change the filter every 400 pounds, or every 30 days" shall not be acceptable except for equipment in large systems where the Liquid Recovery Rate is greater than 25 lba/mln [113 Kg/min] where the filter/drier(s) would be changed for every job.

4.3 The equipment shall either automatically purge non-condensables if the rated level is exceeded or alert the operator that the non-condensable level has been exceeded. While air purge processes are subject to the requirements of this section, there is no specific requirement to include an air purge process for "recycle" equipment.

4.4 The equipment's refrigerant loss due to non-condensable purging shall not be exceeded 5% by weight of total recovered refrigerant. (See Section 9.4)

4.5 Internal hose assemblies shall not exceed a permeation rate of 12 pounds mass per square foot [5.8 g/cm²] of internal surface per year at a temperature of 120 F [48.8 °C] for any designated refrigerant.

4.6 The equipment shall be evaluated at 75 F [24 °C] per 7.1. Normal operating conditions range from 60 °F to 104 F [10 °C to 40 °C].

4.7 *Exemptions:*

4.7.1 Equipment Intended for recovery only shall be exempt from sections 4.2 and 4.3.

TABLE 1.—STANDARD CONTAMINATED REFRIGERANT SAMPLES

	R11	R12	R13	R22	R113	R114	R123	R134a	R500	R502	R503
Moisture content: PPM by weight of pure refrigerant	100	80	30	200	100	86	100	200	200	200	30
Particulate content: PPM by weight of pure refrigerant characterized by 1	80	80	80	80	80	80	80	80	80	80	80

TABLE 1.—STANDARD CONTAMINATED REFRIGERANT SAMPLES—Continued

	R11	R12	R13	R22	R113	R114	R123	R134a	R500	R502	R503
Acid content: PPM by weight of pure re- friger- ant—(mg KOH per kg refrig.) character- ized by ²	900	100	NA	500	400	200	500	100	100	100	NA
Mineral oil con- tent: % by weight of pure refrigerant	20	6	NA	6	20	20	20	5	5	6	NA
Viscosity (SUS)	300	160	-----	300	300	300	300	160	160	150	-----
Non con- densible gases air content % volume ³	NA	3	3	3	NA	3	3	3	3	3	3

¹Partial (the content shall consist of inert material) and shall comply with particulate requirements is ASHRAE Standard 63.2.
²Method of Testing of Filtration Capacity of Refrigerant Liquid Line Filters and Filter Driers
³Add consists of 60% oleic acid and 40% hydrochloric acid on a total number basis.
 Synthetic ester based oil

Section 5. Contaminated Refrigerants

6.1 The standard contaminated refrigerant sample shall have the characteristics specified in Table 1, except as provided in 5.2
 6.2 Recovery equipment not rated for any specific contaminant can be tested with new or reclaimed refrigerant.

Section 6. Test Apparatus

6.1 Self Contained Equipment Test Apparatus. The apparatus as shown in Figure 1 consists of a 3 cubic foot [0.065 m³] mixing chamber with a conical-shaped bottom, although a larger mixing chamber is permissible. The size of the mixing chamber depends upon the size of the equipment. The outlet at the bottom of the cone and all restrictions and valves for liquid and vapor refrigerant lines in the test apparatus shall be & minimum of 0.375 in. [9.5 mm] inside diameter or equivalent. The minimum inside diameter for large equipment for use on chillers shall be 1.5 in. [38 mm.]. The mixing chamber shall contain various ports for receiving liquid refrigerant, oil, and contaminants. A recirculating line connected from the bottom outlet through a recirculating pump and then to a top vapor port shall be provided for stirring of the mixture. Isolation valves may be required for the pump. Alternative stirring means may be used if demonstrated to be equally effective.

6.1.1 For liquid refrigerant feed, the liquid valve is opened. For vapor refrigerant feed,

the vapor valve is opened and refrigerant passes through an evaporator coil. Flow is controlled by a thermostatic expansion valve to create 5 F [3 °C] superheat at an evaporator temperature of 70 F ± 3 F [21 °C ± f]. The evaporator coil or equivalent evaporator means shall be either sized large enough for the largest system or be sized for each system.

6.1.2 An alternative method for vapor refrigerant feed is to pass through a boiler and then an automatic pressure regulating valve set at refrigerant saturation pressure at 75 F ± 3 F [24.0 ± 2 °C].

6.2 System Dependent Equipment Test Apparatus. This test apparatus is to be used for final recovery vacuum rating of all system dependent equipment.

6.2.1 The test apparatus shown in Figure 2 consists of a complete refrigeration system. The manufacturer shall identify the refrigerants to be tested. The test apparatus can be modified to facilitate operation or testing of the system dependent equipment if the modifications to the apparatus are specifically described within the manufacturer's literature. (See Figure 2.) A 1/8 inch [6.3 mm] balance line shall be connected across the test apparatus between the high and low pressure sides, with an isolation valve located at the connection to the compressor high side. A 1/4 inch [6.3 mm] access port with a valve core shall be located in the balance line for the purpose of measuring final recovery vacuum at the conclusion of the test.

FIGURE 1

Test Apparatus for Self-Contained Equipment

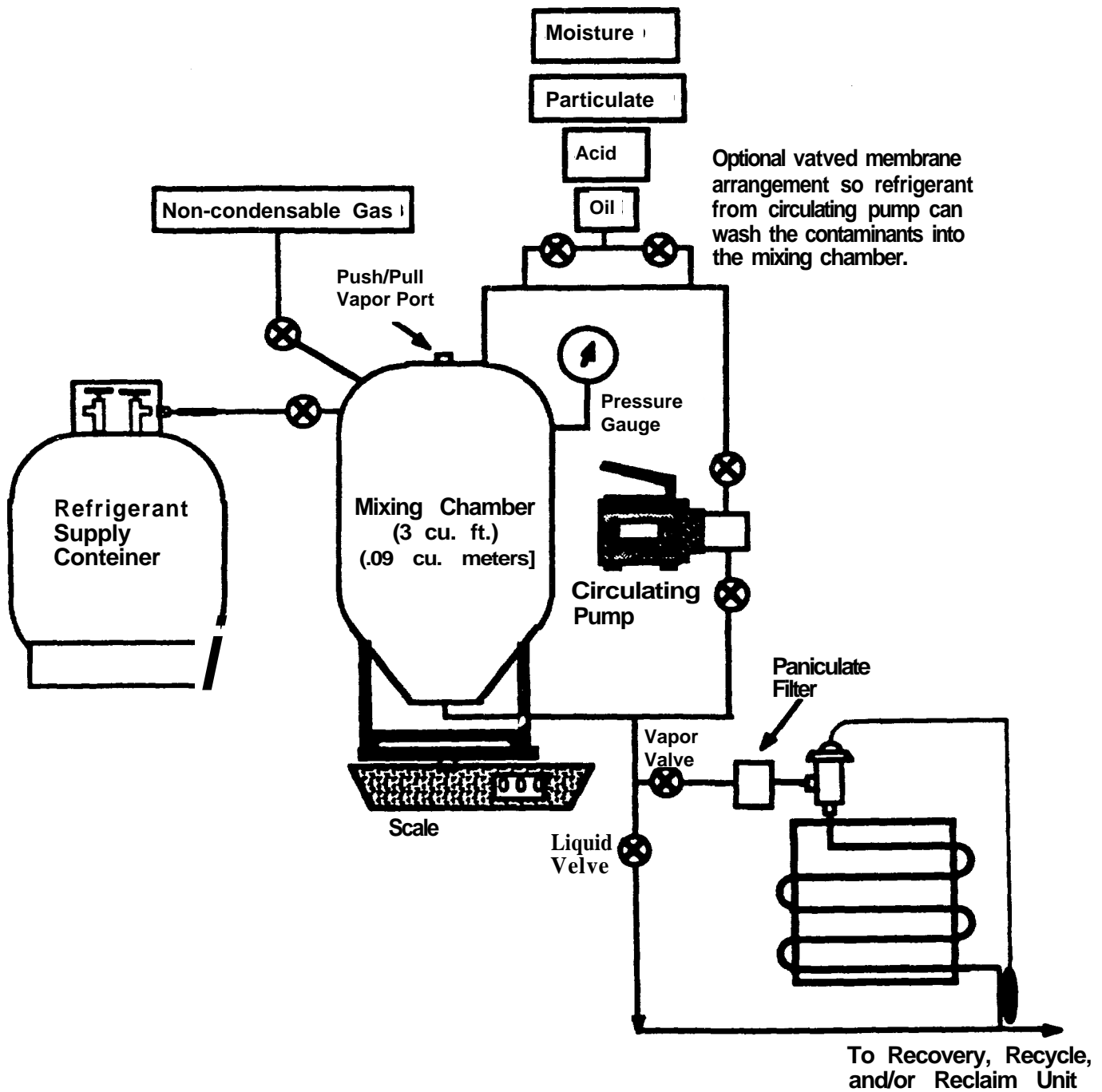
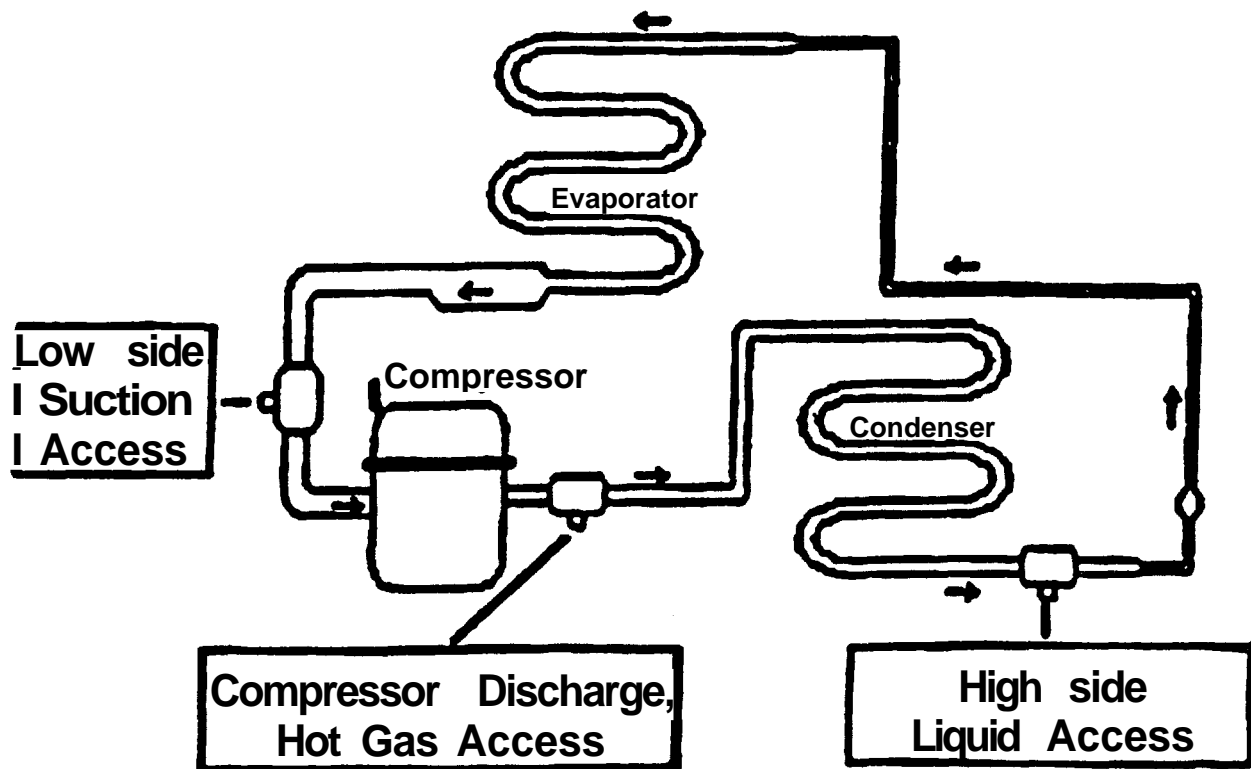


FIGURE 2

System-Dependent Equipment Test Apparatus

Configuration of a standard air conditioning or refrigeration system for use as a test apparatus



Section 7. Performance Testing

7.1 Contaminant removal and performance testing shall be conducted at 75 F ± 12 F [23.9°C ± 1.1°C].

7.1.1 The equipment shall be prepared for operation per the Instruction manual.

7.1.2 The contaminated sample batch shall consist of not less than the sum of the amounts required to complete steps 7.1.2.2 and 7.1.2.3 below.

7.1.2.1 A liquid sample shall be drawn from the mixing chamber prior to starting the test to assure quality control of the mixing process.

7.1.2.2 Vapor refrigerant feed testing, if elected, shall normally be processed first. After the equipment reaches stabilized conditions of condensing temperature and/or storage tank pressure, the vapor feed recovery rate shall be measured. One method is to start measuring the vapor refrigerant recovery rate when 85% of refrigerant remains in the mixing chamber and continue for a period of time sufficient to achieve the accuracy in 9.2. If liquid feed is not elected, complete Step 7.1.2.4.

7.1.2.3 Liquid refrigerant feed testing, if elected, shall be processed next. After the equipment reaches stabilized conditions, the liquid feed recovery rate shall be measured. One method is to wait 2 minutes after starting liquid feed and then measure the liquid refrigerant recovery rate for a period of time sufficient to achieve the accuracy in 9.1. Continue liquid recovery operation as called for in 7.1.2.4.

7.1.2.4 Continue recovery operation until all liquid is removed from the mixing chamber and vapor is removed to the point where the equipment shuts down per automatic means or is manually stopped per the operating instructions.

7.1.2.5 After collecting the first contaminated refrigerant sample batch, the liquid and vapor value of the apparatus shall be closed and the mixing chamber pressure recorded after 1 minute as required in 9.5. After preparing a second contaminated refrigerant sample batch, continue recovery until the storage container reaches 80% liquid fill level. After recycling and measuring the recycle rate per section 7.1.3, set this container aside for the vapor sample in 8.2.2.

7.1.2.6 Interruptions in equipment operations as called for in instruction manual are allowable.

7.1.3 Recycle as called for in equipment operating Instructions. Determine recycle rate by appropriate means as required in 9.3.

7.1.4 Repeat steps 7.1.2, 7.1.2.4, and 7.1.3 with contaminated refrigerant sample until equipment indicator(s) show need to change filter(s). It will not be necessary to repeat the recycle rate determination in 7.1.3.

7.1.4.1 For equipment with a multiple pass recirculating filter system, analyze the contents of the previous storage container.

7.1.4.2 For equipment with a single pass filter system, analyze the contents of the current storage container.

7.1.5 Refrigerant loss due to the equipment's non-condensable gas purge shall be determined by appropriate means. (See Section 9.4.)

7.2 System Dependent Equipment. This procedure shall be used for vacuum rating of all system dependent equipment. Liquid refrigerant recovery rate, vapor refrigerant recovery rate, and recycle rate are not tested on system dependent systems.

7.2.1 The apparatus operation and testing shall be conducted at 75 F ± 2 F. [23.9°C ± 1.1°C].

7.2.2 The apparatus shall be charged with refrigerant per its system design specifications.

7.2.3 For measurement of final recovery vacuum as required in 9.6, first shut the balance line isolation valve and wait 1 minute for pressure to balance. Then connect and operate the recovery system per manufacturer's recommendations. When the evacuation is completed, open the balance line isolation valve and measure the pressure in the balance line.

Section 8. Sampling and Chemical Analytical Methods

8.1 The referee test methods for the various contaminants are summarized in the following paragraphs. Detailed test procedures are included in Appendix A "Test Procedures for ARI STD 700." If alternate test methods are employed, the user must be able to demonstrate that they produce results equivalent to the specified referee method.

8.2 Refrigerant Sampling.

8.2.1 Sampling Precaution*. Special precautions should be taken to assure that representative samples are obtained for analysis. Sampling shall be done by trained laboratory personnel following accepted sampling and safety procedures.

8.2.2 Gas Phase Sample. A gas phase sample shall be obtained for determining the non-condensables. Since non-condensable gases, if present, will concentrate in the vapor phase of the refrigerant, care must be exercised to eliminate introduction of air during the sample transfer. Purging is not an acceptable procedure for a gas phase sample since it may introduce a foreign product. Since R11, R113 and R123 have normal boiling points at or above room temperature, noncondensable determination is not required for these refrigerants.

8.2.2.1 The sample cylinder shall be connected to an evacuated gas sampling bulb by means of a manifold. The manifold should have a valve arrangement that facilitates

evacuation of all connecting tubing leading to the sampling bulb.

After the manifold has been evacuated, close the valve to the pump and open the valve on the system. Allow the pressure to equilibrate and close valves.

Uquid Phase Sample. A liquid phase sample is required for all tests listed in this standard, except the test for non-condensables.

Place an empty sample cylinder with the valve open in an oven at 230 °F for one hour. Remove it from the oven while hot. Immediately connect to an evacuation system and evacuate to less than 1 mm. mercury (1000 microns). Close the valve and allow it to cool.

The valve and lines from the unit to be sampled shall be clean and dry. Connect the line to the sample cylinder loosely. Purge through the loose connection. Make the connection tight at the end of the purge period. Take the sample as a liquid by chilling the sample cylinder slightly. Accurate analysis requires that the sample container be filled to at least 60% by volume; however under no circumstances should the cylinder be filled to more than 80% by volume. This can be accomplished by weighing the empty cylinder and then the cylinder with refrigerant. When the desired amount of refrigerant has been collected, close the valve(s) and disconnect the sample cylinder immediately.

8.2.3.3 Check the sample cylinder for leaks and record the gross weight.

8.3 Water Content.

8.3.1. The Coulometric Karl Fischer Titration shall be the primary test method for determining the water content of refrigerants. This method is described in Appendix A. This method can be used for refrigerants that are either a liquid or a gas at room temperature. Including Refrigerants 11 and 13. For all refrigerants, the sample for water analysis shall be taken from the liquid phase of the container to be tested. Proper operation of the analytical method requires special equipment and an experienced operator. The precision of the results is excellent if proper sampling and handling procedures are followed. Refrigerants containing a colored dye can be successfully analyzed for water using the method.

8.3.2 The Karl Fischer Test Method is an acceptable alternative test method for determining the water content of refrigerants. This method is described in ASTM Standard for "Water in gases Using Karl Fisher Reagent" E700-79, reapproved 1964 (American Society for Testing and Materials, Philadelphia, PA).

8.3.3 Report the moisture level in parts per million by weight if a sample is required.

8.4 **Chloride.** The refrigerant shall be tested for chlorides as an indication of the presence of hydrochloric or similar acids. The

recommended procedure is intended for use with new or reclaimed refrigerants. Significant amounts of oil may interfere with the results by indicating a failure in the absence of chlorides.

8.4.1 The test method shall be that described in Appendix A "Test Procedures for ARI-700." The test will show noticeable turbidity at equivalent chloride levels of about 3 ppm by weight or higher.

8.4.2 The results of the test shall not exhibit any sign of turbidity. Report results as "pass" or "fail."

8.6 Acidity.

8.5.1 The acidity test uses the titration principle to detect any compound that is highly soluble in water and ionizes as an acid. The test method shall be that described in Appendix A. "Test Procedures for ARI-700." The test may not be suitable for determination of high molecular weight organic acids; however these acids will be found in the high boiling residue test outlined in Section 5.7. The test requires about a 100 to 120 gram sample and has a low detection limit of 0.1 ppm by weight as HCl.

8.6 High Boiling Residue.

8.6.1 High boiling residue will be determined by measuring the residue of a standard volume of refrigerant after evaporation. The refrigerant sample shall be evaporated at room temperature or a temperature 50 °F [10 °C], above the boiling point of the sample using a Goetz tube as specified in Appendix A "Test Procedures for ARI-700." Oils and organic acids will be captured by this method.

8.6.2 The value for high boiling residue shall be expressed as a percentage by volume.

8.7 Particulates/Solids.

8.7.1 A measured amount of sample is evaporated from a Goetz bulb under controlled temperature conditions. The particulates/solids shall be determined by visual examination of the empty Goetz bulb after the sample has evaporated completely. Presence of dirt, rust or other particulate contamination is reported a "fail." For details of this test method, refer to Appendix B "Test Procedures for ARI-700."

8.8 Non-Condensables

8.8.1 A vapor phase sample shall be used for determination of non-condensables. Non-condensable gases consist primarily of air accumulated in the vapor phase of refrigerant containing tanks. The solubility of air in the refrigerants liquid phase is extremely low and air is not significant as a liquid phase contaminant. The presence of non-condensable gases may reflect poor quality control in transferring refrigerants to storage tanks and cylinders.

8.8.2 The test method shall be gas chromatography with a thermal conductivity detector as described in Appendix A "Test Procedures for ARI-700."

8.8.2.1 The Federal Specification for "Fluorocarbon Refrigerants." BB-F-1421B, dated March 5, 1992, section 4.4.3 (perchloroethylene method) Is an acceptable alternate test method.

8.8.3 Report the level of non-condensable as percent by volume.

Section 9. Performance Calculation and Rating

9.1 The liquid refrigerant recovery rate shall be expressed in pounds per minute [kg/min] and measured by weight change at the mixing chamber (See Figure 1) divided by elapsed time to an accuracy within .02 lbs/min. [.009 kg/min]. Ratings using the Push/Pull method shall be identified "Push/Pull". Equipment may be rated by both methods.

9.2 The vapor refrigerant recovery rate shall be expressed in pounds per minute [kg/min] and measured by weight change at the mixing chamber (See Figure 1) divided by elapsed time to an accuracy within .02 lbs/min. (.009 kg/min).

9.3 The recycle rate is defined In 3.7 and expressed in pounds per minute [kg/min] of flow and shall be per ASHRAE 41.7-84 "Procedure For Fluid Measurement Of Gases" or ASHRAE 41.8-89 "Standard Method of Flow of Fluids—Liquids."

9.3.1 For equipment using multipass recycling or a separate sequence, the recycle rate shall be determined by dividing the net weight W of the refrigerant to be recycled by the actual time T required to recycle the refrigerant. Any set-up or operator interruptions shall not be Included in the time T. The accuracy of the recycle rate shall be within .02 lbs/min. [.009 kg/min].

9.3.2 If no separate recycling sequence is used, the recycle rate shall be the higher of the vapor refrigerant recovery rate or the liquid refrigerant recovery rate. The recycle rate shall match a process which leads to contaminant levels in 9.6. Specifically, a recovery rate determined from bypassing a

contaminant removal device cannot be used as a recycle rate when the contaminant levels in 9.6 are determined by passing the refrigerant through the containment removal device.

9.4 Refrigerant loss due to non-condensable purging shall be less than 5%. This rating shall be expressed as "passed" if less than 5%.

This calculation will be based upon net loss of non-condensables and refrigerant due to the purge divided by the initial net content. The net loss shall be determined by weighing before and after the purge, by collecting purged gases, or an equivalent method.

9.5 The final recovery vacuum shall be the mixing chamber pressure called for in 7.1.2.5 expressed in inches of mercury vacuum, [mm Hg or kP]. The accuracy of the measurement shall be within ±1 inch [±2.5mm] of Hg and rounding down to the nearest whole number.

9.6 The contaminant levels remaining after testing shall be published as follows:

- Moisture content, PPM by weight
- Chloride ions, Pass/Fail
- Acidity, PPM by weight**
- High boiling residue, percentage by volume
- Particulate/solid, Pass/Fail
- Non-condensables, % by volume

9.7 Product Literature: Except as provided under product labelling in Section 11, performance ratings per 9.1, 9.2, 9.3, and 9.5 must be grouped together and shown for all listed refrigerants (11.2) subject to limitations of 9.8. Wherever any contaminant levels per 9.6 are rated, all ratings in 9.6 must be shown for all listed refrigerants subject to limitations of 9.8. The type of equipment in 11.1 must be Included with either grouping. Optional ratings in 9.8 need not be shown.

9.8 Ratings shall include all of the parameters for each designed refrigerant in 11.2 as shown in Tables 2 and 3.

TABLE 2.—PERFORMANCE

Parameter/type of equipment	Recovery	Recovery/recycle	Recycle	System dependent equip. ment
Liquid refrigerant recovery rate	(2)P	(?)	N/A	N/A
Vapor refrigerant recovery rate	(?)	(?)	N/A	N/A
Final recovery vacuum	(?)	(?)	N/A	(?)
Recycle rate	N/A	(?)	(?)	N/A
Refrigerant loss due to non-condensable purging	(?)	(?)	(?)	N/A

1 Mandatory rating.

2 For a recovery or recovery/recycle unit, one *mutt* rate for either liquid feed only or vapor feed only or can rate for both. N rating only the one the other shall be indicated by "N/A."

For Recovery Equipment, these parameters are optional. If not rated, use N/A.

TABLE 3.—CONTAMINANTS

Contaminant/type of equipment	Recovery	Recovery/re-cycle	Recycle	System de- scribed ment
Moisture content.....	(C)	x	x	NA.
Chloride ions,,	(C)	x	x	NA.
Acidity	(C)	x	x	NA.
High boiling residue	(C)	x	x	NA.
Particulate	(C)	x	x	NA.
Non-condensables	(C)	x	x	NA.

*For Recovery Equipment these parameters are optional. If not irated use NA.
Mandatory rating.

Section 10. Tolerances

10.1 Any equipment tested shall produce contaminant levels not higher than the published ratings. The liquid refrigerant recovery rate, vapor refrigerant recovery rate, final recovery vacuum and recycle rate shall not be less than the published ratings.

Section 11. Product Labelling

11.1 *Type of equipment.* The type of equipment shall be as listed:

- 11.1.1 Recovery only
- 11.1.2 System Dependent Recovery
- 11.1.3 Recovery/Recycle
- 11.1.4 Recycle only

11.2 Designated refrigerants and the following as applicable for each:

- 11.2.1 Liquid Recovery Rate
- 11.2.2 Vapor Recovery Rate
- 11.2.3 Final Recovery Vacuum
- 11.2.4 Recycle Rate

Section 12. Voluntary Conformance

12.1 *Conformance.* While conformance with this standard is voluntary, conformance shall not be claimed or implied for products or equipment within its Purpose (Section 1) and Scope (Section 2) unless such claims meet all of the requirements of the standards.

ATTACHMENT TO APPENDIX B

Particulate Used in Standard Contaminated Refrigerant Sample.

1. Particulate Specification

1.1 The particulate material pm will be a blend of 60% coarse air cleaner dust as received, and 50% retained on a 200-mesh screen. The coarse air cleaner dust is available from: AC Spark Plug Division. General Motors Corporation. Flint. Michigan.

1.2 Preparation of Particulate Materials

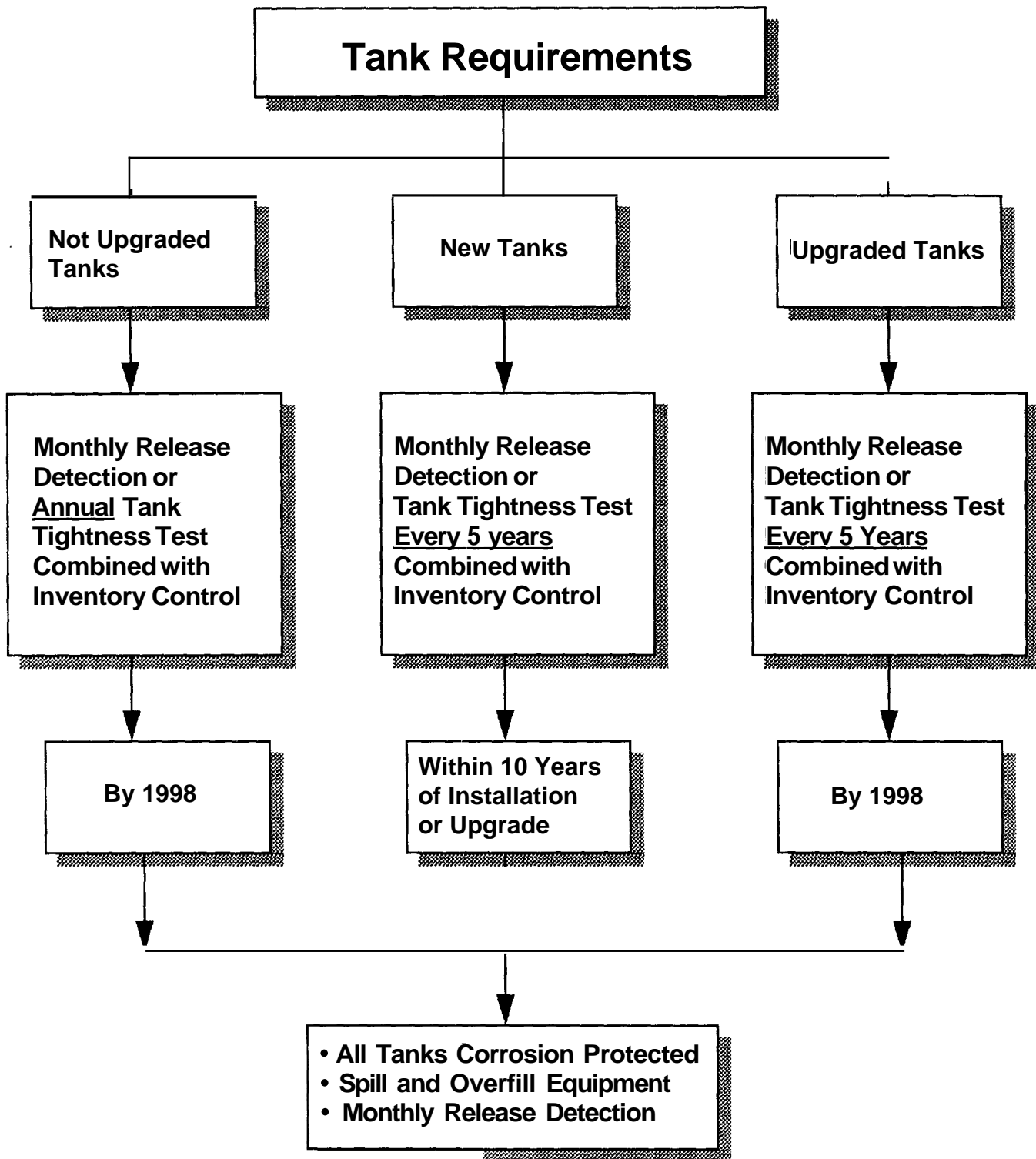
To prepare the blend of contaminant, first wet screen a quantity of coarse air cleaner dust on a 200-mesh screen (particle retention 74 pm). This is done by placing a portion of the dust on a 200-mesh screen and running

water through the screen while stirring the dust with the fingers. The fine contaminant particles passing through the screen are discarded. The +200 mesh particles collected on the screen are removed and dried for one hour at 230 F [110 °C]. The blend of standard contaminant is prepared by mixing 60% by weight of coarse air cleaner dust as received after drying for one hour at 230 F [110 °C] with 60% by weight of the +200 mesh screened dust.

1.3 The coarse air cleaner dust as received and the blend used as the standard contaminant have the following approximate particle size analysis: Wt. % in various size ranges, pm.

Size range	As received	Blend
0-6	12	6
5-10	12	6
10-20	14	7
20-40	23	11
40-60	30	32
80-200	9	38

**ATTACHMENT 1-11
OVERVIEW OF UNDERGROUND STORAGE TANK REQUIREMENTS***

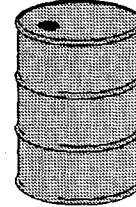


* Taken from Preamble to 40 CFR Part 280, Page 37099.

This page left intentionally blank.

ATTACHMENT 1-12 METHODS OF RELEASE DETECTION FOR TANKS*

There are several methods of release detection for tanks that may be used to meet the requirements. These method(s) must be conducted in accordance with the performance requirements listed below. Whichever method(s) are chosen, it must be capable of detecting a leak rate or quantity of substance with a probability of detection (Pd) of .95 and a probability of false alarm (Pfa) of .05.



A. Inventory control

Product inventory control (or another test of equivalent performance) must be conducted monthly to detect a release of at least 1.0 percent of flow-through plus 130 gallons on a monthly basis in the following manner:

1. Inventory volume measurements for regulated substance inputs, withdrawals, and the amount still remaining in the tank are recorded each operating day;
2. The equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch;
3. The regulated substance inputs are reconciled with delivery receipts by measurement of the tank inventory volume before and after delivery;
4. Deliveries are made through a drop tube that extends to within one foot of the tank bottom;
5. Product dispensing is metered and recorded within the local standards for meter calibration or an accuracy of 6 cubic inches for every 5 gallons of product withdrawn; and
6. The measurement of any water level in the bottom of the tank is made to the nearest one-eighth of an inch at least once a month.

B. Manual tank gauging

Manual tank gauging must meet the following requirements:

1. Tank liquid level measurements are taken at the beginning and ending of a period of at least 36 hours during which no liquid is added to or removed from the tank;

* Taken from 40 *CFR* Part 280, Subpart D, Section 280.43.

2. Level measurements are based on an average of two consecutive stick readings at both the beginning and ending of the period;
3. The equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch;
4. A leak is suspected and subjected to the release investigation requirements if the variation between beginning and ending measurements exceeds the weekly or monthly standards in the following table:

Nominal Tank Capacity	Weekly Standard (one test)	Monthly Standard (average of four tests)
550 gallons or less	10 gallons	5 gallons
551 - 1,000 gallons	13 gallons	7 gallons
1,001 - 2,000 gallons	26 gallons	13 gallons

5. Only tanks of 550 gallons or less nominal capacity may use this as the sole method of release detection. Tanks of 551 to 2,000 gallons may use the method in place of manual inventory control. Tanks of greater than 2,000 gallons nominal capacity may not use this method to meet the release detection requirements.

C. Tank tightness testing

1. Tank tightness testing (or another test of equivalent performance) must be capable of detecting a 0.1 gallon per hour leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.

D. Automatic tank gauging

Equipment for automatic tank gauging that tests for the loss of product and conducts inventory control must meet the following requirements:

1. The automatic product level monitor test can detect a 0.2 gallon per hour leak rate from any portion of the tank that routinely contains product; and

2. Inventory control (or another test of equivalent performance) is conducted in accordance with the requirements above.

E. Vapor monitoring

Testing or monitoring for vapors within the soil gas of the excavation zone must meet the following requirements:

1. The materials used as backfill are sufficiently porous (e.g., gravel, sand, crushed rock) to readily allow diffusion of vapors from releases into the excavation area;
2. The stored regulated substance, or a tracer compound placed in the tank system, is sufficiently volatile (e.g., gasoline) to result in a vapor level that is detectable by the monitoring devices located in the excavation zone in the event of a release from the tank;
3. The measurement of vapors by the monitoring device is not rendered inoperative by the ground water, rainfall, or soil moisture or other known interferences so that a release could go undetected for more than 30 days.
4. The level of background contamination in the excavation zone will not interfere with the method used to detect releases from the tank;
5. The vapor monitors are designed and operated to detect any significant increase in concentration above background of the regulated substance stored in the tank system, a component or components of that substance, or a tracer compound placed in the tank system;
6. In the UST excavation zone, the site is assessed to ensure compliance with the requirements in 1 through 4 of this section and to establish the number and positioning of monitoring wells that will detect releases within the excavation zone from any portion of the tank that routinely contains product; and
7. Monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.

F. Ground Water Monitoring

Testing or monitoring for liquids on the ground water must meet the following requirements:

1. The regulated substance stored is immiscible in water and has a specific gravity of less than one;

2. Ground water is never more than 20 feet from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the monitoring wells or devices is not less than 0.01 cm/sec (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials);
3. The slotted portion of the monitoring well casing must be designed to prevent migration of natural soils or filter pack into the well and to allow entry of regulated substance on the water table into the well under both high and low ground-water conditions;
4. Monitoring wells shall be sealed from the ground surface to the top of the filter pack;
5. Monitoring wells or devices intercept the excavation zone or are as close to it as is technically feasible;
6. The continuous monitoring devices or manual methods used can detect the presence of at least one-eighth of an inch of free product on top of the ground water in the monitoring wells;
7. Within and immediately below the UST system excavation zone, the site is assessed to ensure compliance with the requirements in sections 1 through 5 of this section and to establish the number and positioning of monitoring wells or devices that will detect releases from any portion of the tank that routinely contains product; and
8. Monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.

G. Interstitial monitoring

Interstitial monitoring between the UST system and a secondary barrier immediately around or beneath it may be used, but only if the system is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains product and also meets one of the following requirements:

1. For double-walled UST systems, the sampling or testing method can detect a release through the inner wall in any portion of the tank that routinely contains product;
2. For UST systems with a secondary barrier within the excavation zone, the sampling or testing method used can detect a release between the UST system and the secondary barrier;

- i. The secondary barrier around or beneath the UST system consists of artificially constructed material that is sufficiently thick and impermeable (at least 10^{-6} cm/sec for the regulated substance stored) to direct a release to the monitoring point and permit its detection;
 - ii. The barrier is compatible with the regulated substance stored so that a release from the UST system will not cause a deterioration of the barrier allowing a release to pass through undetected;
 - iii. For cathodically protected tanks, the secondary barrier must be installed so that it does not interfere with the proper operation of the cathodic protection system;
 - iv. The ground water, soil moisture, or rainfall will not render the testing or sampling method used inoperative so that a release could go undetected for more than 30 days;
 - v. The site is assessed to ensure that the secondary barrier is always above the ground water and not in a 25-year flood plain, unless the barrier and monitoring designs are for use under such conditions; and
 - vi. Monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
3. For tanks with an internally fitted liner, and automated device can detect a release between the inner wall of the tank and the liner, and the liner is compatible with the substance stored.

H. Other methods

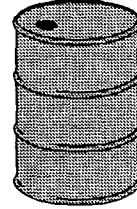
Any other type of release detection method, or combination of methods, can be used if:

1. It can detect a 0.2 gallon per hour leak rate or a release of 150 gallons within a month with a Pd of 0.95 and a Pfa of 0.05; or
2. The ERA may approve another method if the owner and operator can demonstrate that the method can detect a release as effectively as any of the methods allowed in sections C through H of this attachment. In comparing methods, the ERA shall consider the size of release that the method can detect and the frequency and reliability with which it can be detected. If the method is approved, the owner and operator must comply

with any conditions imposed by the ERA on its use to ensure that protection of human health and the environment.

**ATTACHMENT 1-13
METHODS OF RELEASE DETECTION FOR PIPING***

There are several methods of release detection for piping that may be used to meet the requirements. These method(s) must be conducted in accordance with the performance requirements listed below. Whichever method(s) are chosen, it must be capable of detecting a leak rate or quantity of substance with a probability of detection (Pd) of .95 and a probability of false alarm (Pfa) of .05.



A. Automatic line leak detectors

Methods which alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through piping or triggering an audible or visual alarm may be used only if they detect leaks of 3 gallons per hour at 10 pounds per square inch line pressure within 1 hour. An annual test of the operation of the leak detector must be conducted in accordance with the manufacturer's requirements.

B. Line tightness testing

A periodic test of piping may be conducted only if it can detect a 0.1 gallon per hour leak rate at one and one-half times the operating pressure.

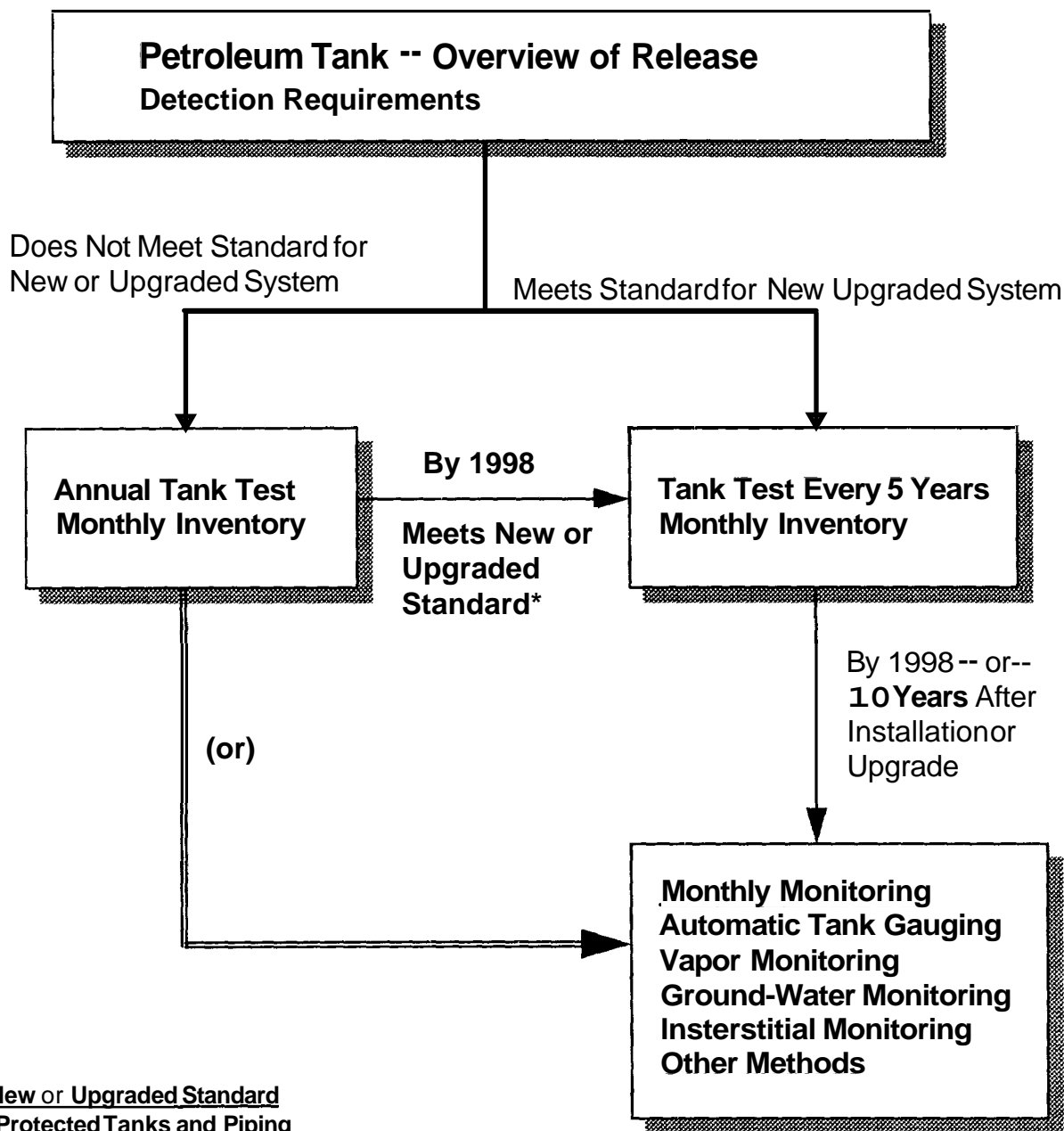
C. Applicable tank methods

Any of those methods in sections E-H of Attachment 1-13, Methods of Release Detection for Tanks, may be used if they are designed to detect a release from any portion of the underground piping that routinely contains regulated substances.

* Taken from 40 *CFR* Part 280, Subpart D, Section 280.44.

This page left intentionally blank.

**ATTACHMENT 1-14
OVERVIEW OF RELEASE DETECTION REQUIREMENTS
FOR PETROLEUM TANKS***

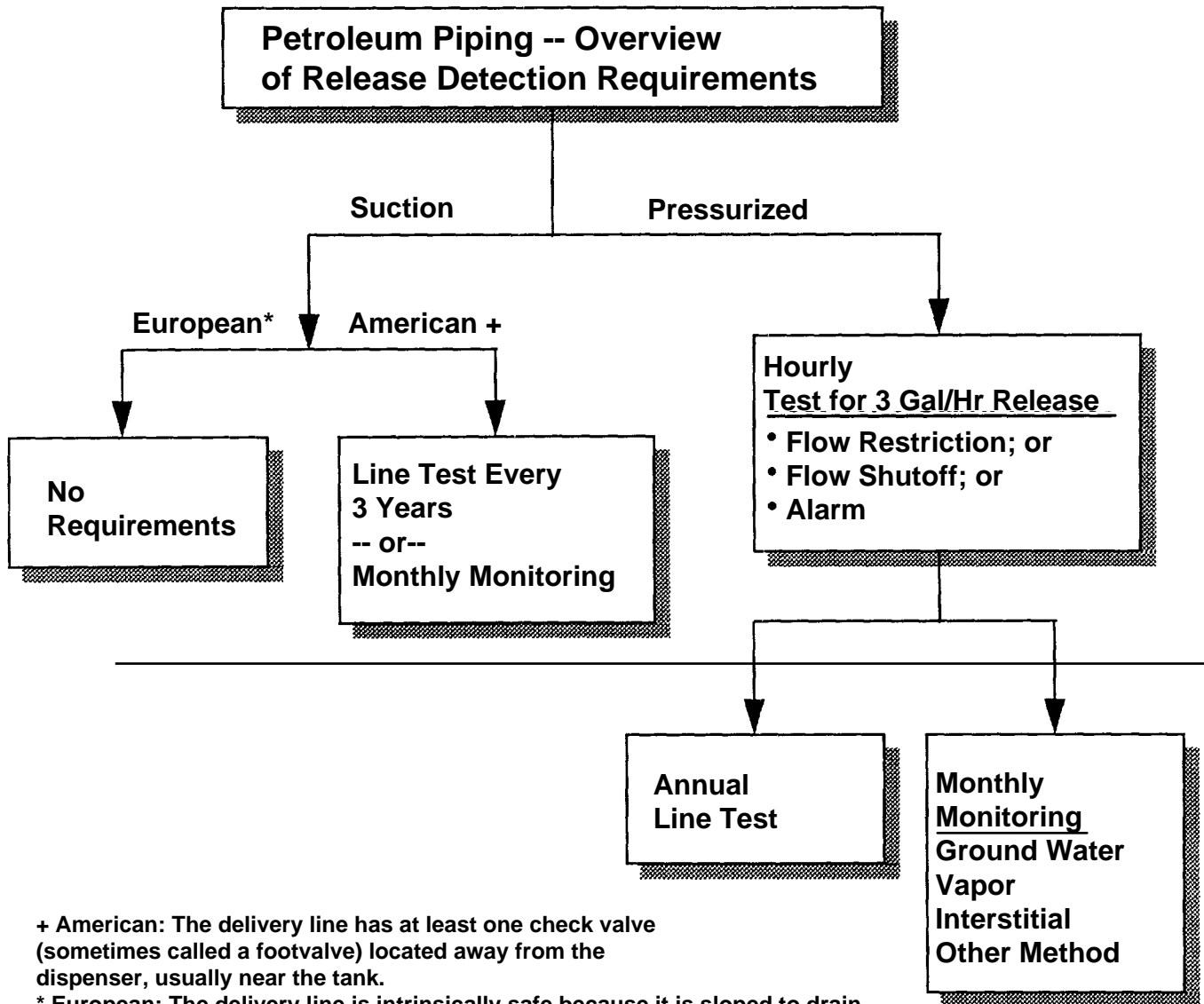


* New or Upgraded Standard
 -- Protected Tanks and Piping
 -- Spill and Overfill Controls

* Taken from Preamble to 40 Part 280, Page 37149.

This page left intentionally blank.

**ATTACHMENT 1-15
OVERVIEW OF RELEASE DETECTION
REQUIREMENTS FOR PIPING***



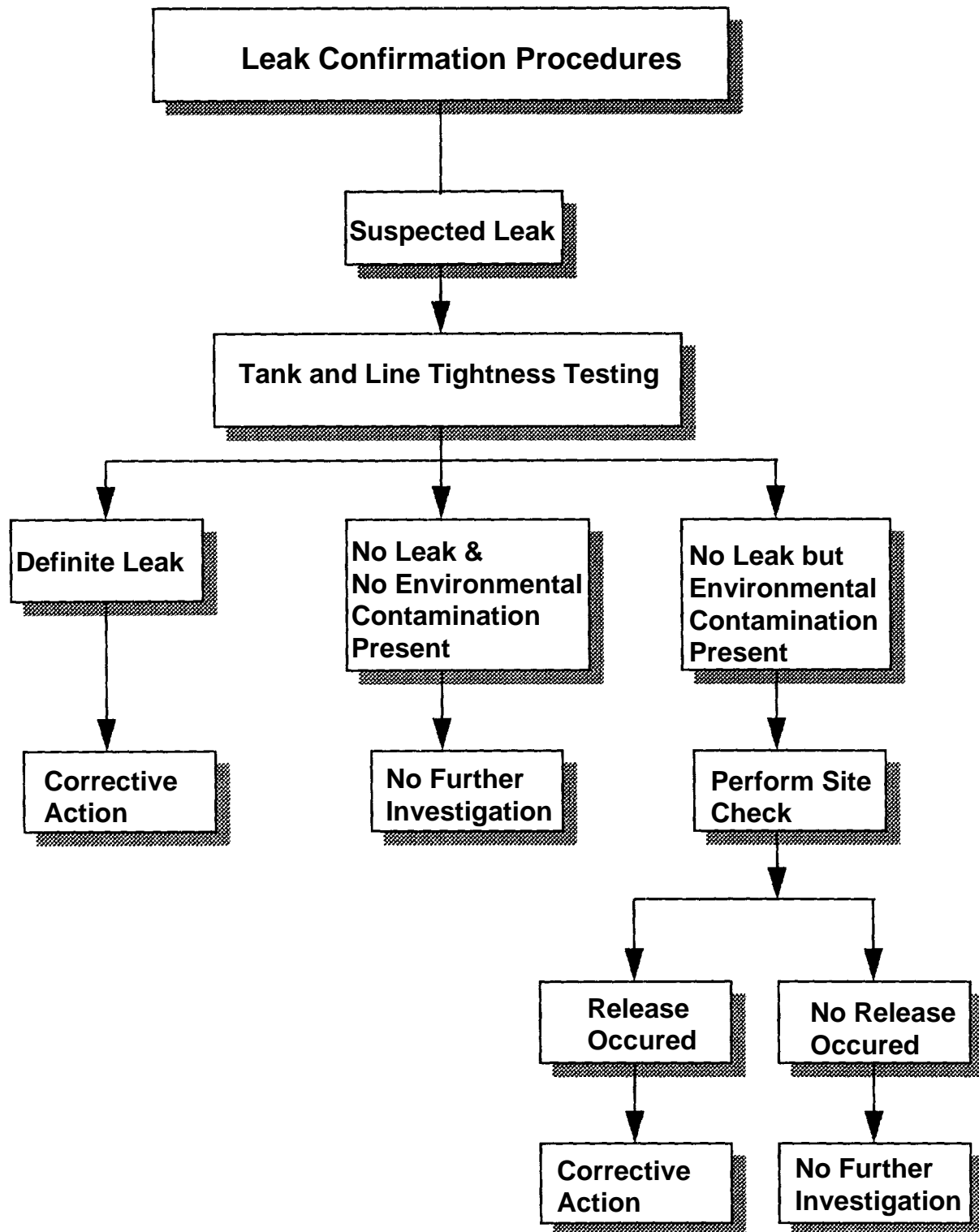
+ American: The delivery line has at least one check valve (sometimes called a footvalve) located away from the dispenser, usually near the tank.

* European: The delivery line is intrinsically safe because it is sloped to drain back into the tank and there is only one check valve on the line next to the dispenser unit.

* Taken from Preamble to 40 CFR Part 280, Page 37152.

This page left intentionally blank.

**ATTACHMENT 1-16
LEAK CONFIRMATION DETECTION**



This page left intentionally blank.

SECTION 2

**STANDARD OPERATING
PROCEDURES**

SOP

This page left intentionally blank.

SECTION 2 - STANDARD OPERATING PROCEDURES

Topics addressed in this section are basic to the safe operation of any transportation system. They include compliance with the federal Commercial Driver License requirements and elemental safety subjects such as insurance, maintenance practices, and standard driver's forms. At a minimum, every transportation system should have standard operating procedures and practices in place for each one of these areas.



The forms referred to in this section are presented in Section 4 - Passenger, Vehicle and System Safety Forms (Part 2).

CLASS D LICENSE PROGRAM

The West Virginia Division of Motor Vehicles requires a Class D License if an individual meets the following:

Any person eighteen (18) years and older with at least one year driving experience who operates motor vehicles which transport persons or property for compensation. This effects individuals whose primary job, duty or function would be the operation of a motor vehicle.

Class D vehicles must have a gross vehicle weight rating (GVWR) of less than 26,001 pounds, a passenger capacity of 15 or less passengers, including the driver, and cannot transport hazardous materials that require the vehicle to be placarded.

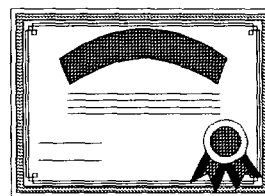
NOTE: Anyone who operates motor vehicles which transport persons or property on a volunteer basis are NOT required to obtain the Class D License, nor are individuals who operate emergency vehicles, such as ambulances, rescue equipment, law enforcement and fire fighters.

Those persons for which the operation of a motor vehicle is incidental to their job duties or functions would NOT be required to obtain a Class D License.

Anyone with questions concerning Class D License should contact the Division of Motor Vehicles at 558-2350.

COMMERCIAL OPERATOR'S LICENSE

The National Commercial Driver Licensing Program is a result of the Commercial Motor Vehicle Safety Act, signed into law in October of 1986. The program sets national standards



for the licensing of drivers for certain types of vehicles including those that have a gross vehicle weight rating (GVWR)¹ of over 26,000 pounds (transit buses) and those that are designed to transport 16 or more people including the driver (maxi-vans).

In West Virginia, copies of the *CDL Manual* are available from the West Virginia Division of Motor Vehicles, in Charleston, ask for Mr. R. Douglas Thompson at (304) 558-2350.

The following regulations apply to commercial operators. Much of the language comes directly from the *WV CDL Manual*.

DRIVER RESPONSIBILITIES

General

- Commercial operators are not allowed to hold more than one driver's license.
- Commercial operators must inform their state licensing agency and their employer within 30 days after the date such driver is found to have been convicted of any out-of-state traffic violation (except parking) convictions. This is true no matter what type of vehicle was being driven. Such violations must be in writing. Necessary forms are available from the Division of Motor Vehicles.
- Commercial operators must notify employers of the fact they had their driver's license suspended, revoked, canceled, or expired by any state and consequently, have lost the privilege to drive a commercial motor vehicle in any state for any period, or been disqualified from driving a commercial motor vehicle for any period. This notification must be made before the end of the business day following the day the driver received notice of that fact.
- Operating privileges will be suspended for either DUI, or leaving the scene of an accident, or using a commercial vehicle in the commission of a felony while operating a commercial vehicle. One year for first offense, lifetime disqualification for second offense.

¹ GVWR means the value specified by the manufacturer(s) as the maximum loading weight of a single vehicle, or registered gross weight.

Notification of Previous Employment

- Each person who applies to be a commercial motor vehicle driver must provide the employer, at the time of the application, with the following information for the ten (10) years preceding the date of application.
 - A list of names and addresses of the applicant's previous employers for which the applicant was a driver of a commercial motor vehicle.
 - The dates between which the applicant drove for each employer.
 - The reason for leaving that employer. The applicant must certify that all information furnished is true and complete. An employer may require an applicant to provide additional information.

Accidents

- If involved in an accident resulting in death or bodily injury, or total property damage of \$250.00 or more, you must file a written report of the accident with the Commissioner of Motor Vehicles within five (5) days after the accident. It is your responsibility to file the report. DO not depend on someone else to make your report.

There is a space provided for insurance verification on the Accident Report which should be completed. If your vehicle was not covered by automobile liability insurance on the date of the accident, your motor vehicle privileges may be suspended.

If, after reviewing the report of the accident, the Commissioner of Motor Vehicles determines your vehicle was not covered by an automobile liability insurance policy on the date of the accident; and there is a reasonable possibility of a civil judgement against you as a result of the accident, the law requires your motor vehicle privileges to be suspended until you comply with one of the following provisions by forwarding to the Division of Motor Vehicles.

- A notarized release for damages from all persons involved and all persons whose property was damaged in excess of \$250.00.
- A transcript from a final civil court action showing you were not liable for property damages or personal injuries arising from the accident.

- An agreement not to sue made by you and any individual(s) who was injured, or whose property was damaged in excess of \$250.00.
- You deposit financial security with the Division of Motor Vehicles. The amount you need to deposit will be determined by the Commissioner of Motor Vehicles, and used to satisfy any judgements for damages resulting from the accident.
- An agreement for payment of damages singed by yourself and any individual(s) who was injured, or whose property damage was in excess of \$250.00.

If you are driving without liability insurance and it is determined you are at fault in an accident, your driver's license and registration of the vehicle involved in the accident, and any other vehicle registered in that owner's name will be suspended. The driving privileges will be retained only when:

- You comply with one of the above requirements.
- One (1) year passes from the date of suspension and there has been no lawsuit brought against you as a result of the accident.

The suspension and security provisions of this law do not apply if your vehicle was being operated without your permission when the accident occurred.

Disqualification and Cancellation

- Any person is disqualified from driving a commercial motor vehicle for a period of not less than one (1) year, if convicted of a first violation of:
 - driving a commercial motor vehicle under the influence of alcohol or a controlled substance;
 - driving a commercial motor vehicle while the alcohol concentration of the person's blood or breath is 0.04 or more;
 - leaving the scene of an accident involving a commercial motor vehicle driven by the person;
 - using a commercial motor vehicle in the commission of any felony as defined in this Act; or

- refusal to submit to a test to determine the driver's alcohol concentration while driving a commercial motor vehicle.

In addition, the State of West Virginia will include the convictions of any of the following offenses as an operator of any vehicle as disqualification offenses:

- manslaughter or negligent homicide resulting from the operation of a motor vehicle;
- driving while license is suspended or revoked; or
- perjury, or making a false affidavit or statement under oath to the Division of Motor Vehicles.

Commercial Drivers Prohibited from Operating with any Alcohol in System

- Notwithstanding any other provision of Law, a person may not drive, operate, or be in physical control of a commercial motor vehicle while having any measurable alcohol in his or her system.

A person who drives, operates, or is in physical control of a motor vehicle while having any measurable alcohol in his or her system, or who refuses to take a preliminary breath test to determine their alcohol content must be placed out-of-service for twenty-four (24) hours.

Implied Consent and the Chemical Test

- Any person who accepts the privilege of driving in West Virginia shall be deemed to have given consent, if arrested, to take the designated test to determine the alcohol content in his or her body. If he or she refuses to take the chemical test, privilege of operating a motor vehicle will be suspended for a period of at least one (1) year, and up to life.

Many people mistakenly assume the Implied Consent Law means they will be fined, or go to jail if they are stopped and have alcohol on their breath. On the contrary, the Law was designated to protect the driver who has not been drinking since the blood alcohol test will provide a medically accepted measure of alcohol concentration. The Implied Consent Law protects the public from drivers who are intoxicated but, when arrested, refuse to be tested for alcohol content. Without this Law, some drivers may escape punishment and continue to pose a danger to the public.

Mandatory Revocation of License

- Convictions for certain violations of the motor vehicle laws are serious and require the immediate revocation of your driver's license. The Division of Motor Vehicles must revoke a driver's license when it receives a notice of final conviction for a period of at least One (1) year for any of the following.
 - Manslaughter or negligent homicide resulting from the operation of a motor vehicle.
 - A felony involving the use of a motor vehicle.
 - Perjury or false affidavits to the Division of Motor Vehicles.
 - Leaving the scene of an accident in which you are involved that results in death or personal injury.
 - Three convictions of reckless driving in twenty-four (24) months.
 - Racing on streets or highways (drag racing).
 - Driving while license is suspended.
 - Failure to satisfy a civil judgement against you as a result of your involvement in an automobile accident.
 - Junior operators—after conviction for two (2) or more moving violations, or one (1) mandatory revocation.
 - Conviction in another State for driving under the influence of alcohol, controlled substances, or drugs.
 - A DUI conviction against a person under the age of 21 will be in effect until age 21 or the applicable statutory period of revocation, which ever is longer.

Driving While Revoked or Suspended

- Revocation and suspension periods vary depending on the offense. In certain instances, you will be required to show proof of financial responsibility or motor vehicle insurance before your privilege to drive may be reinstated.

The mandatory penalty for the first conviction is a minimum forty-eight (48) hour jail term.

Even more serious is the penalty for driving under the influence while the license has been revoked. Upon conviction, the penalty is a minimum jail sentence of six (6) months.

Employer Responsibilities

- No employer may knowingly allow, permit, or authorize a driver to operate a commercial motor vehicle during any period:
 - in which the driver has a driver's license suspended, revoked, or canceled by a State has lost the privilege to drive a commercial motor vehicle in a State, or has been disqualified from driving a commercial motor vehicle; or
 - in which the driver has more than one driver's license at one time except during the ten (10) day period beginning on the date the employee is issued a driver's license.

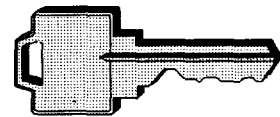
National System

- All states will be connected to one computerized system to share information about CDL drivers. The States will check on driver's accident records and be sure that drivers do not get more than one CDL.

The primary source for the above information was the *CDL Manual* published by the West Virginia Division of Motor vehicles. Every driver should have a current copy of the *CDL Manual* in his or her possession.

INSURANCE

Insurance companies set their rates according to an analysis of a transportation system's risk exposure. The determination is usually based on evaluating the history of claims made against the transportation authority as shown in a Loss Run Statement.

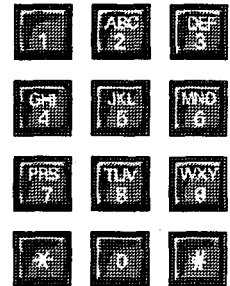


An aggressive safety program can reduce the number of claims and thereby lower insurance premiums. In addition, many insurance companies factor into their analysis whether or not the organization has safety committees, driver training programs, safety incentives for employees, and a Passenger, Vehicle and System (PVS) Safety Plan. The formation of a well-planned and well-executed safety program

makes sense because it not only prevents injuries and the potential loss of life, but could save the transportation system money.

COMMUNICATIONS EQUIPMENT

Radios provide transportation systems with an open channel of communication during times of emergency. They also allow greater flexibility in the normal execution and control of system operations. For this reason, many transportation systems consider radio communications to be an essential part of providing service to the public.



If your system does not have radio-equipped vehicles, see the section entitled "Emergency Communication Forms" in Section 3. If your transportation system does have its vehicles equipped with radios or is thinking about purchasing them, the following safety information is important.

- Place the radios in a location where drivers can easily use the unit during all procedures.
- Place the radio in a location that can be reached by passengers if the driver were to become incapacitated.
- Post clearly written directions for passengers to use the communications system and give them a unique "code" to signify that an emergency exists.
- Provide enough slack in the extension cord for the microphone to be operated from outside the drivers window in the event that conditions in the vehicle (such as fumes or smoke) make communication from inside impossible.
- Restrict non-essential use of the radio.
- Write, distribute, and provide training on a set of standard and emergency operating procedures that clearly define the proper use of the communications system.

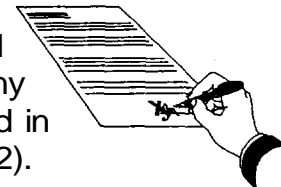
As a result of mountainous terrain, some systems continue to use cellular phones for communication instead of radios. In such cases, it is best to use equipment which is mounted to the vehicle so the operator can keep both hands on the steering wheel when it is in use. A speed dialing function can also help operators in normal use and passengers in emergency use. Access to passengers in an emergency may be a problem if they are unable to reach it. A portable cellular phone

has the advantage of being able to be used to call for help from outside of the vehicle in the event of a smoke or fire condition.

Emergency communication forms should be carried on all vehicles in addition to radios or cellular phones.

DRIVER FORMS

The forms described in this part of the Resource Manual enable drivers to conduct normal operations while noting any irregularities. The forms referred to in this section are presented in Section 4 - Passenger, Vehicle and System Safety Forms (Part 2).



PRE-TRIP VEHICLE INSPECTION SHEET

The Pre-Trip Vehicle Inspection Sheet (Exhibit 4-13) should be completed by each driver before he or she takes the vehicle out on the road. The procedure evaluates many of the vital components required for the safe operation of the vehicle. In addition, the pre-trip inspections, if performed properly, will set a minimum standard for the vehicles in service.

Drivers should review each component listed and place a check mark by each one that passes inspection. An "X" should be placed on the line if the component does not come up to standard. For example, if the right headlight is out, an "X" should be placed on the appropriate line.

When the driver completes the form, he or she should complete the information requested in the top box. The date, vehicle number and signature serve as a control mechanism so that the driver is fully responsible for completing the pre-trip inspection and so that he or she is obligated to pay attention to any problems listed on the form.

The lower box explains to a driver what to do if a problem is found on the vehicle. He or she is instructed to inform their supervisor who must take the responsibility for placing the vehicle in service if the component is not fixed immediately. This step provides an incentive for drivers to be thorough in their inspections, and also provides supervisors with an incentive to put on the road only those vehicles that they declare safe.

VEHICLE DEFECT SHEET

The Vehicle Defect Sheet (Exhibit 4-14) is used by the driver when a mechanical problem develops during the course of his or her tour. Information on the symptoms of the problem, the malfunctioning or broken component and the vehicle are to be filled out by the driver. Once the problem has been resolved, mechanics are responsible for recording on the sheet the repairs that have been made.

When a problem develops, the driver should place a check mark by the vehicle component that needs to be fixed. In addition, the driver must also fill out the information requested in the top box including a description of the defect, the vehicle number, the date and his or her signature.

The mechanic records all repair information in the second box. He or she is also required to sign and date the form. After the sheet is completed and the vehicle is repaired, it should be kept in each vehicles maintenance file.

INCIDENT REPORT

Drivers should fill out an Incident Report (Exhibit 4-15) if anything unusual occurs during their tour. Examples of incidences that should be recorded include, but are not limited to:

- passenger falls without any injuries (if injuries occur, fill out an Accident Report, Exhibit 4-18);
- difficulties with passengers (safety belts, thrown objects, etc.);
- equipment failures which cause delays;
- running over objects which could cause residual damages to tires or undercarriage; and
- any unusual occurrences or events that caused or could cause future problems for the safe and reliable operation of the transportation system.

Immediately after the incident, the operator should indicate, on the Incident Report, the date and time of the incident, the vehicle being used and the location of the occurrence. Space is provided on the form for a description of the incident, and the back can be used for additional space if necessary. Upon completion of the form, drivers should sign their name. At the end of the tour, the driver should hand-deliver the sheet to a supervisor for a counter-signature.

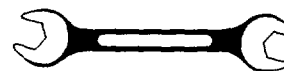
Drivers should be encouraged to fill out the Incident Reports for any occurrence, even though it may seem insignificant at the time. A paper trail dating back to the time of an incident is frequently the best defense transportation systems have against frivolous claims.

DRIVER FORMS CHECKLIST

A listing of the activities to be conducted for this part of the Safety Program is included as Exhibit 4-16.

PREVENTIVE MAINTENANCE

Preventive Maintenance (PM) programs are a set of vehicle inspections and service performances that occur at regular intervals based either on the number of miles or the number of hours a vehicle has been operated. A solid PM program lowers the cost of repairs over the life of the vehicle, assures that it is kept in safe operating condition, and reduces the number of costly and disruptive roadcalls. The key is to replace mechanical components just before they fail but not while they still have significant life. This practice reduces the number of major repairs that occur as a direct result of failed components. For example, good PM programs replace brake shoes at intervals based on experiences with each vehicle to date, so that their failure does not cause damage to discs or drums and does not result in costly road calls.



Your system's PM program should be based upon the manufacturer's suggested repair schedule and your systems own experience. For example, the manufacturer of your vehicles might suggest oil changes every 4,000 miles. Your mechanic, on the other hand, may recommend that in your operating environment the oil may need to be changed every 2,000 miles. In such circumstances it is nearly always best to follow the recommendation of your mechanic. An alternative is to get an independent assessment. Oil samples pulled at different intervals from all vehicles in the fleet could be sent to a lab for analysis. The lab results would govern which vehicles should have their oil changed.

From the manufacturer's and mechanic's suggestions, conduct three or four inspections ranging from simple standard maintenance such as changing the oil and replacing the filters to one that includes comprehensive tasks such as relining the brakes.

All good PM programs have the following things in common.

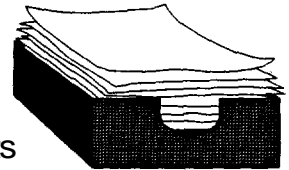
- The component replacements and inspections are comprehensive by the end of the inspection cycle.
- PM checklists are presented in a logical order for the mechanic.
- PM inspections are set at common intervals. For example, 3,000, 6,000, and 12,000 mile inspections allow maintenance crews to perform their comprehensive 12,000

mile inspection at the same time the vehicle is due for its 3,000 and 6,000 mile inspections.

- During the PM inspection, no more than 10 minutes should be needed for the repair of any component. If a task is projected to take longer, the repair should be left until after the inspection is completed. (But attended to before the vehicle is to be put back in service.)
- Attention is paid to details such as missing screws, loose seats or worn components.

MAINTENANCE RECORDS

The degree to which maintenance records need to be kept is dependent upon several variables. A small operation that contracts out its maintenance work to a local garage will have very different needs than a small urban system that employs its own mechanics and has its own parts department.



However, one element that is crucial to any maintenance record-keeping system is a perspective on the repairs that have been made over each vehicle's lifetime. To track this information, many systems keep a listing of repair work in a file folder for each vehicle. The folder is used to hold all of the repair orders and invoices associated with the vehicle. The recorded information includes the date and vehicle mileage at the time of the repairs and the nature of the work that was done.

Commercially available vehicle folders can be extremely valuable to transportation supervisors and managers since they provide an at-a-glance reference for any recurring problems. Details on the actual repairs made are then easily accessible in the records held in the folder.

Another advantage of the folder is that it can be used by general managers or supervisors as a cross-check against any unnecessary repairs or missed PM inspections. If a repair occurs twice without a reasonable interval or occurs just after a PM inspection, the mechanics work can be called into question.

SECTION 3

**EMERGENCY OPERATING
PROCEDURES**

EOP

This page left intentionally blank.

SECTION 3 - EMERGENCY OPERATING PROCEDURES

The safety topics discussed in this section center on preparing for emergency situations that may arise. As in many other safety areas, prior planning and preparation are crucial to a successful response to an emergency situation.

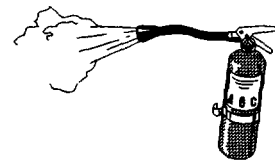


Emergency planning must include both transportation system preparation and rescue crew preparation. For the transportation system this includes establishing a system of communications in addition to proper preparation of emergency equipment and materials to be permanently placed on each vehicle. Rescue personnel should be provided with means for identifying vehicles and passengers, gaining access to the interior of transportation vehicles, and contacting the transportation system.

The forms referred to in this part of the Resource Manual are presented in Section 4 - Passenger, Vehicle and System (PVS) Safety Program Forms (Part 3).

SAFETY EQUIPMENT

The safety equipment that should be carried on each vehicle includes both emergency devices and forms to be used in case of an accident.



ON-BOARD SAFETY EQUIPMENT

All transportation vehicles must carry on-board equipment to assist with the following emergency situations:

- response (fire extinguisher, first aid, and evacuation);
- cautionary (flares, reflectors, etc.); and
- maintenance (jumper cables, lug wrench, etc.).

The ability of the driver to react to emergency situations is highly dependent upon the training he or she has received and the availability and condition of the equipment that should be on the vehicle. Therefore, all materials that relate to emergency situations should be checked as part of every preventive maintenance inspection. Equipment should be stored securely near the driver compartment and out of the way of passengers. However, in the event the driver is incapacitated, the existence of the emergency equipment should be noticeable to passengers and available for their use.

The portable fire extinguishers to be carried on each of the vehicles should meet minimum standards for the size of the vehicle and the type of applications for which they may have to be used. Traditionally, it has been strongly recommended that each unit be equipped with at least a 17 pound Halon 1211 fire extinguisher with a rating of 3-A: 80-B: C. Halon is a clean agent which requires minimum cleanup after deployment. Recent controversy on the impact of released Halon on the ozone layer has caused manufacturers to stop producing Halon 1211 for portable extinguishers and Halon 1301 for automatic extinguishers. Currently, 20 pound dry chemical extinguishers with a rating of 20-A: 120-B:C are being substituted for Halon. The 20 pound dry chemical extinguisher should be located in a secure position in every vehicle and within easy access of the driver and passengers.

SUGGESTED VEHICLE EMERGENCY EQUIPMENT

The following safety equipment should be on-board each vehicle.

Response Equipment

- *1 20 pound dry chemical 20-A:180-B:C fire extinguisher
- *1 first aid kit including instant cold packs (e.g., ZEE medical service kit number Z42 or Johnson & Johnson kit No. 8172)
- *5 Good Samaritan Cards or Emergency Notification Cards (Exhibit 4-22)
- 1 seat belt cutter (e.g., Tie Tech, Inc. Safecut Webbing Cutter)
- 1 pry bar
- 1 transfer board for non-ambulatory passengers
- * 1 Biohazard kit (Disposable gloves for your hands, disinfectant spray for decontamination of any spill, paper towels for clean up, absorbent powder for clean up, approved bags & containers for proper disposal, dust pan, brush and tongs for handling "sharps", mouth and nose mask and disinfectant towelettes for immediate handcleaning)

Cautionary Equipment

- *3 reflective triangles mounted on stands
- 1 reflective vest

Maintenance Equipment

- 1 flashlight and set of extra batteries
- * 1 set of jumper cables
- * 1 spare tire plus appropriate jack and lug wrench

*Standard Equipment on Section 18 and Section 16 Vehicles.

In the summer, cautions should be taken to prevent vehicles from over-heating. During these months, each vehicle should carry its own 3 gallon container of water (preferably antifreeze mixture). Under no circumstances should extra fuel be carried as part of the emergency equipment.

In the winter, the following items should be carried on-board each vehicle:

- 1 10 pound bag of sand or cat litter
- 1 snow/ice scraper
- 1 blanket
- 1 rope capable of pulling the vehicle
- 1 shovel

All equipment must be secured to prevent injury to passengers in normal or emergency situations.

PASSENGER PROFILE CARD

Passenger Profile Cards (Exhibit 4-17) are designed to assist emergency crews in the event of a serious accident. A card should be filled out for each passenger and kept readily available for whenever the passenger rides in a vehicle. When trips are posted, each driver is responsible for taking the appropriate cards and placing them in a holding box that will be a permanent fixture on each vehicle.

Passenger Profile Cards aid emergency crews by helping them to:

- identify passengers who may be unconscious or unable to communicate; and
- advise rescue teams on the medical status of each passenger prior to the accident.

If used properly, Passenger Profile Cards can be extremely valuable in directing the efforts of rescue teams in an emergency.

OPERATOR ACCIDENT FORM

If an accident occurs, drivers should fill out an Operator Accident Form (Exhibit 4-18). This form has been designed to instruct the driver what to do if an accident occurs and organize the information that should be collected. The Operator Accident Form is to be included in an accident kit that should be permanently stationed on the vehicle. The form should be read by the driver during training and followed closely after an accident occurs.

ACCIDENT PROCEDURE CHECKLIST

The Accident Procedure Checklist (Exhibit 4-20) provides a simple listing of actions drivers should take when they have an accident. The sheet should be carried on each vehicle along with the Operator Accident Form to assist drivers in the actions they need to take before the Operator Accident Form is filled out.

ACCIDENT INFORMATION CHECKLIST

The Accident Information Checklist (Exhibit 4-21) is a listing of all the pertinent information that needs to be gathered at the scene of an accident. Although the same type of listing could be obtained through reading the Operator Accident Form, the Accident Information Checklist places all of the information on one page. This sheet should be carried on each vehicle and accompany the Operator Accident Form.

EMERGENCY COMMUNICATION FORMS

Many smaller transportation systems may not have radios. To assist emergency situations, two different forms have been developed that can be passed to motorists who can provide assistance. Your transportation system should choose one of the forms to be carried on your vehicles if they are not equipped with radios.

The first form is the "Good Samaritan Card" (Exhibit 4-22) which gives the passing motorist a detailed set of instructions. It is based on the concept that the first person to be contacted will be the transportation system's own dispatcher who will then alert emergency forces.

The second form, the "Emergency Notification Card" (Exhibit 4-22), lists the telephone numbers of local emergency forces. The passing motorist would call the appropriate emergency personnel for assistance aided by information filled out by the driver at the bottom of the sheet. The passing motorist would also be instructed to contact the dispatcher.

PASSENGER CARDS

Passenger Cards (Exhibit 4-23) are used to accurately record vital information on the occupants of a vehicle at the time of an accident.

The accident kit for each vehicle must include 15 pens and an envelope for the passenger cards that are collected. Drivers are instructed, on the Accident Form, to:

- hand out a card to each passenger on the vehicle at the time of the accident;

- distribute the cards from the rear forward;
- indicate that the cards will be collected promptly;
- collect a card from each passenger; and
- thank each passenger for his/her cooperation.

Cards should be distributed from the rear of the vehicle first because the behavior of one passenger may affect others. If the first passenger refuses to fill out a card, he/she may influence others to do likewise. By starting the process in the back of the vehicle, each interaction will not be "on display" for everyone to see.

The way the driver handles passengers after an accident can make a difference in the number of claims filed against the transportation system.

EMERGENCY RESPONSE MATERIALS

The following materials help emergency crews respond to the needs of the transportation system in case of an accident. They provide information on the transportation system itself, the vehicle involved in the emergency, and the passengers who may be on-board the vehicle.



It is suggested that in addition to the following materials, your transportation system post its name, telephone number, and vehicle number on the outside of the vehicle and also prominently display the same information inside. This will provide emergency crews with a number to contact when they arrive on the scene. It will also allow passengers to provide vehicle number information during emergency radio usage.

AGENCY PROFILE SHEET

The Agency Profile Sheet (Exhibit 4-24) is filled out by each transportation system and distributed to local emergency personnel such as police forces, fire companies, and ambulance crews. The purpose of the sheet is to provide vital information on who to contact from the transportation system in case of an emergency and basic information on the vehicles operated.

Copies of the Agency Profile Sheet should be distributed as part of each transportation system's effort to coordinate local emergency preparedness needs.

VEHICLE PROFILE CARD

The Vehicle Profile Card (Exhibit 4-25) is kept in emergency vehicles to aid rescue crews in the event of an emergency involving a paratransit or transit vehicle. It can assist emergency personnel by listing important rescue information such as its seating capacity, fuel tank location and capacity, and emergency access points.

EMERGENCY LABELS

"RESCUE" labels should be used by transportation systems to mark the emergency windows or doors and any roof ventilation/escape hatches which are suitable for use in an emergency. Emergency access points should be listed in each vehicle's service manual.

PASSENGER I.D. CARDS

Passenger I.D. Cards (Exhibit 4-26) can be used to register passengers who use the transportation system and provide an additional means of reaching a passenger's primary physician or emergency contact if the need were to arise. A card should be carried by each passenger and can be used to identify the passenger in an emergency or to control use of the transportation system to individuals who have been registered.

EMERGENCY PLACARD

The Emergency Placard (Figure 4-27) is posted inside the vehicle. Its purpose is to advise and remind emergency personnel that some passengers may not be able to communicate or are incapable of some physical movements. At the scene of an accident it is frequently difficult to sort out previous impairments or disabilities from injuries that might have been caused by the accident. The Emergency Placard reminds rescue personnel that there is a good possibility that they should not make unwarranted assumptions about the capabilities or characteristics of the accident victims.

EMERGENCY RESPONSE CHECKLIST

A listing of the activities to be conducted for this part of the Safety Program is included as Exhibit 4-28.

EMERGENCY EVACUATIONS

Passenger evacuations and accident scene activities can be structured around nine critical elements that together form a system of emergency response preparedness. The nine activities are:



- preparation;
- response;
- hazard control;
- support operations;
- gaining access;
- emergency care;
- disentanglement;
- removal and transfer; and
- debriefing and documentation.

PREPARATION

The first step in the planning process is inventorying the rescue equipment that is available. (A comprehensive list of emergency equipment is listed in Attachment 1 -1.) Although much of the equipment used in auto accident rescue situations can be applied to public transportation accidents, there are some important operations that do require special equipment. For example, rescue forces may need powered hydraulic tools to cut through wheelchair lifts, and/or ramps, that commonly block side or rear doors.

Rescue personnel should be trained for both emergency access to transportation vehicles and, if the system is a paratransit operation, in the evacuation of elderly passengers and passengers with disabilities. Simulated accidents can be a particularly effective way to orient rescue crews to the special needs of public transportation emergencies.

RESPONSE

The correct level of effort needed to respond to an emergency is highly dependent on both the characteristics of the involved vehicle and the possible disabilities of the occupants. If the accident involves a paratransit vehicle, the level of effort needed from the response teams could be considerably greater than a typical auto accident. For this reason it is important that the emergency crews have as much information as possible before they respond to the accident. Useful information could include: type of vehicle, number of occupants, number of wheelchair users, number of passengers with sight, hearing, or speech impairments, etc.

ASSESSMENT

Accidents that have involved public transportation vehicles are often more complicated than normal auto crashes. To this end, emergency response teams should take time to make a quick assessment of any factors that could dictate how the rescue should be conducted. This means that, if possible, they should evaluate the access points to the vehicle and the type of occupants on-board before rescue efforts are started. The paratransit operator can assist this process by educating the emergency preparedness forces as much as possible before an accident. Familiarization and simulated training are recommended. All victims, if able to reply, should be asked about their disabilities and new injuries. If some victims are unconscious, the best source of information on their disabilities may be other passengers who may frequently ride with the victim. In addition, it is recommended that carriers develop a Passenger Profile Card system (Exhibit 4-17) whereby index cards containing important medical information on each passenger are kept in a clearly marked box at the front of the vehicle. Also, Passenger ID Cards (Exhibit 4-26) should be carried by all passengers when traveling. In the event of an accident, emergency rescue teams can use this information in their decision-making.

HAZARD CONTROL

On-site rescue crews must be conscious of other hazards that may develop. In addition to the normal dangers of fire or disrupted traffic patterns, public transportation poses some unique dangers to rescue crews. Many smaller vehicles such as modified vans and body-on-chassis small buses may be less stable than autos or trucks. Wheelchair lifts can make these vehicles more susceptible to rollovers during rescue operations. In addition, electric wheelchairs are extremely heavy and are powered by batteries that could leak acid if damaged or overturned.

SUPPORT ORGANIZATIONS

Additional equipment and personnel may be required for any of the following reasons:

- a fire may break out or reignite;
- darkness may hinder rescue and emergency medical treatment;
- crowds including relatives or victims may be difficult to control; or
- bystanders may try to steal victims' belongings.

GAINING ACCESS

Rescue crew orientation to the special design features of vehicles is a crucial part of accident response. In addition, Vehicle Profile Cards, Exhibit 4-25, (filled out by the transportation system and carried on emergency vehicles) can illustrate the vehicle's critical access points to emergency crews.

EMERGENCY CARE

Before victims can be extricated from the vehicle and transported to hospitals, it may be necessary to:

- engage in initial life-support activities;
- evaluate each victim's situation in order to aid further extrication procedures;
- protect all victims during extrication; and
- wrap or secure each victim prior to transport.

Care in all emergency situations is basic. Paratransit accidents may pose problems to rescue crews who are trying to diagnose the nature of passenger injuries. For example, the treatment of a broken leg for a general passenger and that for a person with paraplegia are not the same. The difference is that a passenger with paraplegia may not be aware that the leg needs treatment and thus may not be able to communicate that fact to rescue crews.

DISENTANGLEMENT

After the medical condition of the victims has been assessed, decisions must be made on how to disentangle passengers. In all types of vehicle accidents, disentanglement may involve:

- cutting seat belts;
- removing seats;
- displacing pedals;
- cutting the steering wheel;
- displacing the steering column;

- removing the victim from the windshield; and/or
- removing victims from impaling objects.

In accidents involving paratransit vehicles, the above situations along with disentanglement from the following may be necessary:

- torso-restraint devices;
- wheelchairs;
- the wheelchair lift or ramp;
- canes, crutches or walkers; and/or
- various prostheses.

If hydraulically-powered lifts complicate rescue efforts, they can be moved by activating the release mechanism or by cutting their hoses. If the hoses are cut, care must be taken to ensure that the fluid that emanates from the machinery does not ignite or contaminate the open wounds of victims.

Torso-restraint devices may sometimes be cut, without further injury to the victim, with a pair of safety belt cutters. Prostheses can often also be easily removed to expedite rescue efforts.

REMOVAL AND TRANSFER

In a severe accident, most of the obvious access routes will be blocked or inoperable. If holes must be made in the vehicle's body structure to extricate victims, care must be taken to not complicate the disentanglement process or to injure the victims further. Information contained on the Vehicle Profile Card (Exhibit 4-25) can help rescuers make decisions.

The easiest exits from vans are the side door and rear doors (if they are not blocked by lift mechanisms, seats, or crushed beyond use). Removal of victims through windows may be only a last resort because of their relatively small openings, their height above ground, and the interference that seats can cause. Removal through roof escape hatches is most useful if the vehicle has been turned on its side.

DEBRIEFING

All rescue personnel should be debriefed after responding to each emergency. The debriefing should help find:

- what standard rescue techniques could not be used because of the special characteristics of the occupants;
- what new techniques were improvised;
- what special equipment might have been useful if it had been available; and
- what kinds of training might increase the preparedness of rescue personnel.

This page left intentionally blank.

SECTION 3
ATTACHMENT

EOP

This page left intentionally blank.

**ATTACHMENT 3-1
LIST OF TYPICAL EMERGENCY RESCUE EQUIPMENT**

HAND TOOL KIT

Aircraft snips
Cold chisel set
Claw hammer
Machinist hammer
Short-handled sledgehammer (2 1/2 pound)
Linoleum knife
Battery pliers
Channel-locking pliers
Diagonal-cutting pliers
Needle-nosed pliers
Slip-joint pliers
Vice-grip pliers
Punch set
Rubber mallet
Regular frame hacksaw
Low-profile frame hacksaw
Carpenter's handsaw
Small treesaw
Wiresaw
Adjustable wrench (assorted sizes)
Open-end wrench (assorted sizes)
Pipe wrench (assorted sizes)
Socket wrench (3/8-inch drive, 3/8-inch to 3/4-inch capacity)

ADDITIONAL HAND TOOLS

Crash ax
Flat-head ax
Pick-head ax
Rescue-type ax (such as the pry ax)
Combination rescue tools
Impact bar
Bolt cutter (36-inch)
Pry bar
Sledgehammer
Wrenching bar
Can opener
Dent puller
Door-lock opener

ELECTRICALLY-POWERED TOOLS

Chain saw
Rescue-type circular saw
Wood-cutting-type circular saw
Electric drill
Reciprocating-type power hacksaw
Powershears
Electric Impact tool

GASOLINE-POWERED TOOLS

Disc saw kit

HYDRAULICALLY-POWERED TOOLS

4-ton, 10-ton, or 20-ton capacity hydraulic rescue tool kit
Holmatro or Hurst rescue tool

AIR-POWERED TOOL

Air cutting-gun kit

CHEMICALLY-POWERED TOOLS

Oxy-acetylene cutting torch kit

TRAFFIC HAZARD-CONTROL EQUIPMENT

Reflector triangles
Warning flags
Traffic-control flashlight

FIRE SUPPRESSION AND PREVENTION EQUIPMENT

Pressurized water extinguisher
Carbon dioxide extinguisher
Dry-chemical extinguisher
High-expansion foam generator
Light Water and dry-chemical system

Some: Grant, Harvey D. "Vehicle Rescue", Instructor's Guide, Bowie, MD: Robert J. Brady Co., 1975.

ATTACHMENT 3-1
LIST OF TYPICAL EMERGENCY RESCUE EQUIPMENT (CONTINUED)

HAZARD DETECTION EQUIPMENT

Combustible gas detector kit
 Carbon monoxide detection kit
 Oxygen analyzer

ELECTRIC HAZARD-CONTROL EQUIPMENT

Lineman's gloves and protectors
 Lineman's not stick
 1 00 feet of weighted synthetic rope
 Insulated wire cutters

DANGEROUS-MATERIALS LEAK KIT

Non-sparking hammer
 Hardwood and rubber cone-shaped plugs

VEHICLE STABILIZATION EQUIPMENT

Hardwood cribbing
 Hardwood wedges
 Air bag set

SUBMERGED VEHICLE KIT

Scuba gear
 Compressed air tank with long hose

POWER-GENERATING AND POWER DISTRIBUTING EQUIPMENT

Portable electric generator
 Power cord and reel
 Power distribution box

LIGHTING EQUIPMENT

Portable floodlights
 Battery-operated handlights

COMPRESSED AIR SUPPLY SYSTEM

High-pressure compressor
 Manifold air storage system
 Spare air cylinders

RESCUER PROTECTION EQUIPMENT

Safety helmet
 Safety goggles
 Gloves
 Turnout coat
 Boots
 Self-contained, demand-regulator breathing apparatus
 Spare compressed air cylinders
 Full body acid suit

VICTIM PROTECTION EQUIPMENT

Aluminized rescue blankets
 Asbestos blankets
 Salvage covers
 Smoke ejector and extension tube

WARNING AND SIGNALING DEVICES

Traffic-guide cones
 Safety vests
 High-intensity, battery-operated flashing lights

LIFE-SUPPORT KIT

Hand-held, bag-mask ventilating unit
 Combination airway and resuscitation tubes
 Self-contained suction unit
 Oropharyngeal airways (assorted sizes)
 Multitrauma dressings
 Self-adhering bandages
 Gauze pads (4 x 4 inches)
 Two towels

**ATTACHMENT 3-1
LIST OF TYPICAL EMERGENCY RESCUE EQUIPMENT (CONCLUDED)**

LIFE-SUPPORT KIT (Cont.)

Adhesive tape
Occlusive dressings (aluminum foil or plastic wrap)
Cervical collars (extrication-type)
Sphygmomanometer (dial-type)
Stethoscope
Flashlight
Bandage scissors
Notebook and pen

ADDITIONAL EMERGENCY CARE EQUIPMENT**Positive-pressure oxygen resuscitator**

Aspirator (hand, battery, or gasoline-operated)
Straps (9-foot web-type)
Blankets
Disposable obstetrics kit
First-aid kit (modular)
Inflatable splints
Vacuum splints
Traction splints
Wire splints
Short-board Splints
Cardboard splints

PATIENT-TRANSFER EQUIPMENT

Short spine-board with straps
Pull backboard
Combination rescue board
Scoop-style stretcher

PATIENT-TRANSFER EQUIPMENT (Cont.)

D-ring stretcher
Basket stretcher
Reeves stretcher
1-inch rope sling
Hill-assist device
Disaster pouch

LIFTING AND PULLING EQUIPMENT

Cable or chain come-alongs
Chain and hook sets
Rope and cable slings
Number one grade manila rope
(1/2-inch, 5/8-inch, and 3/4 inch)
3/4-inch two-shreave blocks
3/4-inch three-shreave blocks
1/2-inch and 3/4-inch snatch blocks
Hydraulic lifting jacks (various capacities)
Ratchet lifting Jack

MISCELLANEOUS EQUIPMENT

Step-to-straight-type ladder
Gasoline storage cans
Mobile radio transceiver
Portable radio transceiver

This page left intentionally blank.

SECTION 4

PASSENGER, VEHICLE AND SYSTEM SAFETY PROGRAM FORMS



This page left intentionally blank.

**SECTION 4 - PASSENGER, VEHICLE
AND SYSTEM SAFETY PROGRAM FORMS**

This section presents the forms to be used in conjunction with your transportation system's Passenger, Vehicle and System Safety Plan and Program. It is divided into three subsections to correspond with the information presented previously in this Resource Manual.



The first set of forms relate to Preventive Measures that the transportation system can take to ensure that hazards are correctly identified in operating facilities. The second section contains forms that assist the transportation system in performing Standard Procedures related to safety. The third and final set of forms relate to Emergency Procedures.

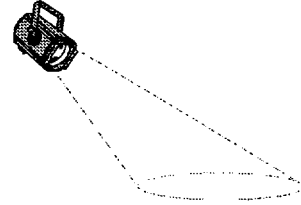
Each form has a set of directions (yellow paper) that states the form's purpose and how it should be used. The forms have been printed on single sheets so that they may be easily removed from the Resource Manual for reproduction.

This page left intentionally blank.

PART 1 - PREVENTIVE MEASURE FORMS

FACILITY SAFETY WORK SHEET

PURPOSE: To assist safety personnel in conducting safety inspections of facilities



DIRECTIONS

Each Facility Safety Work Sheet has a topic heading such as Basic Design Deficiencies and a blank space for the date and the name of the reviewer. Examples of the types of hazards that relate to the topic, possible causes of any deficiencies and the methods that can be used to control the hazards are also listed under the topic heading.

All Facility Safety Work Sheets ask the reviewer a set of questions and provide spaces for recording responses. To each question the reviewer can check yes or no. If their answer is no, then no more information is required. However, if the answer is yes, the reviewer should write down the location of the problem in the space provided and describe the problem accompanied by what is being done to fix it.

Any Facility Safety Work Sheets that do not apply to your situation can be removed. In addition, a blank sheet has been included so that you may type in your own set of questions if an issue is not covered in the forms provided.

This page left intentionally blank.

Exhibit 4-1
Facility Safety Work Sheet
I. Basic Design Deficiencies

Date: _____ Reviewer: _____

Examples include:

- * sharp corners
- * instability
- * excessive weight
- * inadequate clearance
- * lack of accessibility

Causes

Improper or poor design

Control Methods

Improve or change design

	Y	N	N/A	Location(s)	Action Taken
• Are there any sharp objects or surfaces that are unprotected?					
• Are there any work surfaces or shelving that are unstable?					
• Are there any machines and/or equipment that are not adequately supported?					
• Are there any physical barriers that impede the movement of either personnel or equipment?					
• Are there any tools or machines without accessible override or safety switches for use in both normal operating and emergency conditions?					

**Exhibit 4-1 (Continued)
Facility Safety Work Sheet
II. Inherent Hazards**

Date: _____ Reviewer: _____

Examples include:

- * mechanical (e.g., rotating equipment)
- * electrical
- * explosives
- * flammable gases or liquids
- * toxic substances
- * flying objects
- * falling objects
- * temperature

Causes

Inherent characteristics

Control Methods

- (1) Control devices
- (2) Warning devices
- (3) Procedures and training

Y N N/A **Location(s)** **Action Taken**

• Are there any machines that have inadequate safety protection or are missing guards or other protective devices?					
• Are there any tools or machines that do not adequately protect the user from electrical shock?					
• Are there any explosive or combustible materials that are either unmarked or not stored in a controlled and isolated environment?					
• Are there any flammable materials that are either un-marked or not stored in a controlled and isolated environment?					
• Are there any toxic materials that are either unmarked or not stored in a controlled and isolated environment?					

Exhibit 4-1 (Continued)
Facility Safety Work Sheet
II. Inherent Hazards (Continued)

Date: _____ Reviewer: _____

	Y	N	N/A	Location(s)	Action Taken
• Are there any areas in which hoists or other lifting equipment are operated that are not clearly marked?					
• Are there any overhead storage areas that do not have guards against falling objects?					
• Are there any storage areas for flammable or combustible materials that are not well ventilated?					
• Are there any work or storage areas that do not have smoke detectors or other appropriate warning devices?					
• Are there any air conditioning or air ventilation ducts that contain fungi? (Have instances of headaches and dizziness increased among personnel?)					

Exhibit 4-1 (Continued)
 Facility Safety Work Sheet
 III. Malfunctions

Date: _____ Reviewer: _____

Examples include:

- * structural failures
- * mechanical malfunctions
- * power failures
- * electrical malfunctions

Causes

- (1) Faulty design
- (2) Malfunctioning defects
- (3) Improper or lack of maintenance
- (4) Exceeding operational limits
- (5) Environmental effects

Control Methods

- (1) Fail safe design
- (2) Higher safety margins
- (3) Redundant circuitry or equipment
- (4) Preventive maintenance
- (5) Timed replacement
- (6) Safety and warning devices
- (7) Procedures and training

Y N N/A Location(s) Action Taken

	Y	N	N/A	Location(s)	Action Taken
• Are there any tools or appliances that are not approved by an independent testing laboratory?					
• Are there any tools or machines that have visible signs of wear such as cracks or frayed wiring?					
• Are there any tools or machines that have not had scheduled maintenance?					
• Are there any tools or machines that could become dangerous if a power outage occurred during operation?					
• Are there any outlets or machines that do not operate on circuit breakers?					

Exhibit 4-1 (Continued)
Facility Safety Work Sheet
IV. Maintenance Hazards

Date: _____ Reviewer: _____

Examples include:

- * improper connections
- * component failures
- * equipment damage
- * operational delay

Causes

- (1) Faulty design
- (2) Malfunctioning defects
- (3) Improper or lack of maintenance
- (4) Exceeding operational limits
- (5) Environmental effects

Control Methods

- | | |
|--|---|
| <ol style="list-style-type: none"> (1) Design <ol style="list-style-type: none"> a) simplified design b) fail-safe design c) easy access to equipment d) elimination of need for special tools or equipment (2) Safety devices <ol style="list-style-type: none"> a) guards for moving parts b) interlocks | <ol style="list-style-type: none"> (3) Warning Devices <ol style="list-style-type: none"> a) labels/signs b) lights c) audible alarms (4) Procedures and training <ol style="list-style-type: none"> a) documentation of proper procedures b) improved training courses c) housekeeping |
|--|---|

	Y	N	N/A	Location(s)	Action Taken
• Are there any tools or machines that are severely damaged but are still in use?					
• Are there any tools or machines that are not cleaned or maintained on their specified service schedules?					
• Are there any machines that are not accessible for repairs?					
• Are there any machines or tools that do not have guards or interlocks?					
• Are there machines that do not have appropriate warning devices such as lights or alarms?					

**Exhibit 4-1 (Continued)
 Facility Safety Work Sheet
 IV. Maintenance Hazards (Continued)**

Date: _____ Reviewer: _____

	Y	N	N/A	Location(s)	Action Taken
• Are there any maintenance manuals which are not kept on file?					
• Have there been any repairs made in the last year by untrained personnel?					
• Are there any work areas that could be hazardous due to poor housekeeping?					
• Are safety factors ever omitted in the procurement process?					

Exhibit 4-1 (Continued)
Facility Safety Work Sheet
V. Environmental Hazards

Date: _____ Reviewer: _____

Examples Include:

- | | | |
|-----------|----------------|--------------------------------------|
| * heat | * slipperiness | * natural hazards (lightening, etc.) |
| * cold | * wetness | * glare |
| * dryness | * darkness | * gas or other toxic fumes |

Control Methods

Causes

- (1) Inherent
- (2) Foreseen or unforeseen natural phenomena

- (1) Design
 - a) increased resistance to temperature changes
 - b) increased resistance to dryness or wetness
 - c) fail-safe design

- (3) Warning Devices
 - a) visual
 - b) auditory
 - c) olfactory

- (2) Safety devices
 - a) sufficient heating or cooling
 - b) adequate insulation
 - c) restricted access
 - d) Temperature or moisture sensor

- (4) Procedures and training

	Y	N	N/A	Location(s)	Action Taken
• Are there any work or storage areas that have wide variances in temperature?					
• Are there any work or storage areas that have wide variances in moisture levels?					
• Are there any work areas that are excessively dark or have glare problems?					
• Are there any machines which are affected by wide variances in temperature or moisture?					

Exhibit 4-1 (Continued)
 Facility Safety Work Sheet
 V. *Environments/Hazards (Continued)*

Date: _____ Reviewer: _____

	Y	N	N/A	Location(s)	Action Taken
• Are there any storage areas that have inadequate protection or warning systems for environmental hazards?					
• Are employees who are not sufficiently aware of how changes in environmental conditions could affect machines or material?					
• Are there any vehicle pathways that are affected repeatedly by glare, ice, or other natural hazards?					

**Exhibit 4-1 (Continued)
Facility Safety Work Sheet**

VI. Human Factors

Date: _____ Reviewer: _____

Examples include:

- | | |
|--|---|
| <ul style="list-style-type: none"> * physical surroundings <ul style="list-style-type: none"> ● noise ● illumination ● temperature ● energy sources ● air and humidity ● vibration | <ul style="list-style-type: none"> * stress (sensory, mental, motor) * errors <ul style="list-style-type: none"> • omission • commission * non-recognition of hazards * incorrect decision/tasks done at wrong time * non-performance/improper performance of tasks |
|--|---|

Causes

- (1) Inadequate attention to design criteria
- (2) Poor location, design of controls
- (3) Equipment complexity
- (4) Non-recognition of inherent hazards
- (5) Incorrect installation
- (6) Failure of warning devices
- (7) Failure to follow directions
- (8) Lack of knowledge of procedures
- (9) Inadequate testing

Control Methods

- | | |
|--|--|
| <ol style="list-style-type: none"> (1) Design (to address) causes 1-6 (2) Safety Devices <ol style="list-style-type: none"> a) isolation (separation) b) barriers (guards) c) interlocks (deactivation) d) temperature sensor (3) Warning Devices <ol style="list-style-type: none"> a) visual (eye) - color, shape, signs, light b) auditory (hear) - bell, alarm c) tactile (touch) - shape, texture | <ol style="list-style-type: none"> (4) Procedures and training <ol style="list-style-type: none"> a) clear warning labels (nature of hazard, action to avoid injury, consequences) b) Use of complete, proper, safe procedures c) adequate training (also refresher training) d) backout/recovery procedures protective equipment f) emergency procedures g) proper maintenance procedures |
|--|--|

Y N N/A Location(s) **Action Taken**

<ul style="list-style-type: none"> • Are there any work environments that are abnormal in terms of sight, sound, temperature, humidity and/or vibration? 					
<ul style="list-style-type: none"> • Are there any machines or equipment that do not have a posted set of safety instructions? 					
<ul style="list-style-type: none"> • Are there any machines or tools that do not tell the user the possible dangers of its use? 					

**Exhibit 4-1 (Concluded)
Facility Safety Work Sheet**

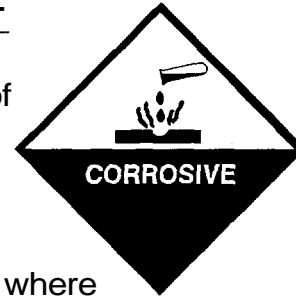
Date: _____

Reviewer: _____

	Y	N	N/A	Location(s)	Action Taken

HAZARDOUS MATERIAL STORAGE FORM: INVENTORY SHEET

PURPOSE: To assist safety personnel in cataloguing a list of stored hazardous materials.



DIRECTIONS

An Inventory Sheet should be completed for each area where hazardous materials are stored. Each potentially hazardous substance should be listed in the space provided. Each hazardous substance should then be classified as either Toxic (hazardous if inhaled or swallowed); Flammable (easily catches fire); or Caustic (dangerous if touched without protection). Additionally, the quantity of each hazardous substance should be indicated. Because the contents of storage areas can change over time, it is important for the reviewer to sign and date the Inventory Sheet at the bottom of the page.

For example, if a space is used to recharge or store dead batteries the substance noted would be "previously used and/or discarded batteries". Because the fumes from battery acid are both toxic and flammable and battery acid is harmful if it comes into contact with skin, its hazard classification would include all three categories and would be designated as "TFC". The quantity could be written as 10 batteries.

This page left intentionally blank.

Exhibit 4-2
Hazardous Material Storage Form: Inventory Sheet

**HAZARDOUS MATERIAL STORAGE FORM:
INVENTORY SHEET**

Complete one form for each area where hazardous materials are stored

Organization: _____

Address: _____

Storage Location: _____

INVENTORY:

T - Toxic
F - Flammable
C - Caustic

Substance	Hazard	Quantity
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Signed _____

Date _____

This page left intentionally blank.

HAZARDOUS MATERIAL STORAGE FORM: SITE REPORT

PURPOSE: To help the reviewer make a quick assessment of the condition of storage areas for hazardous materials.



DIRECTIONS

The reviewer should indicate the location of the storage area in the space provided at the top of the page. The sheet lists a number of factors that could make a storage area unsafe. Those factors are:

- Access;
- Identification;
- Leaks;
- Cleanliness;
- Ventilation;
- Rust;
- Wiring;
- Shelving;
- Lighting;
- Security; and
- Isolation.

Next to each category the reviewer should indicate whether or not the condition of the storage area is satisfactory or unsatisfactory for the appropriate category. If the category is judged to be "unsatisfactory" the reviewer should indicate the problem and corrective steps in the space provided.

This page left intentionally blank.

**Exhibit 4-3
Hazardous Material Storage Form: Site Report**

**HAZARDOUS MATERIAL STORAGE FORM:
SITE REPORT**

Storage Location: _____

Please evaluate each storage area for--
the criteria listed.

S - Satisfactory U-Unsatisfactory

	Status	Action Taken
Access	_____	_____
Identification	_____	_____
Temperature	_____	_____
Leaks	_____	_____
Cleanliness	_____	_____
Ventilation	_____	_____
Rust	_____	_____
Wiring	_____	_____
Shelving	_____	_____
Lighting	_____	_____
Security	_____	_____
Isolation	_____	_____

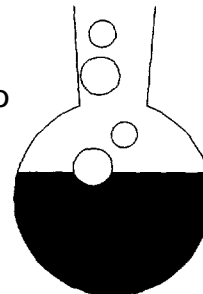
Signed: _____

Date: _____

This page left intentionally blank.

MATERIAL SAFETY DATA SHEET

PURPOSE: The purpose of the Material Safety Data Sheets is to identify all hazardous chemicals and to provide important safety information to all persons who use the chemical such as the name, potential health hazards caused by the chemical, primary route of entry, precautions, and emergency procedures.



DIRECTIONS

The transportation system must maintain a Material Safety Data Sheet (MSDS) for every hazardous chemical they use. Transportation systems will receive a MSDS from the chemical manufacturer or importer with, or just prior to, an initial shipment of each chemical (or with the first shipment after a MSDS update). If it is not provided, the transportation system should obtain one as soon as possible. Any new information regarding the hazards of the chemical or ways to protect against the hazards must be added to the MSDS within 3 months of discovery. MSDSs must be kept in a readily accessible location for employees of the transportation system.

If the transportation system will be completing a MSDS, all information should be provided as accurately as possible. If no relevant information is found for any category on the MSDS, that fact should be indicated on the MSDS in the appropriate space on the sheet. If complex mixtures have similar contents and hazards (same ingredients, different composition), only one MSDS needs to be completed.

The following is a list of information to be included on each MSDS.

- The identification of the chemical by its common and chemical names. If the chemical is a mixture tested as a whole entry, or a mixture not tested as a whole entry, specific information must be provided for each hazardous and/or carcinogenic component of the mixture.
- The physical and chemical characteristics of the chemical, such as vapor pressure, flash point, etc.
- The physical hazards of the chemical, such as potential for fire, explosion, and reactivity.
- The health hazards of the chemical, including signs and symptoms of exposure, and any medical conditions recognized as being aggravated by exposure to the chemical.
- The primary routes of entry, such as through the skin, through the

respiratory system (breathing), etc.

- Whether the chemical is listed in the National Toxicology Program (NTP) *Annual Report on Carcinogens*, or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) *Monographs*, or by OSHA.
- The OSHA permissible exposure limit, ACGIH Threshold Limit Value, or any other exposure limit recommended by the manufacturer, importer, or transportation system.
- Any known precautions for safe handling and use, including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean up of spills and leaks.
- Any known control measures, such as appropriate engineering control, work practices, or personal protective equipment.
- Emergency and first aid procedures.
- Preparation date for the MSDS, and date of last change or update.
- Name, address, and telephone number of the person responsible for the MSDS preparation.

Exhibit 4-4
Material Safety Data Sheet

IDENTIFICATION OF CHEMICAL

SINGLE SUBSTANCE

Chemical Name: _____

Common Name(s): _____

MIXTURE TESTED AS A WHOLE

Common Name(s) for Mixture: _____

Ingredients which contribute to Hazards

Chemical Name: _____

Common Name(s): _____

Chemical Name: _____

Common Name(s): _____

Chemical Name: _____

Common Name(s): _____

MIXTURE NOT TESTED AS A WHOLE

Ingredients which have been determined to be health hazards and are at least 1 % of
the composition

Chemical Name: _____

Common Name(s): _____

Chemical Name: _____

Common Name(s): _____

Exhibit 4-4 (Continued)
Material Safety Data Sheet

Chemical Name: _____

Common Name(s): _____

Ingredients which are carcinogens and are at least 1 % of the composition

Chemical Name: _____

Common Name(s): _____

Chemical Name: _____

Common Name(s): _____

Chemical Name: _____

Common Name(s): _____

Ingredients which have been determined to be health hazards and are less than 1 % of the composition (.1 % for carcinogens) which if released from the mixture would exceed OSHA permissible exposure limit or ACGIH Threshold Limit Value or could present a health hazard to employees

Chemical Name: _____

Common Name(s): _____

Chemical Name: _____

Common Name(s): _____

Chemical Name: _____

Common Name(s): _____

Ingredients which present a physical hazard when present in the mixture

Chemical Name: _____

Common Name(s): _____

**Exhibit 4-4 (Continued)
Material Safety Data Sheet**

Chemical Name: _____

Common Name(s): _____

Chemical Name: _____

Common Name(s): _____

PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE CHEMICAL

PHYSICAL HAZARDS OF THE CHEMICAL

HEALTH HAZARDS OF THE CHEMICAL

**Exhibit 4-4 (Continued)
Material Safety Data Sheet**

PRIMARY ROUTE OF ENTRY

LISTING AS A CARCINOGEN

National Toxicology Program (NTP) *Annual Report on Carcinogens*: _____

International Agency for Research on Cancer (IARC) *Monographs*: _____

Occupational Safety and Health Administration 29 *CFR* Part 1910 Subpart Z: _____

EXPOSURE LIMIT

PRECAUTIONS FOR SAFE HANDLING AND USE

Exhibit 4-4 (Continued)
Material Safety Data Sheet

CONTROL MEASURES

EMERGENCY AND FIRST AID PROCEDURES

DATE OF PREPARATION OF MATERIAL SAFETY DATA SHEET

Date of Preparation:
Date of Last Change:

PERSON COMPLETING THE MATERIAL SAFETY DATA SHEET

Name:
Address:
Telephone Number:

This page left intentionally blank.

NOTIFICATION FOR UNDERGROUND STORAGE TANKS

PURPOSE: The purpose of the Notification for Underground Storage Tanks form is to locate and evaluate all underground storage tanks that a transportation system owns. This form also notifies the state and the Environmental Protection Agency of the existence of all underground storage tanks that a transportation system owns.



DIRECTIONS

The transportation system must complete this form for all underground storage tanks (USTs) that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that were brought into use after May 8, 1986. Section I-VI must be completed for all USTs. These sections include:

- Ownership of Tanks;
- Location of Tanks;
- Contact Person at Tank Location;
- Type of Notification;
- Certification; and
- Description of Underground Storage Tanks.

Section VII of the Notification form must be completed for any UST installed after December 22, 1988, including all new USTs. This Certification for Compliance section addresses the following requirements:

- installation of tanks and piping;
- release detection;
- corrosion protection of steel tanks and piping;
- financial responsibility under Subpart H of 40 CFR Part 280; and
- an oath.

This page left intentionally blank.

Exhibit 4-5 Notification for Underground Storage Tanks

Notification for Underground Storage Tanks		FORM APPROVED OMB NO. 2050-0048 APPROVAL EXPIRES 12-31-87
EPA estimates public reporting burden for this form to average 30 minutes per response, including time for reviewing instructions, gathering and maintaining the data needed, and completing and reviewing the form. Send comments regarding this burden estimate to Chief, Information Policy Branch, FM-223, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, D.C. 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503, marked "Attention: Desk Officer for EPA."	ID Number STATE USE ONLY	
		Date Received
GENERAL INFORMATION		
<p>Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act (RCRA), as amended.</p> <p>The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or in the absence of such records, your knowledge, belief, or recollection.</p> <p>Who Must Notify? Section 9002 of RCRA, as amended, requires that unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means— (a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and (b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.</p> <p>What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.</p> <p>What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are: 1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes, 2. tanks used for storing heating oil for consumptive use on the premises where stored, 3. septic tanks,</p> <p>4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979 or which is an intrastate pipeline facility regulated under State laws</p> <p>5. surface impoundments, pits, ponds, or lagoons,</p> <p>6. storm water or waste water collection systems,</p> <p>7. flow-through process tanks</p> <p>8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations</p> <p>9. storage tanks situated in an underground area (such as a basement, cellar, mineworking, drift shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.</p> <p>What Substances Are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).</p> <p>Where To Notify? Completed notification forms should be sent to the address given at the top of this page.</p> <p>When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.</p> <p>Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed \$10,000 for each tank for which notification is not given or for which false information is submitted.</p>		
INSTRUCTIONS		
Please type or print in ink all items except "signature" in Section V. This form must be completed for each location containing underground storage tanks. If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.		Indicate number of continuation sheets attached
I. OWNERSHIP OF TANK(S) Owner Name (Corporation, Individual, Public Agency, or Other Entity) _____ Street Address _____ County _____ City _____ State _____ ZIP Code _____ Area Code _____ Phone Number _____ Type of Owner (Mark all that apply) <input type="checkbox"/> Current <input type="checkbox"/> State or Local Gov't <input type="checkbox"/> Private or Corporate <input type="checkbox"/> Former <input type="checkbox"/> Federal Gov't (GSA facility I.D. no. _____) <input type="checkbox"/> Ownership uncertain	II. LOCATION OF TANK(S) (If same as Section I, mark box here <input type="checkbox"/>) Facility Name or Company Site Identifier, as applicable _____ Street Address or State Road, as applicable _____ County _____ City (nearest) _____ State _____ ZIP Code _____ Indicate number of tanks at this location Mark box here if tank(s) are located on land within an Indian reservation or on other Indian trust lands <input type="checkbox"/>	
III. CONTACT PERSON AT TANK LOCATION		
Name (If same as Section I, mark box here <input type="checkbox"/>) _____		Job Title _____
		Area Code _____ Phone Number _____
IV. TYPE OF NOTIFICATION		
<input type="checkbox"/> Mark box here only if this is an amended or subsequent notification for this location		
V. CERTIFICATION (Read and sign after completing Section VI.)		
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.		
Name and official title of owner or owner's authorized representative _____	Signature _____	Date Signed _____

CONTINUE ON REVERSE SIDE

SPI-KETRON-JNB-94-003

Exhibit 4-5 (Continued)
 Notification for Underground Storage Tanks

Owner Name (from Section I) _____ Location (from Section II) _____ Page No. _____ of _____ Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location)					
Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No.	Tank No.	Tank No.	Tank No.	Tank No.
1. Status of Tank (Mark all that apply <input type="checkbox"/>) Currently in Use Temporarily Out of Use Permanently Out of Use Brought into Use after 5/8/86	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Estimated Age (Years)					
3. Estimated Total Capacity (Gallons)					
4. Material of Construction (Mark one <input type="checkbox"/>) Steel Concrete Fiberglass Reinforced Plastic Unknown Other, Please Specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Internal Protection (Mark all that apply <input type="checkbox"/>) Cathodic Protection Interior Lining (e.g., epoxy resins) None Unknown Other, Please Specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. External Protection (Mark all that apply <input type="checkbox"/>) Cathodic Protection Painted (e.g., asphaltic) Fiberglass Reinforced Plastic Coated None Unknown Other, Please Specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Piping (Mark all that apply <input type="checkbox"/>) Bare Steel Galvanized Steel Fiberglass Reinforced Plastic Cathodically Protected Unknown Other, Please Specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply <input type="checkbox"/>) a. Empty b. Petroleum Diesel Kerosene Gasoline (including alcohol blends) Used Oil Other, Please Specify _____ c. Hazardous Substance Please Indicate Name of Principal CERCLA Substance _____ OR Chemical Abstract Service (CAS) No. _____ Mark box <input type="checkbox"/> if tank stores a mixture of substances d. Unknown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Additional Information (for tanks permanently taken out of service) a. Estimated date last used (mo/yr) b. Estimated quantity of substance remaining (gal.) c. Mark box <input type="checkbox"/> if tank was filled with inert material (e.g., sand, concrete)	/	/	/	/	/
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Exhibit 4-5 (Concluded)
Notification for Underground Storage Tanks

Owner Name (from Section I) _____ Location (from Section H) _____ Page No. _____ of _____ Pages

VII OF RTIHCATION OF COMPLIANT (COMPLFH FOR ALL MI W TANKS AT THIS LOCATION)

10. Insulation (mark all that apply):

- Insulation options: The installer has been certified by the tank and piping manufacturers, The installer has been certified or licensed by the implementing agency, The installation has been inspected and certified by a registered professional engineer, The installation has been inspected and approved by the implementing agency, All work listed on the manufacturer's installation checklists has been completed, Another method was used as allowed by the implementing agency.

11. Release Detection (mark all that apply):

- Release Detection options: Manual tank gauging, Tank tightness testing with inventory controls, Automatic tank gauging, Vapor monitoring, Ground-water monitoring, Interstitial monitoring within a secondary barrier, Interstitial monitoring within secondary containment, Automatic line leak detectors, Line tightness testing, Another method allowed by the implementing agency.

12. Corrosion Protection (H applicable) -

- Corrosion Protection options: As specified for coated steel tanks with cathodic protection, As specified for coated steel piping with cathodic protection, Another method allowed by the implementing agency.

13. I have financial responsibility in accordance with Subpart I. Please specify:

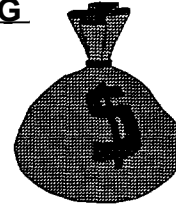
Method, Insurer, Policy Number

14 OATH: I certify that the information concerning installation provided in Item 10 is true to the best of my belief and knowledge.

Installer: Name, Date, Position, Company

This page left intentionally blank.

**LETTER FOR COMPLIANCE WITH FINANCIAL RESPONSIBILITY
REQUIREMENTS THROUGH THE LOCAL GOVERNMENT BOND RATING
TEST FOR GENERAL PURPOSE LOCAL GOVERNMENTS**



PURPOSE: The purpose of this letter is to demonstrate compliance with the underground storage tank financial responsibility requirements through the local government bond rating test.

DIRECTIONS

This form should be used if the transportation system is considered a general purpose local government and has the legal authority to issue general obligation bonds. If such a transportation system chooses to comply with some or all parts of the underground storage tank financial responsibility requirements (40 CFR Part 280, Subpart H) through a local government bond rating test, the chief financial officer must sign and date the letter worded exactly as shown on the next page, except that the bracketed instructions should be replaced with relevant information.

This page left intentionally blank.

Exhibit 4-6
Letter for Compliance with Financial Responsibility Requirements
Through Local Government Bond Rating Test
for General Purpose Local Governments¹

LETTER FROM CHIEF FINANCIAL OFFICER

I am the chief financial officer of [insert: name and address of local government owner or operator, or guarantor]. This letter is in support of the use of the bond rating test to demonstrate financial responsibility for [insert: "taking corrective action" and/or "compensating third parties for bodily injury and property damage "] caused by [insert: "sudden accidental releases and/or "nonsudden accidental releases "] in the amount of at least [insert: dollar amount] per occurrence and [insert: dollar amount] annual aggregate arising from operating (an) underground storage tank(s).

Underground storage tanks at the following facilities are assured by this bond rating test: [List for each facility: the name and address of the facility where tanks are assured by the bond rating test].

The details of the issue date, maturity, outstanding amount, bond rating, and bond rating agency of all outstanding bond issues that are being used by [name of local government owner or operator, or guarantor] to demonstrate financial responsibility are as follows: [complete table].

ISSUE DATE	MATURITY DATE	OUTSTANDING AMOUNT	BOND RATING	RATING AGENCY
				MOODY'S OR STANDARD & POOR'S

The total outstanding obligation of [insert amount], excluding refunded bond issues, exceeds the minimum amount of \$1 million. All outstanding general obligation bonds issued by this government that have been rated by Moody's or Standard & Poor's are rated as at least investment grade (Moody's Baa or Standard & Poor's BBB) based on the most recent ratings published within the last 12 months. Neither rating service has provided notification within the last 12 months of downgrading of bond ratings below investment grade or withdrawal of bond ratings below investment grade or withdrawal of bond rating other than for repayment of outstanding bond issues.

¹

40 Code of Federal Regulations (CFR). Part 280, Subpart H, Section 280.104.

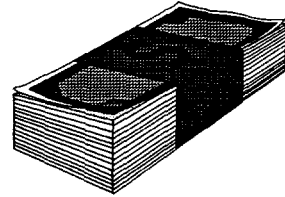
Exhibit 4-6 (Concluded)
Letter for Compliance with Financial Responsibility Requirements
Through Local Government Bond Rating Test
for General Purpose Local Governments

I hereby certify that the wording of this letter is identical to the wording specified in 40 CFR part 280.104(d) as such regulations were constituted on the date shown immediately below.

[Date] _____
[Signature] _____
[Name] _____
[Title] _____

LETTER FOR COMPLIANCE WITH FINANCIAL RESPONSIBILITY REQUIREMENTS THROUGH THE LOCAL GOVERNMENT BOND RATING TEST FOR OWNERS/OPERATORS OTHER THAN GENERAL PURPOSE LOCAL GOVERNMENTS

PURPOSE: The purpose of this letter is to demonstrate compliance with the underground storage tank financial responsibility requirements through the local government bond rating test.



DIRECTIONS

This form should be used if the transportation system is not considered a general purpose local government and does not have the legal authority to issue general obligation bonds (uses revenue bonds). If such a transportation system chooses to comply with some or all parts of the underground storage tank financial responsibility requirements (40 CFR Part 280, Subpart H) through a local government bond rating test, the chief financial officer must sign and date the letter worded exactly as shown on the next page, except that the bracketed instructions should be replaced with relevant information.

This page left intentionally blank.

Exhibit 4-7
 Letter for Compliance with Financial Responsibility
 Requirements Through Local Government Bond Rating Test
 for Owner/Operator Other Than
 a General Purpose Local Government²

LETTER FROM CHIEF FINANCIAL OFFICER

I am the chief financial officer of [insert: name and address of local government of operator, or guarantor]. This letter is in support of the use of the bond rating test to demonstrate financial responsibility for [insert: "taking corrective action" and/or "compensating third parties for bodily injury and property damage "] caused by [insert: "sudden accidental release" and/or "nonsudden accidental releases"} in the amount of at least] insert: dollar amount] per occurrence and [insert: dollar amount] annual aggregate arising from operating (an) underground storage tank(s). This local government is not organized to provide general governmental services and does not have the legal authority under state law or constitutional provisions to issue general obligation debt

Underground storage tanks at the following facilities are assured by this bond rating test: [List for each facility: the name and address of the facility where tanks are assured by the bond rating test].

The details of the issue date, maturity, outstanding amount, bond rating, and bond rating agency of all outstanding revenue bond issues that are being used by [name of local government owner or operator, or guarantor] to demonstrate financial responsibility are as follows: [complete table].

Issue date	Maturity date	Outstanding amount	Bond rating	Rating agency
				[Moody's or Standard & Poor's]

The total outstanding obligations of [insert amount], excluding refunded bond issues, exceeds the minimum amounts of \$1 million. All outstanding revenue bonds issued by this government that have been rated by Moody's or Standard & Poor's are rated as at least investment grade (Moody's Baa or Standard & Poor's BBB) based on the most recent ratings published within the last 12 months. The revenue bonds listed are not backed by third-party credit enhancement or are insured by a municipal bond insurance company. Neither rating service has provided notification within the last 12

²

40 Code of Federal Regulations (CFR). Part 280, Subpart H, Section 280.104.

Exhibit 4-7 (Continued)
Letter for Compliance with Financial Responsibility
Requirements Through Local Government Bond Rating Test
for Owner/Operator Other Than
a General Purpose Local Government

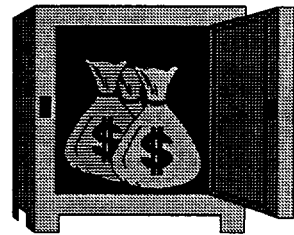
months of downgrading of bond ratings below investment grade or of withdrawal of bond rating other than for repayment of outstanding bond issues.

I hereby certify that the wording of this letter is identical to the wording specified in 40 CFR part 280.104(e) as such regulations were constituted on the date shown immediately below.

[Date] _____
[Signature] _____
[Name] _____
[Title] _____

WORKSHEET FOR THE MUNICIPAL FINANCIAL TEST

PURPOSE: The purpose of this worksheet is to determine whether a transportation system can demonstrate compliance with the underground storage tank financial responsibility requirements through the local government (municipal) financial test (self-insurance).

**DIRECTIONS**

This worksheet recognizes the unique financial structure of government entities. Transportation systems choosing to comply with some or all parts of the underground storage tank financial responsibility requirements (40 CFR Part 280, Subpart H) by self-insuring, must complete a local government (municipal) financial test to determine whether self-insurance is possible. The transportation system must have the chief financial officer complete the worksheet for the municipal financial test using information from year-end financial statements for the latest completed fiscal year. The following information will be needed:

- total revenues;
- total expenditures;
- local revenues;
- debt service;
- total funds; and
- population.

The worksheet on the following pages must be completed exactly as it is shown. If the financial index calculated using the worksheet is greater than zero, the transportation system may self-insure.

This page left intentionally blank.

Exhibit 4-8
Worksheet for Municipal Financial Test³

PART 1: BASIC INFORMATION

1. **Total Revenues**
 - a. Revenues (dollars) _____
Value of revenues exclude liquidation of investments and issuance of debt. Value include all general fund operating and non-operating revenues, as well as all revenues from all other governmental funds including enterprise, debt service, capital projects, and special revenues, but excluding revenues to funds held in a trust or agency capacity.
 - b. Subtract interfund transfers (dollars) _____
 - c. Total Revenue (dollars) _____

2. **Total Expenditures**
 - a. Expenditures (dollars) _____
Value consists of the sum of general fund operating and non-operating expenditures including interest payments on debt, payments for retirement of debt principal, and total expenditures from all other governmental funds including enterprise, debt service, capital projects, and special revenues,
 - b. Subtract interfund transfers (dollars) _____
 - c. Total Expenditures (dollars) _____

3. **Local Revenues**
 - a. Town Revenues (from 1c) (dollars) _____
 - b. Subtotal intergovernmental transfers (dollars) _____
 - c. Local Revenues (dollars) _____

4. **Debt Service**
 - a. Interest and fiscal charges (dollars) _____
 - b. Add debt retirement (dollars) _____
 - c. Total Debt Service (dollars) _____

5. **Total Funds (Dollars) _____**
(Sum of amounts held as cash and investment securities from all funds, excluding amounts held for employee retirement funds, agency funds, and trust funds)

³ 40 Code of Federal Regulations (CFR). Part 280, Subpart H, Section 280.105.

Exhibit 4-8 (Continued)
Worksheet for Municipal Financial Test

6. Population (Persons) _____

PART 11: APPLICATION OF TEST

7. Total Revenues to Population

- a. Total Revenues (from 1c) _____
- b. Population (from 6) _____
- c. Divide 7a by 7b _____
- d. Subtract 417 _____
- e. Divide by 5,212 _____
- f. Multiply by 4.095 _____

8. Total Expenses to Population

- a. Total Expenses (from 2c) _____
- b. Population (from 6) _____
- c. Divide 8a by 8b _____
- d. Subtract 524 _____
- e. Divide by 5,401 _____
- f. Multiply by 4.095 _____

9. Local Revenues to Total Revenues

- a. Local Revenues (from 3c) _____
- b. Total Revenues (from 1cJ) _____
- c. Divide 9a by 9b _____
- d. Subtract .695 _____
- e. Divide by .205 _____
- f. Multiply by 2.840 _____

10. Debt Service to Population

- a. Debt Service (from 4d) _____
- b. Population (from 6) _____
- c. Divide 10a by 10b _____
- d. Subtract 51 _____
- e. Divide by 1,308 _____
- f. Multiply by -1.866 _____

Exhibit 4-8 (Continued)
Worksheet for Municipal Financial Test

11. Debt Service to Total Revenues
- a. Debt Service (from 4d) _____
 - b. Total Revenues (from 1c) _____
 - c. Divide 11a by 11b _____
 - d. Subtract .068 _____
 - e. Divide by .259 _____
 - f. Multiply by -3.533 _____

12. Total Revenues to Total Expenses
- a. Total Revenues (from 1c) _____
 - b. Total Expenses (from 2c) _____
 - c. Divide 12a by 12b _____
 - d. Subtract .910 _____
 - e. Divide by .899 _____
 - f. Multiply by 3.458 _____

13. Funds Balance to Total Revenues
- a. Total Funds (from 5) _____
 - b. Total Revenues (from 1c) _____
 - c. Divide 13a by 13b _____
 - d. Subtract .891 _____
 - e. Divide by 9.156 _____
 - f. Multiply by 3.270 _____

14. Funds Balance to Total Expenses
- a. Total Funds (from 5) _____
 - b. Total Expenses (from 2c) _____
 - c. Divide 14a by 14b _____
 - d. Subtract .866 _____
 - e. Divide by 6.409 _____
 - f. Multiply by 3.270 _____

15. Total Funds to Population
- a. Total Funds (from 5) _____
 - b. Population (from 6) _____
 - c. Divide 15a by 15b _____
 - d. Subtract 270 _____
 - e. Divide by 4,548 _____
 - f. Multiply by 1.866 _____

Exhibit 4-8 (continued)
Worksheet for Municipal Financial Test

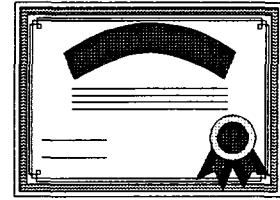
16. Add $7f + 8f + 9f + 10f + 11f + 12f + 13f + 14f + 15f + 4.937$

I hereby certify that the financial index shown on line 16 of the worksheet is greater than zero and that the wording of this letter is identical to the wording specified in 40 CFR part 280.105(c) as such regulations were constituted on the date shown immediately below.

[Date] _____
[Signature] _____
[Name] _____
[Title] _____

CERTIFICATION OF FINANCIAL RESPONSIBILITY

PURPOSE: The purpose of the this certification is to document that the owner or operator of underground storage tanks is in compliance with the underground storage tank financial responsibility requirements (Subpart H of 40 CFR Part 280).



DIRECTIONS

All owners or operators must maintain an updated, signed copy of the Certification of Financial Responsibility worded exactly as shown on the next page, except that the bracketed instructions should be replaced with relevant information.

This page left intentionally blank.

Exhibit 4-9
Certification of Financial Responsibility⁴

[Owner or operator] hereby certifies that it is in compliance with the requirements of subpart H of 40 CFR part 280.

The financial assurance mechanism(s) used to demonstrate financial responsibility under subpart H of 40 CFR part 280 is (are) as follows:

[For each mechanism, list the type of mechanism, name of issuer, mechanism number (if applicable), amount of coverage, effective period of coverage and whether the mechanism covers "taking corrective action" and/or "compensating third parties for bodily injury and property damage caused by" either "sudden accidental releases" or "nonsudden accidental releases" or "accidental releases. "]

[Signature of Owner or Operator] _____
[Name of Owner or Operator] _____
[Title] _____
[Date] _____

[Signature of witness or notary] _____
[Name of witness or notary} _____
[Date] _____

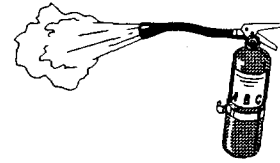
⁴

40 Code of Federal Regulations (CFR) 1. Part 280, Subpart H, Section 280.111.

This page left intentionally blank.

FIRE EXTINGUISHER CHECKLIST

PURPOSE: To assist safety personnel in evaluating the condition of fire extinguishers.



DIRECTIONS

Fire Extinguisher Checklists should be prepared for each building occupied by the transportation system. This includes all administrative offices, maintenance shops, and vehicle storage areas. A permanent listing of the locations of fire extinguishers should be typed in the column marked "Location." Photocopies of the sheet should then be used to mark the status of each fire extinguisher during the review process. The categories that should be used are:

- A - Ready;
- B - Needs Service; or
- C - Missing.

At the bottom of the sheet is a box marked "Action Taken," which should be used to indicate any problems and their proposed resolutions.

This page left intentionally blank.

Exhibit 4-10
Fire Extinguisher Checklist

FIRE EXTINGUISHER CHECKLIST

A - Ready
B - Needs Service
C - Missing

Building _____

Date _____

Location

Status

Location	Status
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

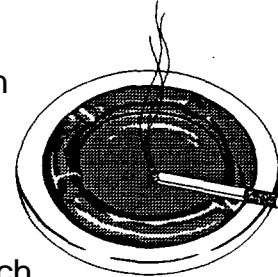
Action Taken:

Signed: _____ Date: _____

This page left intentionally blank.

SMOKE DETECTOR CHECKLIST

PURPOSE: To assist safety personnel in evaluating the condition of smoke detectors.



DIRECTIONS

Smoke Detector Checklists should be prepared for each building occupied by the transportation system. This includes all administrative offices, maintenance shops, and vehicle storage areas. A permanent listing of the locations of smoke detectors should be typed in the column marked "Location." Photocopies of the sheet should then be used to mark the status of each smoke detector during the review process. The categories that should be used are:

- A - Ready;
- B - Needs Service; or
- C - Missing.

At the bottom of the sheet is a box marked "Action Taken," which should be used to indicate any problems and their proposed resolutions.

This page left intentionally blank.

Exhibit 4-11
Smoke Detector Checklist

SMOKE DETECTOR CHECKLIST

- A - Ready
- B - Needs Service
- C - Missing

Building _____

Date _____

Location

Status

Location	Status
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Action Taken:

Signed: _____

Date: _____

This page left intentionally blank.

CHECKLIST FOR FACILITY SAFETY

PURPOSE: To assist in the establishment of a Passenger, Vehicle, and System Safety Program.



DIRECTIONS

Use this form to check safety activities once a Safety Program has been established.

This page left intentionally blank.

Exhibit 4-12
Checklist for Facility Safety

**/ CHECKLIST FOR
FACILITY SAFETY**

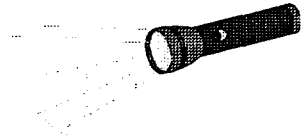
- D Safety and Accident Review Committee actively reviews facility safety issues
- D Facility Safety Worksheets are used to catalogue potentially dangerous situations
- D Hazardous Material Storage Forms (Inventory Sheets) are used to catalogue substances
- D Storage areas are inspected using Hazardous Material Storage Forms (Site Reports)
- D Fire extinguishers are checked on a regular basis to ensure that they are in working order
- D Smoke detectors are checked on a regular basis to ensure that they are in working order
- D Employees are aware of proper procedures for handling and using hazardous materials
- D Freon recovery units are being used by employees
- D Underground storage tank requirements are being followed

This page is left intentionally blank.

PART 2 - STANDARD PROCEDURE FORMS

PRE-TRIP VEHICLE INSPECTION SHEET

PURPOSE: To help ensure the safe mechanical condition of each vehicle before it is used in service.



DIRECTIONS

The Pre-Trip Vehicle Inspection Sheet should be completed by each driver before they start their tour. Items to be checked are listed on the left side of the page. Two boxes on the right side of the page highlight information that should be recorded for administrative purposes.

There are three main areas that must be inspected by the driver. The exterior inspection checks the lighting systems, tires, body damage, and wheelchair lift/ramp operation. The interior inspection checks the operating condition of the major mechanical systems such as the brakes and steering as well as the operation of the radio (if applicable) and the cleanliness of the vehicle. Drivers should also visually check the condition of the belts and hoses in the engine compartment and fluid levels as instructed by their supervisor.

EXTERIOR INSPECTION

The exterior inspection can be completed more efficiently by two people but it should not take long for a single person to do this work.

Headlights	Both high and low beams must be checked.
Turn Signals	Front and back pairs of signals must work. In addition, hazard lights must be operational.
Back-up Lights	Back-up lights must work if transmission is shifted into reverse. (Should be inspected by another individual if possible.)
Mirrors	All mirrors must be present, unobstructed, and adjusted to the person who will be driving the vehicle.
Windshield Wipers	Windshield wipers must work at all settings. Wiper fluid pump should also be tested.

Windows	Windows must be secure and in good operating condition.
Tires	All tires should be visibly inspected for inflation and tread wear.
Body Damage	Any body damage should be reported, even if transportation system administration and personnel are already aware of the problem.
Cleanliness	Outside of the vehicle should be inspected for accumulated dirt and grime.
Lift/Ramp Operation	All wheelchair lifts must be checked and cycled before the vehicle is put into service, whether or not the lifts are intended to be used.

INTERIOR INSPECTION

Brakes	Brakes should be checked by putting the vehicle in gear without acceleration and applying the brakes.
Steering	Steering wheel should have a full range of motion and effectively turn the front wheels.
Gauges and Indicators	All gauges and indicators should be visually inspected to make sure they are operational.
Transmission Selector	Vehicle should be capable of being shifted into any gear.
Radio	If the vehicle is equipped with a radio, a radio check should be conducted with dispatch.
Cleanliness	The interior of the vehicle should be free of any litter, food, or excessive dirt.

ENGINE AREA INSPECTION

Each driver should visibly inspect the engine compartment for any loose belts or hoses. Fluid levels should also be checked as appropriate.

**Exhibit 4-13
Pre-trip Inspection Sheet⁶**

PRE-TRIP VEHICLE INSPECTION SHEET

(Complete before vehicle is placed into revenue service)

Use this form to assist you in inspecting *your* vehicle before each trip. Give the completed form to your supervisor before leaving the vehicle storage area.

EXTERIOR INSPECTION

- _____ Headlights
- _____ Turn Signals
- _____ Back-up Lights
- _____ Mirrors
- _____ Windshield Wipers
- _____ Windows
- _____ Tires (Inflation and tread wear)
- _____ Body Damage (Specify) _____
- _____ Cleanliness
- _____ Wheelchair Lift/Ramp Operation

Driver Signature _____ Vehicle # _____ Date _____

/ = Satisfactory
X = Unsatisfactory

INTERIOR INSPECTION

- _____ Brakes
- _____ Steering
- _____ Gauge and Indicators
- _____ Transmission Selector
- _____ Radio
- _____ Cleanliness

<u>DEFECT PROCEDURE</u>	
If there is a problem with this vehicle notify your supervisor immediately. Before placing the vehicle into revenue service obtain a signature from either your supervisor or mechanic that the defect has been fixed or the vehicle is safe to drive.	
Repaired ___	Safe ___
Supervisor Signature _____	Date _____

ENGINE AREA INSPECTION

- _____ Belts and Hoses

FLUID LEVELS: (APPROPRIATE CHECKS TO BE DETERMINED BY SUPERVISOR)

- | | | |
|--------------------|----------------|-------------------------|
| _____ Oil | _____ Steering | _____ Windshield Washer |
| _____ Transmission | _____ Brake | |

⁵

Section 16 recipients should continue to use form found in Project Guide.

This page left intentionally blank.

Exhibit 4-13
Pre-trip Inspection Sheet⁶ⁱ

PRE-TRIP VEHICLE INSPECTION SHEET

(Complete before vehicle is placed into revenue service)

Use this form to assist you in inspecting your vehicle before each trip. Give the completed form to your supervisor before leaving the vehicle storage area.

EXTERIOR INSPECTION

- _____ Headlights
- _____ Turn Signals
- _____ Back-up Lights
- _____ Mirrors
- _____ Windshield Wipers
- _____ Windows
- _____ Tires (Inflation and tread wear)
- _____ Body Damage (Specify) _____
- _____ Cleanliness
- _____ Wheelchair Lift/Ramp Operation

Driver Signature	_____
Vehicle #	_____
Date	_____

/ = Satisfactory
X = Unsatisfactory

INTERIOR INSPECTION

- _____ Brakes
- _____ Steering
- _____ Gauge and Indicators
- _____ Transmission Selector
- _____ Radio
- _____ Cleanliness

<u>DEFECT PROCEDURE</u>	
<i>If there is a problem with this vehicle notify your supervisor immediately. Before placing the vehicle into revenue service obtain a signature from either your supervisor or mechanic that the defect has been fixed or the vehicle is safe to drive.</i>	
Repaired	Safe
_____	_____
Supervisor Signature	Date
_____	_____

ENGINE AREA INSPECTION

- _____ Belts and Hoses

FLUID LEVELS: (APPROPRIATE CHECKS TO BE DETERMINED BY SUPERVISOR)

- | | | |
|--------------------|----------------|-------------------------|
| _____ Oil | _____ Steering | _____ Windshield Washer |
| _____ Transmission | _____ Brake | |

This page left intentionally blank.

Exhibit 4-13
Pre-trip Inspection Sheet⁵

PRE-TRIP VEHICLE INSPECTION SHEET

(Complete before vehicle is placed into revenue service)

Use this form to assist you in inspecting your vehicle before each trip. Give the completed form to your supervisor before leaving the vehicle storage area.

EXTERIOR INSPECTION

- _____ Headlights
- _____ Turn Signals
- _____ Back-up Lights
- _____ Mirrors
- _____ Windshield Wipers
- _____ Windows
- _____ Tires (Inflation and tread wear)
- _____ Body Damage (Specify) _____
- _____ Cleanliness
- _____ Wheelchair Lift/Ramp Operation

Driver Signature _____
Vehicle # _____
Date _____

/ = Satisfactory
X = Unsatisfactory

INTERIOR INSPECTION

- _____ Brakes
- _____ Steering
- _____ Gauge and Indicators
- _____ Transmission Selector
- _____ Radio
- _____ Cleanliness

<u>DEFECT PROCEDURE</u>	
<i>If there is a problem with this vehicle notify your supervisor immediately. Before placing the vehicle into revenue service obtain a signature from either your supervisor or mechanic that the defect has been fixed or the vehicle is safe to drive.</i>	
Repaired _	Safe ___
Supervisor Signature _____	Date _____

ENGINE AREA INSPECTION

- _____ Belts and Hoses

FLUID LEVELS: (APPROPRIATE CHECKS TO BE DETERMINED BY SUPERVISOR)

- | | | |
|--------------------|----------------|-------------------------|
| _____ Oil | _____ Steering | _____ Windshield Washer |
| _____ Transmission | _____ Brake | |

⁵

Section 16 recipients should continue to use form found in Project Guide.

This page left intentionally blank.

VEHICLE DEFECT SHEET

PURPOSE: Used by drivers to record and report any vehicle malfunctions or problems that develop during their tour.



DIRECTIONS

Drivers should use this form to indicate any vehicle defects that occur during their tour. An "x" should mark the component or area that seems to be malfunctioning. Drivers must also describe the defect as they record information on the vehicle in question, the date, and their name in the first box. The mechanic should describe any repairs made in the second box. If no repairs are made because the problem could not be located, the mechanic should also record that information.

This page left intentionally blank.

Exhibit 4-14 Vehicle Defect Sheet

VEHICLE DEFECT SHEET

(Return to supervisor if repairs are needed)

If a problem develops with your vehicle during your run, indicate the nature of the problem on this sheet by both checking with an "X" the appropriate difficulty and explaining the problem in as much detail as possible. Give the completed form to your supervisor.

EXTERIOR

- Headlights
- Turn Signals
- Back-up Lights
- Mirrors
- Windshield Wipers
- Windows
- Tires (Inflation and tread wear)
- Body Damage
- Cleanliness
- Wheelchair Lift/Ramp Operation

Defect _____

 Vehicle # _____
 Date _____
 Driver Signature _____

INTERIOR

- Brakes
- Steering
- Gauges and Indicators
- Transmission Selector
- Radio
- Cleanliness

REPAIRS MADE

 Supervisor Signature _____ Date _____

ENGINE AREA

- Belts and Hoses

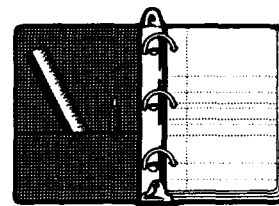
Fluid Levels: (Appropriate checks to be determined by Supervisor)

- | | | |
|---------------------------------------|-----------------------------------|--|
| <input type="checkbox"/> Oil | <input type="checkbox"/> Radiator | <input type="checkbox"/> Brakes |
| <input type="checkbox"/> Transmission | <input type="checkbox"/> Battery | <input type="checkbox"/> Windshield Washer |
| <input type="checkbox"/> Steering | | |

This page left intentionally blank.

INCIDENT REPORT

PURPOSE: Used by drivers to document and report occurrences that fall outside the scope of normal service provision.



DIRECTIONS

Copies of blank Incident Reports are to be carried on all vehicles.

An Incident Report should be filled out by the driver any time normal operations are disrupted even if no one was injured or no property was damaged. Incidents should include all "near misses" with this vehicle and any significant passenger problems. Documenting incidents helps protect the transportation system against liability claims and can pinpoint problems that may significantly affect transportation system operations in the future.

On the Incident Report form, drivers are requested to record basic information about the incident including the date, time, vehicle and location of the occurrence. They are then prompted to describe, in their own words, what occurred. Lastly, drivers are asked to sign the sheet and hand it to their supervisor.

This page left intentionally blank.

Exhibit 4-15
Incident Report

Incident Report

Please supply the following information
about the incident you are reporting

Date: ___ / ___ / ___
am

Time: ___ : ___ pm

Vehicle: _____

Location: _____

Description of Incident

When you have completed the report, sign your name below and take the form to your supervisor. The supervisor should sign this report as received in front of the driver.

Driver Signature

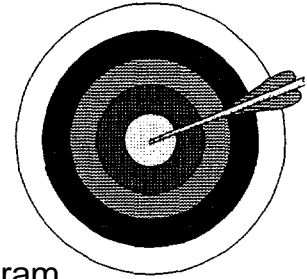
Supervisor Signature

Date

This page left intentionally blank.

CHECKLIST FOR DRIVER SAFETY

PURPOSE: To assist in the establishment of a Passenger, Vehicle and System Safety Program.



DIRECTIONS

Use this form to check safety activities once a Safety Program has been established.

This page left intentionally blank.

Exhibit 4-16
Checklist for Driver Safety⁶

**/ CHECKLIST FOR
DRIVER SAFETY**

- D Pre-trip inspection forms are used by drivers daily
- D Drivers report all mechanical problems on Vehicle Defect Sheets to the appropriate person
- D Drivers have been instructed to report all unusual occurrences on Incident Reports
- D Dispatcher or System Manager reviews all driver forms as appropriate
- D All driver safety concerns as reported on driver forms are addressed and resolved
- D If applicable, all trips are posted to Section 16 Monthly Reporting Forms

⁶

Section 16 recipients should continue to use form found in Project Guide.

This page left intentionally blank.

PART 3 - EMERGENCY PROCEDURES FORMS

PASSENGER PROFILE CARD

PURPOSE: To aid rescue personnel in the event that passengers are found unconscious at the scene of an accident.



DIRECTIONS

A completed card on each passenger should be on the vehicle in which they are traveling.

The front of each Passenger Profile Card gives rescue personnel the identifying characteristics of each passenger and the name and numbers of emergency contacts. The detailed information that needs to be listed on the cards includes the following.

- **NAME:** the passenger's first and last names.
- **SEX:** male or female.
- **DATE OF BIRTH:** passenger's date of birth.
- **WEIGHT:** approximate weight of the passenger.
- **HEIGHT:** approximate height of the passenger (note: in severe accidents, passengers may become dislodged from their wheelchairs. To aid in the identification process, height and weight need to be recorded for everyone).
- **HAIR COLOR:** passenger's hair color.
- **EYE COLOR:** color of passenger's eyes.
- **DATE:** date the card is used.
- **RACE:** ethnic background (i.e. white, black, Hispanic, Asian, or Native American).
- **CHARACTERISTICS:** distinguishing features of passenger. Enter at least 3 (i.e. build; hair characteristics, such as curly, balding, etc.; eyeglasses - although these may fall off during an accident, or any other prominent feature of the passenger).

- **MOBILITY AIDS:** enter if the passenger has a prosthesis or uses a device to move such as a cane, walker, or wheelchair.
- **PRIMARY PHYSICIAN:** full name of the passenger's doctor.
- **TELEPHONE:** both office and home numbers of doctor, if possible.
- **EMERGENCY CONTACT:** name or organization to be contacted in an emergency (i.e. passenger's family or the institution providing care).
- **TELEPHONE:** two telephone numbers for the emergency contact, if possible.

On the reverse side of the card, space is provided to enter any pertinent medical information on the passenger. The detailed medical emergency information that needs to be listed includes the following.

- **MEDICAL CONDITIONS:** any illnesses that the passenger has such as quadriplegia, arthritis, epilepsy, etc.
- **DISABILITIES:** any skills or abilities that the passenger may not be able to perform.
- **MEDICATION(S) TAKEN:** any medication that the passenger takes even if it is on an infrequent basis.
- **ALLERGIES:** anything that may not be covered in the previous categories (this space may be used to repeat any critical condition that may affect emergency care, i.e. ALLERGIC TO PENICILLIN).

Exhibit 4-17
Passenger Profile Card: Front

PASSENGER PROFILE CARD		_____
		Month/Year
Name: _____	Hair Color _____	
Sex _____	Weight _____	Eye Color _____
Date of Birth _____	Height _____	Race _____
Characteristics _____		

Mobility Aids _____		
Primary Physician: _____		
Phone _____ or _____		
Emergency Contact: _____		
Phone _____ or _____		

**Exhibit 4-17 (Concluded)
Passenger Profile Card: Back**

<u>MEDICAL EMERGENCY INFORMATION</u>	
<i>Medical Condition(s)</i>	<i>Medication(s) Taken</i>
_____	_____
_____	_____
_____	_____
<i>Disabilities</i>	<i>Allergies</i>
_____	_____
_____	_____
_____	_____
<i>Special Instructions:</i> _____	

OPERATOR ACCIDENT FORM

PURPOSE: To assist drivers in making decisions and collecting the appropriate information after an accident has occurred.



DIRECTIONS

Copies of the Operator Accident Form should be carried on all vehicles.

The cover page asks the driver to record the accident date and time, and to sign the sheet after all required information has been provided. The signature should be viewed as an indication by the driver that everything he/she has recorded on the form is correct.

Following are descriptions of each of the steps outlined in the report.

Step 1: Call the Dispatcher. The driver is instructed to use the radio to announce the type of emergency. The form directs the driver to provide other vital information to the dispatcher and rescue crew, if necessary. If the vehicle does not have a radio, one of the Emergency Communication forms should be filled out by the driver indicating vital information and given to a passing motorist.

Step 2: Aid the Injured. The driver is directed to aid passengers and the occupants of other vehicles who are injured. However, no one should be removed from any vehicle unless a smoke or fire condition exists or is eminent. If there is such a condition, the driver is instructed to immediately evacuate all passengers as quickly as possible.

Step 3: Warn Other Drivers. The driver is instructed to warn other motorists of the accident scene by placing reflective triangles at both the front and rear of the vehicle.

Step 4: Do Not Discuss Accident Except with Police or Supervisors. To protect the transportation system and the driver from unnecessary legal claims, the driver is instructed to say nothing about the accident to unauthorized individuals. This step should be reviewed carefully during training.

Step 5: Record Information on Other Drivers and Vehicles Involved. If an accident occurs, the driver should fill out the appropriate information as many times as necessary and use the back of the form if more space is needed.

The Driver should collect all required information including the name, address, telephone number, and birth date of each driver involved in the accident. Notation

should be made of the make, year, license plate, state, and registration number of all vehicles involved. Specific visible damage should be recorded as well as the insurance company and policy number of the owner of the vehicle.

Step 6: Record Information on Injured Individuals. The driver should record the appropriate information for each person injured as a result of the accident. Drivers are instructed to write down the vital information on each injured individual and to indicate whether the person was in their vehicle, another vehicle, or a pedestrian.

Step 7: Distribute and Collect Passenger Cards. The Resource Manual provides the driver with detailed instructions on the distribution process of Passenger Cards (Exhibit 4-23). A full discussion of Passenger Cards is included elsewhere in the Resource Manual.

Step 8: Record Information on Witnesses. The driver should record the names, addresses, and phone numbers of at least three witnesses to the accident, if possible.

Step 9: Record Information on Non-Vehicle Property Damage. The driver is required by the form to record any non-vehicle property damage that has occurred as a result of the accident. Two sets of lines are provided which list the object damaged, the nature of the damage, the owner of the damaged property, and their telephone number.

Step 10: Record Information on Police Officers Present. After an accident occurs, the driver should note the names, badge numbers, and the jurisdictions of the police officers who responded to the assistance request. This part of the form provides three sets of spaces for the driver to record the information.

Step 11: Sketch the Accident. Before the driver leaves the scene of the accident, he/she should sketch how the accident occurred. This sheet provides a road system to be used by the driver to indicate his/her own vehicle and the other vehicles (if any) involved. A circle to the right of the diagram should be used by the driver to indicate "North" by placing an arrow in the proper direction.

Step 12: Describe the Accident. Lines are provided to give a narrative description of the accident. The driver is also instructed to indicate the date and time of the accident as well as the weather and road conditions. A line is provided at the bottom of the page for the driver to sign after he or she has recorded all applicable information.

Step 13: File Report. File the DMV 121 SE Accident Report (Exhibit 4-19) by mailing it to: Department of Transportation, Division of Highway - Traffic Engineering, Building 5, Capitol Complex, Charleston, WV, 35305, telephone 348-2817.

Exhibit 4-18
Operator Accident Form

OPERATOR ACCIDENT FORM

(Please follow these instructions)

STEP 1: *Contact Your Dispatcher and Police*

- Announce type of emergency (accident, vehicle breakdown, medical emergency, etc.)
- Announce vehicle number and your name
- State your exact location
Road
Direction headed
- Describe condition of occupants
Number of injured occupants
Severity of injuries

STEP 2: *Aid the Injured*

- Provide any assistance for which you have been trained to passengers. Do not remove passengers from vehicle unless an emergency situation exists. (Fire, etc.)

STEP 3: *Warn other Drivers*

- Be sure to place warning devices well in advance and to the rear of the accident scene.

Exhibit 4-18 (Continued)
Operator Accident Form

STEP 4: *Do Not Discuss the Accident Except with Police or Your Supervisor*

- Do not discuss the accident with passengers, drivers of other vehicles or witnesses

STEP 5: *Record Information on Other Drivers*

Driver's Name _____
Address _____
Telephone _____ Date of Birth _____
License # _____ State _____
Make of Vehicle _____ Year ____ Plate ____
Damage _____
Insurance Co. _____ Policy # _____

(Attach information on other vehicles as necessary)

STEP 6: *Record Information on Those Injured*

Name _____
Address _____
Telephone _____ Date of Birth _____
Injury _____

Injured was: (circle one)

In your vehicle In another vehicle Pedestrian

(Attach information on others injured as necessary)

Exhibit 4-18 (Continued)
Operator Accident Form

STEP 7: *Distribute Passenger Cards*

Remember to:

- Hand a card to each passenger
- Pass out cards starting at the rear
- Collect the cards promptly
- Always thank the passengers who cooperate

STEP 8: *Collect Information from Witnesses*

Name _____

Date of Birth _____

Address _____

Day Phone _____ Evening Phone _____

Name _____

Date of Birth _____

Address _____

Day Phone _____ Evening Phone _____

STEP 9: *Record Non-Vehicle Property Damage*

Object Damaged _____

Nature of Damage _____

Location _____

Object Damaged _____

Nature of Damage _____

Location _____

Exhibit 4-18 (Continued) Operator Accident Form

STEP 10: Record the Names of Police Officers

Name _____

Jurisdiction _____ Badge #. _____

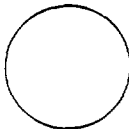
Name _____

Jurisdiction _____ Badge # _____

Was a summons issued? _____ Yes _____ No

To Whom? _____

STEP 11: Sketch the Accident



Indicate North by drawing an arrow in the circle



Your Vehicle



Other Vehicles

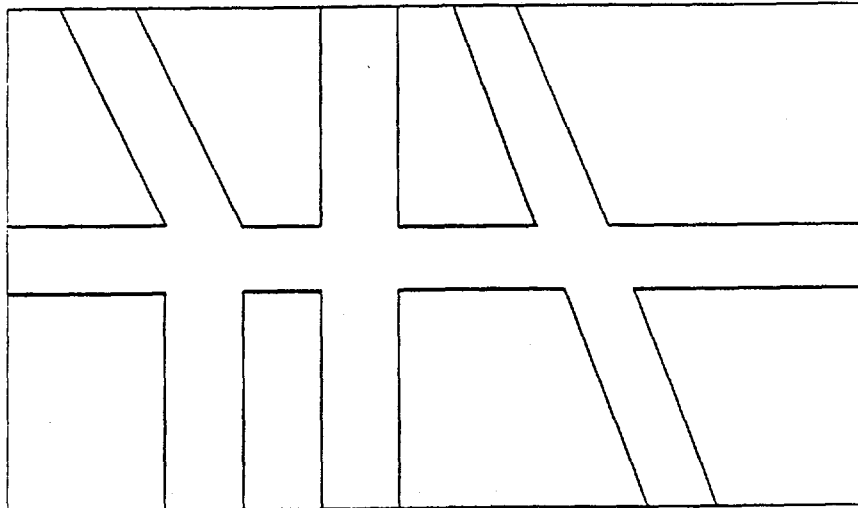


Exhibit 4-18 (Continued)
Operator Accident Form

STEP 12: Describe the Accident

Description: _____

**Exhibit 4-18 (Concluded)
Operator Accident Form**

STEP 13: *File Report*

File the DMV 121 SE Accident Report by mailing it to:

Department of Transportation
Division of Highways - Traffic Engineering
Building 5
Capitol Complex
Charleston, WV 35305
Telephone (348-2817)

Date: __ / __ / __

Time __ : __ AM PM

Weather: _____ Road Condition: _____

After you have filled out the report completely, and fully reviewed its content, please sign your name.

Signature

Exhibit 4-19 DMV Accident Report (Front)

DEPARTMENT OF TRANSPORTATION DIVISION OF MOTOR VEHICLES

DMV 121 SE
REVISED 1/92

OPERATOR'S OR OWNER'S ACCIDENT REPORT

MAIL THIS REPORT TO. Department of Transportation Division of Highways - Traffic Engineering Building 5 Capitol Complex Charleston WV 25305 Telephone 348 2817		The driver of any vehicle involved in an accident resulting in injuries death or property damage to an apparent extent of \$250 or more for all damage must within 5 days file a report of the accident with the department of Motor Vehicles If the driver is physically incapable of reporting and is not the owner of the vehicle then the owner shall submit this report within 5 days after learning of the accident																														
DATE OF ACCIDENT		MONTH	DAY	YEAR	DAY OF WEEK (Check One)	SUN 1	M 2	T 3	W 4	Th 5	F 6	S 7	TIME OF ACCIDENT	AM	PM																	
NUMBER OF VEHICLES INVOLVED IN ACCIDENT		NUMBER INJURED		NUMBER KILLED		ACCIDENT WAS INVESTIGATED BY		1 <input type="checkbox"/> State Police		3 <input type="checkbox"/> Sheriff		2 <input type="checkbox"/> City Police		4 <input type="checkbox"/> None of Above																		
L O C A T I O N	COUNTY		<input type="checkbox"/> IN <input type="checkbox"/> NEAR		CITY OR TOWN		HIGHWAY CLASSIFICATION		1 <input type="checkbox"/> Interstate		3 <input type="checkbox"/> W. Va		5 <input type="checkbox"/> City		2 <input type="checkbox"/> U.S.		4 <input type="checkbox"/> County		6 <input type="checkbox"/> Other													
	ACCIDENT OCCURRED ON	ROUTE 1	Or		STREET 1		CODE		IF ON CONTROLLED ACCESS HIGHWAY CHECK ONE																							
	AT INTERSECTION WITH	ROUTE 2	Or		STREET 2		CODE		1 <input type="checkbox"/> Main Road		2 <input type="checkbox"/> Main Road at Interchange		3 <input type="checkbox"/> Entrance Ramp On		N S E W		4 <input type="checkbox"/> Exit Ramp On		N S E W Side Side													
	IF NOT AT INTERSECTION		<input type="checkbox"/> FEET <input type="checkbox"/> MILES		N S E W		OF		STREET HIGHWAY TOWN ETC		CODE																					
	SPECIAL REFERENCE IF LOCATION CAN BE DESCRIBED MORE PRECISELY ENTER HERE														MILEPOST		TOLERANCE															
Y O U	YOUR FULL NAME (Please Print)				ADDRESS				CITY		STATE		ZIP CODE																			
	DATE OF BIRTH		MONTH	DAY	YEAR	<input type="checkbox"/> Male <input type="checkbox"/> Female		DRIVER'S LICENSE NUMBER				STATE																				
	DRIVER ACTION (Check One)		1 <input type="checkbox"/> Going Straight Ahead		4 <input type="checkbox"/> U. Turning		7 <input type="checkbox"/> Parking		10 <input type="checkbox"/> Merging		13 <input type="checkbox"/> Entering or Leaving Driveway		2 <input type="checkbox"/> Turning Right		5 <input type="checkbox"/> Changing Lanes		8 <input type="checkbox"/> Parked		11 <input type="checkbox"/> Slowing or Stopping		14 <input type="checkbox"/> Pulling Out from Parking Space		3 <input type="checkbox"/> Turning Left		6 <input type="checkbox"/> Passing		9 <input type="checkbox"/> Backing		12 <input type="checkbox"/> Stopped in Traffic Lane		15 <input type="checkbox"/> Other	
Y O U R V E H I C L E	OWNER'S FULL NAME <input type="checkbox"/> Same As Driver				ADDRESS				CITY		STATE		CIRCLE POINT OF INITIAL IMPACT (Circle Only One)																			
	YEAR		MAKE		MODEL		BODY STYLE		LICENSE PLATE NUMBER		STATE																					
	VEHICLE SERIAL NUMBER (Refer to Registration Card)				TOTAL OCCUPANTS OF THIS VEHICLE																											
	DIRECTION OF TRAVEL (If turning enter direction BEFORE turn)				N S E W		ON		ROUTE <input type="checkbox"/> 1 (See LOCATION Section Above)		(Or Street) <input type="checkbox"/> 2																					
	APPROXIMATE COST TO REPAIR				<input type="checkbox"/> Total Loss		AREA(S) DAMAGED		Select Number(s) from Diagram								<input type="checkbox"/> UNDERCARRIAGE															
OTHER DRIVER'S FULL NAME				ADDRESS				CITY		STATE																						
O T H E R D R I V E R	<input type="checkbox"/> Male <input type="checkbox"/> Female		DRIVER'S LICENSE NUMBER				STATE		OTHER DRIVER'S APPARENT CONDITION		1 <input type="checkbox"/> Normal		3 <input type="checkbox"/> Asleep		5 <input type="checkbox"/> Other		2 <input type="checkbox"/> Sleepy		4 <input type="checkbox"/> Ill		6 <input type="checkbox"/> Unknown											
	DRIVER ACTION (Check One)		1 <input type="checkbox"/> Going Straight Ahead		4 <input type="checkbox"/> U. Turning		7 <input type="checkbox"/> Parking		10 <input type="checkbox"/> Merging		13 <input type="checkbox"/> Entering or Leaving Driveway		2 <input type="checkbox"/> Turning Right		5 <input type="checkbox"/> Changing Lanes		8 <input type="checkbox"/> Parked		11 <input type="checkbox"/> Slowing or Stopping		14 <input type="checkbox"/> Pulling Out from Parking Space		3 <input type="checkbox"/> Turning Left		6 <input type="checkbox"/> Passing		9 <input type="checkbox"/> Backing		12 <input type="checkbox"/> Stopped in Traffic Lane		15 <input type="checkbox"/> Other	
	OWNER'S FULL NAME <input type="checkbox"/> Same As Driver				ADDRESS				CITY		STATE		CIRCLE POINT OF INITIAL IMPACT																			
YEAR		MAKE		MODEL		BODY STYLE		LICENSE PLATE NUMBER		STATE																						
VEHICLE SERIAL NUMBER (Refer to Registration Card)				TOTAL OCCUPANTS OF THIS VEHICLE																												
DIRECTION OF TRAVEL (If turning enter direction BEFORE turn)				N S E W		ON		ROUTE <input type="checkbox"/> 1 (See LOCATION Section Above)		(Or Street) <input type="checkbox"/> 2																						
APPROXIMATE COST TO REPAIR				<input type="checkbox"/> Total Loss		AREA(S) DAMAGED		Select Number(s) from Diagram								<input type="checkbox"/> UNDERCARRIAGE																
OTHER DRIVER'S FULL NAME				ADDRESS				CITY		STATE																						
D A M A G E	DAMAGED PROPERTY OTHER THAN VEHICLES				<input type="checkbox"/> ON PAVEMENT OR _____ FEET N S E W OF PAVEMENT EDGE				Approx. Damage																							
	OWNER'S NAME				ADDRESS				CITY		STATE																					

Exhibit 4-19 DMV Accident Report (Back)

C O D E S	INJURY CLASSIFICATION K - Killed A - Bleeding Wound, Distorted Member, or Had to Be Carried from Scene B - Bruises, Abrasions, Swelling, Limping, Etc. C - No Visible Injury But Complaint of Pain or Momentary Unconsciousness	FIRST AID BY 1 - None 2 - Police 3 - Emergency Medical Technician 4 - Doctor 5 - Rescue Squad 6 - Helicopter Crew 7 - Paramedic 8 - Unknown	SEATING M - Motorcycle B - Bicyclist P - Pedestrian O - Other <small>NOTE: Forbans 7, 8 and 9 indicate Rear of Station Wagon</small>	SEAT BELTS 1 - None Installed 2 - Not Used 3 - Lap Belt Only Used 4 - Lap and Shoulder Belts Used 5 - Unknown 6 - Child Safety Restraint Used 7 - Child Safety Restraint Not Used	EJECTED 1 - No 2 - Yes 3 - Partially 4 - Unknown				
			VEH NO 1 - OCCUPANT OF YOUR VEHICLE 2 - OCCUPANT OF OTHER VEHICLE						
I N J U R I E S	For each person injured or killed in the accident, use the codes above to fill in the boxes at the right								
	1 Name _____	Address _____	AGE	SEX	VEH. NO	IN JURY			
	DESCRIPTION OF INJURY _____								
	2 Name _____								
A C C I D E N T D I A G R A M	1 <input type="checkbox"/> Rear End 2 <input type="checkbox"/> Head On 3 <input type="checkbox"/> Same Direction Sideswipe 4 <input type="checkbox"/> Opp. Direction Sideswipe			5 <input type="checkbox"/> 6 <input type="checkbox"/> LEFT & RIGHT TURN 7 <input type="checkbox"/> LEFT TURNS 8 <input type="checkbox"/> RIGHT TURNS 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/>			SINGLE VEHICLE ACCIDENT ACCIDENT OCCURRED <input type="checkbox"/> ON <input type="checkbox"/> OFF PAVEMENT 18 <input type="checkbox"/> Hit Fixed Object 19 <input type="checkbox"/> Hit Pedestrian 20 <input type="checkbox"/> Hit Animal 21 <input type="checkbox"/> Hit Parked Vehicle 22 <input type="checkbox"/> Hit Train 23 <input type="checkbox"/> Ran Off Road 24 <input type="checkbox"/> Overturned 25 <input type="checkbox"/> Other		
	INDICATE IN THIS DIAGRAM WHAT HAPPENED								
	INSTRUCTIONS 1 Follow dotted lines to draw outline of roadway at place of accident 2 Number each vehicle and show direction of travel by arrow, for example: 3 Use solid line to show path before accident 4 Show pedestrian by 5 Show railroad by 6 Show distance and direction to landmarks								
N A R R A T I V E	DESCRIBE WHAT HAPPENED (Refer to Vehicles by Numbers Used in Diagram Above)								
P E D E S T R I A N A C T I O N	1 <input type="checkbox"/> Crossing at Intersection 2 <input type="checkbox"/> Crossing Not at Intersection 3 <input type="checkbox"/> Walking on Pavement With Traffic		4 <input type="checkbox"/> Walking on Pavement Facing Traffic 5 <input type="checkbox"/> Standing on Pavement 6 <input type="checkbox"/> Playing on Pavement		7 <input type="checkbox"/> Working on Pavement 8 <input type="checkbox"/> Other on Pavement 9 <input type="checkbox"/> Not on Pavement				
	Clothing <input type="checkbox"/> Light <input type="checkbox"/> Dark								
E N V I R O N M E N T	LIGHT 1 <input type="checkbox"/> Daylight 2 <input type="checkbox"/> Dark 3 <input type="checkbox"/> Dark, Artificial Lights 4 <input type="checkbox"/> Dusk 5 <input type="checkbox"/> Dawn		WEATHER 1 <input type="checkbox"/> Clear 2 <input type="checkbox"/> Cloudy 3 <input type="checkbox"/> Raining 4 <input type="checkbox"/> Fog, Smog 5 <input type="checkbox"/> Snowing or Sleeting 6 <input type="checkbox"/> Hailing		ROADWAY SURFACE 1 <input type="checkbox"/> Dry 2 <input type="checkbox"/> Wet 3 <input type="checkbox"/> Snow, Ice 4 <input type="checkbox"/> Muddy 5 <input type="checkbox"/> Hazardous Material				
	WERE LANES CLEARLY MARKED? <input type="checkbox"/> YES <input type="checkbox"/> NO		NUMBER OF LANES _____		TRAFFIC CONTROL 1 <input type="checkbox"/> Stop Sign 2 <input type="checkbox"/> Traffic Signal 3 <input type="checkbox"/> Yield Sign 4 <input type="checkbox"/> Officer Flagman 5 <input type="checkbox"/> RR Gates Signals 6 <input type="checkbox"/> None 7 <input type="checkbox"/> Other <input type="checkbox"/> Yes <input type="checkbox"/> No				
	VISION OBSCURED BY 1 <input type="checkbox"/> Not Obscured 2 <input type="checkbox"/> Rain, Snow, Ice on Windshield 3 <input type="checkbox"/> Trees, Bushes 4 <input type="checkbox"/> Building(s) 5 <input type="checkbox"/> Embellishment 6 <input type="checkbox"/> Signboard		7 <input type="checkbox"/> Hillcrest 8 <input type="checkbox"/> Parked Vehicle(s) 9 <input type="checkbox"/> Moving Vehicle(s) 10 <input type="checkbox"/> Blinding Headlights 11 <input type="checkbox"/> Blinding Sunlight 12 <input type="checkbox"/> Other 13 <input type="checkbox"/> Unknown		OPERATOR <input type="checkbox"/> OWNER <input type="checkbox"/>				
	DATE OF THIS REPORT _____ SIGN HERE: _____								

CHECKLIST FOR ACCIDENT PROCEDURES

PURPOSE: To assist drivers in conducting post-accident activities.



DIRECTIONS

Drivers may wish to follow this list to make sure that they are acting properly after they have been involved in an accident. The form should be included in each vehicle located near the Operator Accident Form.

This page left intentionally blank.

Exhibit 4-20
Checklist for Accident Procedures

/ CHECKLIST FOR
ACCIDENT PROCEDURES

- D Contact dispatcher in addition to sending for help
- D Send for appropriate assistance noting exact location and requirements
- D Turn off ignitions of any vehicles involved in the accident
- D Attend to injured by applying first aid or CPR if qualified and trained
- D Move injured only if their lives are in immediate danger
- D Warn other drivers of accident by placing reflective triangles to the rear and front of the accident scene
- D Take down information on other vehicles and drivers by filling out the accident form

This page left intentionally blank.

CHECKLIST FOR ACCIDENT INFORMATION

PURPOSE: To assist drivers in gathering the correct information after an accident.



DIRECTIONS

Drivers should use this form to check that they have collected all of the necessary information at the accident scene. The Accident Information Checklist should be kept in the vehicle and can be used in conjunction with the Operator Accident Form.

This page left intentionally blank.

Exhibit 4-21
Checklist for Accident Information

**/ CHECKLIST FOR
ACCIDENT INFORMATION**

- D Information has been collected on other drivers involved in the accident
- D Information has been collected on other vehicles involved in the accident
- D Information has been recorded on people injured as a result of the accident
- D Passenger cards have been distributed and collected from every passenger who was on the vehicle at the time of the accident
- D Information has been gathered from those who might have witnessed the accident
- D Information has been recorded for any non-vehicle property damage
- D Information has been recorded on police officers who were at the accident scene and citations
- D Description of accident has been recorded

This page left intentionally blank.

EMERGENCY COMMUNICATION FORM

PURPOSE: To assist operators who do not have a radio on their vehicle and who are faced with an emergency situation. Two forms are presented from which to choose. Your organization should select one of these two.



In the event of an accident and the vehicle does not contain a radio or the radio is inoperative, the driver should fill out the Emergency Notification Card, and hand it to a witness or passerby so that the system learns of the emergency and takes steps to acquire help.

GOOD SAMARITAN CARD DIRECTIONS

Copies of the Good Samaritan Card should be carried on all vehicles.

The Good Samaritan Card contains space for the time of the accident, necessary telephone numbers for use by the Good Samaritan (a witness or passerby) and the following vital information:

- emergency codes and vehicle identification;
- location;
- assistance required; and
- passenger status.

Emergency Codes and Vehicle Information

The Good Samaritan is asked to relay information that identifies the type of emergency and the vehicle in trouble. The nature of the emergency is indicated by the driver when he/she circles the words "red," "blue" or "yellow." The colors represent the following:

- RED - Accident;
- BLUE - Medical Emergency; and/or
- YELLOW - Vehicle Breakdown (cannot move).

NOTE: It is possible to indicate more than one emergency type by circling multiple colors.

Location

This information describes the location of the vehicle involved in the emergency. The driver is asked to fill in the road or street where the vehicle is located, the direction headed, two points of reference (e.g. intersections), and a landmark near the site of the emergency.

Assistance Required

Information in this section lists the type of assistance that is needed: Police, Fire, Ambulance, Tow, and other (the driver must specify). It should never be assumed that the type of emergency indicated by the color code requires a standard response.

Passenger Status

The final information concerns the number of people who are on the vehicle at the time of the emergency and their status (e.g. how many are injured or how many are in wheelchairs, etc.).

The Good Samaritan is asked to give his/her name and telephone number to the dispatcher at the end of the conversation. This is so they can be contacted in the future and thanked for their assistance.

EMERGENCY NOTIFICATION CARD DIRECTIONS

The Emergency Notification Card is similar to the Good Samaritan Card in that it is also passed to a motorist in an emergency. It differs in that it lists local emergency numbers to call as well as the number for the dispatcher. The use of this form does not place the burden of notifying emergency personnel on the dispatcher but would be good to require as a backup.

At the top of the sheet is a space to fill in the number of the vehicle on which the form is to be carried. A box at the top portion of the form contains spaces for the phone numbers of the Police, Fire, Ambulance, and dispatcher. These numbers must be filled in by the transportation system before the form is placed on the vehicle.

If the system operates in multiple jurisdictions, the comprehensive inclusion of all emergency numbers would be a problem. Further compounding this problem is that the assisting motorist may not be familiar with the area and consequently, ignorant of what jurisdiction number to call. The availability of 911 would contribute to solving this problem.

The driver is responsible for filling out information regarding the location of the vehicle and the nature of the emergency. He or she is also directed to write down the number of people injured and to indicate the severity of the injuries.

This page left intentionally blank.

Exhibit 4-22
Good Samaritan Card

Good Samaritan Card

Time ___ am / pm

Please read the following instructions carefully.

Notice: *You have been asked to help us respond to an emergency situation concerning one of our vehicles. Please complete the following steps as quickly as possible. Thank you for your cooperation.*

STEP 1: Call my dispatcher. (You can make this a collect call by having the operator announce you as a "Good Samaritan.")

Phone _____
If no answer, call _____

STEP 2: Give the dispatcher or receptionist the following information *exactly* as it is written.

- I have been asked by your driver to report a code red / blue / yellow status for vehicle # _____
- The exact location of the vehicle is:
Street/Road _____
Headed towards _____
Between _____
Near _____
- The driver is requesting that you contact:
__Police __Fire __Ambulance __Tow
__Other _____
- The number of occupants on the vehicle is _____
- The number of injured occupants is _____
- The number of people in wheelchairs is _____

Step 3: Give your name and home phone number so that we may thank you for your assistance.

THANK YOU!

Exhibit 4-22
Emergency Notification Card

VEHICLE # _____

TIME _____ am/pm

EMERGENCY NOTIFICATION CARD

TELEPHONE NUMBERS

Police _____

Fire _____

Ambulance _____

Transportation System _____ (You can make this a collect call by having the Operator announce you as a "Good Samaritan.")

IMPORTANT INFORMATION

LOCATION (Be as specific as possible)

PROBLEM (Be as specific as possible)

Number of Possible Injuries _____

Severity of Injuries _____

PASSENGER CARD

PURPOSE: To be filled out by passenger at the scene of an accident to record who was on the vehicle.



DIRECTIONS

A quantity of cards at least equal to the total number of passengers ever expected to be on-board the vehicle at any point in time is to be carried on each vehicle.

Pass out the cards starting with passengers in the rear of the vehicle and collect them as you move toward the front of the vehicle.

On the front of the Passenger Card, information is filled in by each passenger. The detailed information requested includes:

- **NAME** - Passenger's first and last name;
- **ADDRESS** - Passenger's current residence;
- **TELEPHONE NUMBERS** - Day and evening telephone numbers;
- **TODAY'S DATE** - Passenger must date the card;
- **CURRENT TIME** - Passenger must fill in the time; and
- **SIGNATURE** - Passenger's signature must be on file for validation purposes.

The reverse side of the card contains a diagram of a vehicle with the front and rear indicated. Passengers are required to place an "X" in the location where they were sitting at the time of the accident.

This page left intentionally blank.

**Exhibit 4-23
Passenger Card**

PASSENGER CARD

Please assist us by filling out this card completely.

Name: _____

Address: _____

Phone Numbers (Very Important)

Day: _____ **Evening:** _____

Today's Date: _____

Current Time: _____

Signature of Passenger

Please Complete Other Side Also

**Exhibit 4-23 (Concluded)
Passenger Card**

Mark an "X" where you were sitting

Rear Front

Thank you!

AGENCY PROFILE SHEET

PURPOSE: To provide rescue crews information concerning the transportation system and its vehicles in case of emergency.



DIRECTIONS

At the top of the Agency Profile Sheet, lines are provided for basic agency information. The space for telephone numbers is intentionally long to accommodate multiple offices or special numbers.

The first box contains spaces for six individuals and their home phone numbers to be listed as emergency contacts. The second box contains information about the vehicles operated by the system. Transportation systems should record in the appropriate spaces the number of the vehicles in the fleet; their color scheme or markings; the different types of vehicles; their identifying features; and their capacity for ambulatory passengers and wheelchair passengers.

This page left intentionally blank.

**Exhibit 4-24
Agency Profile Sheet**

AGENCY PROFILE SHEET

Agency Name _____

Address _____

Telephone _____

Emergency Contacts

	<i>Name</i>	<i>Title</i>	<i>Phone</i>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____

Vehicle Information

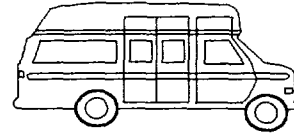
Fleet Size _____ Colors/Markings _____

<i>Vehicle Types</i>	<i>Identifying Features</i>	<i>Capacity Amb./WC</i>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

This page left intentionally blank.

VEHICLE PROFILE CARD

PURPOSE: To assist emergency crews in identifying a vehicle at the accident scene and describing its emergency access points.



DIRECTIONS

One of the most important parts of the form is the vehicle identification information. The data supplied in these spaces will be the only means that rescue crews will have of knowing which Vehicle Profile Card to use. Information that should be conveyed in this section of the card includes:

- Vehicle Numbers (the vehicle numbers of each vehicle of this type);
- Location of Numbers (where to find the numbers on the vehicle);
- Identifying Features (unique characteristics of vehicles of this type);
- Seating Capacity; and
- Wheelchair Securement Locations.

The next section on the Vehicle Profile Card lists the capacity and location of the fuel tanks. In addition, information about the emergency shut off procedure is presented if the ignition mechanism is inaccessible.

The box at the bottom of the page lists areas of the vehicle through which rescue workers could gain access. For each area, information should be given as to where the emergency access might or might not be, (for example, roof escape hatches) and their operation. The last line lists a phone number that can be called if there are any questions concerning the vehicle or its access.

To begin the process of completing the sheets, a list should be made of the different types of vehicles in the fleet. Information should then be recorded for each vehicle type. If the access points on two different vehicles are exactly the same, then only one sheet should be used listing the identifying features of *both* vehicles.

A copy of the completed card should be placed in each of the appropriate vehicles and distributed to all emergency response agencies to train personnel and to carry on emergency response vehicles.

This page left intentionally blank.

Exhibit 4-25
Vehicle Profile Card

VEHICLE PROFILE CARD

(Do Not Remove From Vehicle)

Transit System _____

Vehicle Type _____

Vehicle Identification

Vehicle Numbers _____

Location of Numbers _____

Identifying Features _____

Seating Capacity _____ Wheelchair Locations _____

Fuel Tank Information

Capacity _____ Location _____

Emergency Shut-Off Procedure _____

Emergency Access Points

Driver Side _____

Passenger Side _____

Front _____

Rear _____

Roof _____

Window Information _____

If further information is required call: _____

This page left intentionally blank.

PASSENGER ID CARD

PURPOSE: To help identify passengers in case of an emergency.

DIRECTIONS



A blank Passenger ID Card should be issued to each registered passenger. They should be asked to fill it out and carry it with them in their purse or wallet when ever riding on a paratransit/transit vehicle.

The Passenger ID Card records basic information about the passenger such as his or her name, address, telephone number, date of birth, and sex. Additional identifying characteristics listed on the card include eye color, hair color, height, and weight.

The bottom part of the card lists a primary physician and his or her phone number(s) and a person or organization to reach in case of an emergency. After the information is recorded on each passenger, the card should be laminated and carried by the passenger whenever they ride a system vehicle.

This page left intentionally blank.

Exhibit 4-26 (Front)
Passenger ID Card

PASSENGER ID CARD

Name: _____

Date of Birth _____ Sex _____ Eye Color _____

Hair Color _____ Height _____ Weight _____

Primary Physician: _____

Phone _____ or _____

Emergency Contact: _____

Phone _____ or _____

Exhibit 4-26 (Back)
Passenger ID Card

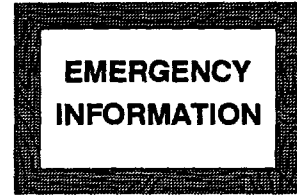
PASSENGER ID CARD

Disability or Medical Condition:

Current Medications Taken:

EMERGENCY PLACARD

PURPOSE: To remind emergency crews that Passengers carried on transportation system vehicles may not be able to communicate with rescue personnel in some ways.



DIRECTIONS

The Emergency Placard should be posted inside each vehicle in a highly visible place.

This page left intentionally blank.

Exhibit 4-27
Emergency Placard

***EMERGENCY
RESCUE INFORMATION***

This Vehicle May Carry

Passengers Who Are:

Blind

Hearing Impaired

Disabled Mentally

and/or

Disabled Physically

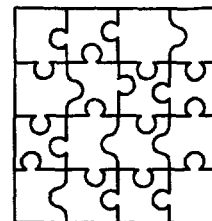
This page left intentionally blank.

CHECKLIST FOR EMERGENCY PROCEDURES

PURPOSE: To assist in the establishment of a Passenger, Vehicle and System Safety Program.

DIRECTIONS

Use this form to check safety activities once a Safety Program has been established.



This page left intentionally blank.

Exhibit 4-28
Checklist for Emergency Procedures

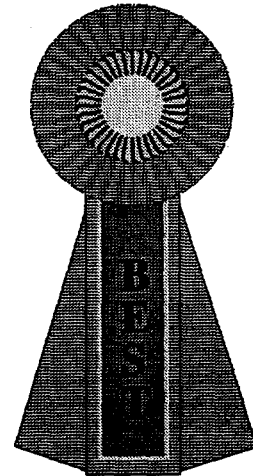
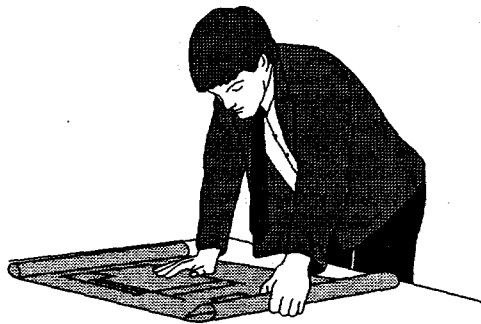
/ CHECKLIST FOR
EMERGENCY PROCEDURES

- D Police, Fire and Ambulance crews have received Agency Profile Sheets
- D Vehicle Profile Cards have been distributed to emergency response agencies and placed in vehicles
- D Emergency Placards are posted in each vehicle
- D Each driver is aware of the responsibilities and procedures in emergency situations
- D Passenger Profile Cards have been placed on each vehicle in service
- D Drivers have been instructed to pass out and collect Passenger Cards after each accident
- D Each driver knows how to correctly fill out an accident form

This page left intentionally blank.

SECTION 5

PASSENGER, VEHICLE AND SYSTEM SAFETY PLAN



This page left intentionally blank.

**PASSENGER, VEHICLE AND
SYSTEM SAFETY PLAN FOR**

_____(Name of Agency)____

DATE: _____

This page left intentionally blank.

(To be typed on your letterhead)

M E M O R A N D U M

TO: All Employees
FROM: (Director or Manager).
DATE: _____
RE: Passenger, Vehicle, and System Safety

It is the objectives of the (Name of Agency) to provide safe and reliable service to its passengers. As a result, it is the responsibility of all employees to make sure that we conduct our daily operations in the safest manner possible.

As part of the commitment to safety, the (Board of Directors or any other appropriate body) has passed a resolution calling for a Safety Plan whose overall goal is to prevent and reduce the severity and number of accidents involving vehicles, passengers, employees or any other individuals who come into contact with the transportation system.

To ensure that the Safety Plan is successfully implemented, (Name of Individual or yourself) has been appointed the system's Lead Safety Officer. As part of the Safety Program, employees are required to bring any conditions perceived to be unsafe to (the Lead Safety Officer's name)'s attention.

I am fully committed to this Passenger, Vehicle and System Safety Plan because it formalizes safety as the transportation system's top priority. Please join with me in supporting this important program.

This page left intentionally blank.

TABLE OF CONTENTS

<u>TITLE</u>	<u>PAGE</u>
INTRODUCTION	1
DIRECTIONS FOR SYSTEM DESCRIPTION	3
SYSTEM DESCRIPTION	5
TRANSPORTATION SYSTEM HISTORY	5
SCOPE OF TRANSIT SERVICES	5
OPERATING ENVIRONMENT	7
DIRECTIONS FOR EMPLOYEE RESPONSIBILITIES	9
SAFETY PROGRAM MANAGEMENT AND ADMINISTRATION	9
SELECTING RESPONSIBILITIES FOR PERSONNEL	9
EMPLOYEE RESPONSIBILITIES	11
SAFETY MANAGEMENT	11
THE SYSTEM MANAGER/PROJECT DIRECTOR (Option 1)	11
THE SYSTEM MANAGER/PROJECT DIRECTOR (Option 2)	12
THE LEAD SAFETY OFFICER (If Option 2 is chosen)	13
DISPATCHERS/SUPERVISORS	13
DRIVERS	14
MAINTENANCE PERSONNEL	14
DIRECTIONS FOR SAFETY AND ACCIDENT REVIEW COMMITTEE	17
COMMITTEE ORGANIZATION	17
ACCIDENT REVIEW ORGANIZATION	17
THE SAFETY AND ACCIDENT REVIEW COMMITTEE	21
ACCIDENT PREVENTION ACTIVITIES	21
ACCIDENT REVIEW ACTIVITIES	22
SAFETY AND ACCIDENT REVIEW COMMITTEE MEMBERS	22
HAZARD ASSESSMENT	22
Sample Hazard Identification and Analysis Methodology ...	24
Hazard Resolution Methods	26
PROGRAM IMPLEMENTATION AND MAINTENANCE	27
SAFETY GOALS AND OBJECTIVES	27
PROGRAM SCHEDULE	27
REQUIREMENTS FOR PLAN UPDATES	27

APPENDIX A
OPERATIONS AND MAINTENANCE SAFETY RULES 29

APPENDIX B
SAFETY STATISTICS AND GOALS 33

APPENDIX C
PROGRAM SCHEDULE 37

APPENDIX D
SAFETY AND ACCIDENT REVIEW COMMITTEE GUIDELINES
FOR DETERMINING THE PREVENTABILITY OF AN ACCIDENT 41

APPENDIX E
PASSENGER, VEHICLE AND SYSTEM SAFETY FORMS 45

LIST OF FIGURES

<u>FIGURE</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
5-1	Hazard Assessment Matrix	5-25

This page left intentionally blank.

LIST OF TABLES

<u>TABLE</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
5-1	List of Board Members	5-6
5-2	Members of the Safety and Accident Review Committee	5-23

This page left intentionally blank.

PASSENGER, VEHICLE AND SYSTEM SAFETY PLAN FOR

(Name of Your Organization).

(retype on your own letterhead)

INTRODUCTION

To emphasize the importance of safety in all aspects of transportation operations, (Name of your organization) [hereafter referred to as the Transportation System] has established a set of comprehensive safety activities called the Passenger, Vehicle and System (PVS) Safety Program. The goal of the PVS Safety Program is to reduce the severity and number of accidents involving vehicles, passengers, employees or any other individuals who come into contact with the Transportation System.

As a result of the PVS Safety Program, the Transportation System hopes to achieve an improved safety record, and to establish safety as its number one priority. In order to be effective, the program is oriented towards identifying potential hazards and implementing solutions before accidents occur. In addition, the PVS Safety Program emphasizes post-accident analysis so that steps can be taken to minimize or prevent future accidents.

The purpose of this document (referred to as the PVS Safety Plan) is to help establish and maintain the PVS Safety Program for the Transportation System. It serves as a blueprint for all safety activities by:

- establishing how safety activities are organized;
- outlining employee safety responsibilities;
- instituting hazard analysis methods; and
- setting goals and objectives for the program.

The PVS Safety Plan is updated annually to record past safety performance and to establish goals for the upcoming year. Although the PVS Safety Plan sets a course for the direction of the PVS Safety Program to follow, the Plan's existence alone does not guarantee success. A commitment to incorporate safety into every aspect of the Transportation System's operations is the only way to ensure that safety experiences will be improved. For this reason, the Transportation System's employees are the most important component of both the PVS Safety Plan and PVS Safety Program.

This page left intentionally blank.

DIRECTIONS FOR SYSTEM DESCRIPTION

This section of the PVS safety Plan outlines your transportation organization's services and background. It is important to document this information as carefully as possible. To establish the context that the PVS Safety Plan addresses and to individualize the Plan to your specific situation.

If your organization has a one-page description of its background and/or activities you may want to incorporate it into the document. It is important, however that basic information such as the hours of operation, the number of rides per year, and a rough breakdown of the type of trips provided be included in the Plan. This information serves to indicate to the reader that the activities of the Safety Program must be placed in the context of the transportation organizations's operating environment.

This page left intentionally blank.

SYSTEM DESCRIPTION

(Organization Name) is a Transportation System that serves the area of (Name of Area Served) . The Board of Directors consists of _ people appointed by (Name of Appointing Body or Person) . and serves a term of _ years.

Board meetings are held at the (location) in (room number) at (time) every (day meeting occurs). The names and positions of Board Members are listed on Table 5-1.

TRANSPORTATION SYSTEM HISTORY

Insert a one page description of your services and/or organizational history.

SCOPE OF TRANSIT SERVICES

(Organization Name) provides service approximately __ days a year. The weekday hours of operation for the service are from __ am to __ pm. Weekend hours are (list weekend hours) . During the _ - _ fiscal year approximately _ riders were transported in support of a total service area population of ____.

Transportation is essential to the community(ies) that (Organization Name)_ serves. The system is used by people to travel to and from:

- ___ % Work
- ___ % Shopping
- ___ % Health Care
- ___ % School
- ___ % _____
- ___ % _____
- ___ % _____
- ___ % Other

**Table 5-1
LIST OF BOARD MEMBERS**

LIST OF BOARD MEMBERS	
<u>Member</u>	<u>Title</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

OPERATING ENVIRONMENT

Safety precautions depend in large part on the operating environment of each Transportation System. The Transportation System's operating area is approximately ___ % rural and ___ % urban. Vehicles operate on a road network that is composed of:

- ___ % city streets
- ___ % suburban residential streets
- ___ % interstates/throughways
- ___ % 4-lane highways
- ___ % 2-lane highways
- ___ % unpaved roads

Common hazards that drivers must face when operating a vehicle are: (List common hazards such as heavy traffic, animals, etc.)

In case of snow or other weather-related emergencies, (Name of Person)___ makes a determination as to whether to operate the service. If a weather emergency occurs during the day, drivers on the road are informed about the system's operating status by (Type of Communication System) .

This page left intentionally blank.

DIRECTIONS FOR EMPLOYEE RESPONSIBILITIES

The following pages list different employee positions commonly found in transportation organizations and their responsibility under the PVS Safety Program. Because transportation organizations vary in size, scope, and management structure it is not possible to write a listing of responsibilities that is applicable to every situation. For this reason, the job responsibilities for each position have been listed separately so that you can pick the listings that are most applicable to your situation.

SAFETY PROGRAM MANAGEMENT AND ADMINISTRATION

In small systems, Project Directors or Transportation Managers perform many functions. Due to a lack of resources (available personnel and money) Project Directors of small systems will probably serve as the manager of the safety program, and its primary implementer. In larger transportation organizations, however, the Project Director or System Manager is more removed from the daily provision of service. In such cases, it is likely that another individual would coordinate the activities of the safety program. Although the Project Director or System Manager would still be ultimately accountable for safety.

To account for both types of organizations, two options have been developed for the management structure of the safety program and the responsibilities of the Project Director or System Manager. Option 1 should be used when the head person in the organization is to be primarily responsible for both directing and conducting safety activities. Most small transportation organizations should choose this option.

Option 2 outlines the responsibilities of the Project Director or System Manager for larger transportation organizations that cannot have their safety activities directed and conducted by just one person. In such cases, the responsibilities outlined under Option 2 refer to the Project Director or System Manager's responsibility for the overall safety program but does not refer to how the safety activities will be administered. In cases where Option 2 is used, a Lead Safety Officer should be appointed to take over the day-to-day administration of the safety program. A separate sheet is provided listing the Lead Safety Officer's responsibilities under the safety program if Option 2 is chosen. If Option 1 is chosen then the sheet outlining the responsibilities of the Lead Safety Officer should be discarded.

SELECTING RESPONSIBILITIES FOR PERSONNEL

The following pages list the safety responsibilities of different types of employees. In order for your plan to be complete, you should pick those that apply to your particular organization. For example, if your organization does not have mechanics, that section can be discarded. On the other hand, if drivers serve as dispatchers, both the Driver and the Dispatcher/Supervisor sheets should be included.

In this way, an employee is charged with the safety responsibility of the role they fulfill in the organization at any one time, not his or her main occupation.

EMPLOYEE RESPONSIBILITIES

To ensure that operations are conducted in the safest manner possible, all Transportation System personnel have been assigned specific responsibilities to assist in increasing the level of safety throughout the system. In addition to their responsibilities under the PVS Safety Program, operators and mechanics are required to adhere to the safety rules listed in Appendix A.

Office personnel are responsible under the PVS Safety Program for being thoroughly familiar with emergency procedures. All personnel must know the location of fire extinguishers and emergency exits, understand all emergency communication procedures (including operation of radios if available) and be practiced in all emergency operating procedures.

SAFETY MANAGEMENT

The management of the PVS Safety Program is the responsibility of a combination of specific individuals and the Safety and Accident Review Committee. As in all operational matters, the System Manager, (Name of the System Manager), holds ultimate responsibility for the direction of the PVS Safety Program and the execution of the PVS Safety Plan.

The Safety and Accident Review Committee has a broad scope of responsibilities that primarily encompass accident prevention and accident review. Its activities include, but are not limited to vehicle safety, facility inspections, accident reviews, safe work practices, emergency procedures, safety reviews, and the development and updating of the PVS Safety Plan. By placing the requirements of the PVS Safety Program on several employees, no one person is overburdened with the responsibility for all safety activities.

THE SYSTEM MANAGER/PROJECT DIRECTOR (Option 1)

The top manager of the Transportation System is responsible for the overall direction and implementation of the Safety Program. He or she should be well informed of the Safety Program's status and work to conduct safety activities.

As the employee in charge of safety, he or she should be a member of the Safety and Accident Review Committee and be in charge of collecting and disseminating safety information. The System Manager or Project Director is specifically charged with the following responsibilities under the PVS Safety Program:

- being answerable for the safe conduct of the Transit System's operations;

- communicating safety as a top priority to all employees;
- listening and taking appropriate action on all safety concerns and hazards brought to his or her attention;
- reporting directly to the transit manager any safety concerns or hazards;
- identifying potential safety concerns or hazards in any part of the Transit System's operations;
- actively soliciting the safety concerns of other employees;
- serving as a liaison between the Safety and Accident Review Committee and transit system employees; and
- working to ensure that the PVS Safety Program is carried out on a daily basis.

THE SYSTEM MANAGER/PROJECT DIRECTOR (Option 2)

The top manager of the Transportation System is responsible for the overall direction and implementation of the Safety Program. As such, he or she should be well informed of the transit system's safety status on a daily basis. Although the manager's many obligations make it impossible to attend to every detail of the PVS Safety Program, he or she should be very familiar with specific programs and the status of the system in relation to achieving its safety goals.

The manager is responsible for assessing the adequacy, responsiveness, thoroughness, and effectiveness of the Lead Safety Officer and all other safety-related personnel in the development of the PVS Safety Plan and the implementation of the PVS Safety Program. The manager is specifically charged with the following management responsibilities for the PVS Safety program:

- being answerable for the safe conduct of the Transit System's operations;
- communicating safety as a top priority to all employees; and
- listening and taking appropriate action on all safety concerns and hazards brought to his or her attention.

THE LEAD SAFETY OFFICER (If Option 2 is chosen)

The Lead Safety Officer is the individual who is directly responsible for implementing the PVS Safety Program. He or she is expected to be a member of the Safety and Accident Review Committee and to be in charge of collecting and disseminating safety data. The Lead Safety Officer is specifically charged with the following management responsibilities for the PVS Safety Program:

- reporting directly to the transit manager any safety concerns or hazards;
- identifying potential safety concerns or hazards in any part of the Transit System's operations;
- actively soliciting the safety concerns of other employees;
- serving as a liaison between the Safety and Accident Review Committee and transit system employees; and
- working to ensure that the PVS Safety Program is carried out on a daily basis.

DISPATCHERS/SUPERVISORS

In larger transportation systems, Supervisors are responsible for communicating the Transit System's safety policy to all employees. For this reason, supervisors must have full knowledge of all safety rules and policies, but more importantly must communicate those policies to other employees in a manner that encourages them to work safely as a matter of principle. Specific responsibilities of supervisors under the PVS Safety Plan include:

- having full knowledge of all standard and emergency operating procedures;
- ensuring that drivers make safety a primary concern when on the job;
- cooperating fully with the safety program regarding any accident investigations;
- listening and acting upon any safety concerns raised by the drivers; and
- reporting to the Safety Coordinator or the General Manager any safety concerns or possible hazards.

DRIVERS

As the primary point of contact with passengers, each driver whether full-time, part-time or volunteer, plays a crucial role in forming the public's perception of how service is delivered. Although safe operation is everyone's responsibility, the behavior and actions of drivers are the most visible element of the Transit System's safety awareness. As part of the PVS Safety Program all driver's must:

- show primary concern for the safety of passengers at all times;
- have complete knowledge of all standard and emergency operating procedures (including evacuation);
- be thoroughly familiar with fuel and service lane standard and emergency operating procedures;
- obey all traffic laws — especially speed limits;
- cooperate fully with safety operations and accident investigations;
- be assured that each vehicle is in safe condition either through the use of the daily inspection form or the release of a mechanic or supervisor; and
- report any safety concern or possible hazards to the appropriate person (supervisors, the Safety Coordinator, or the General Manager).

MAINTENANCE PERSONNEL

Mechanics are responsible for the safe operating condition of the vehicles, and for a safe work environment in the maintenance area. Appropriate protective gear is to be worn at all times and proper safety precautions are to be followed. In addition, all flammable and toxic materials are to be stored safely and securely away from any work activity that could cause an accident or emergency. Specific responsibilities for maintenance workers under the PVS Safety Plan include:

- safe operation of all machinery and equipment;
- complete knowledge of both standard and emergency operating procedures;
- knowledge of proper chemical spill containment and clean-up procedures;
- clean and safe condition of all work areas;

- knowledge of all emergency shut-off switches;
- knowledge of the location and safe operation of fire extinguishers; and
- communication of all safety concerns to the Safety Coordinator or foreman.

This page left intentionally blank.

DIRECTIONS FOR SAFETY AND ACCIDENT REVIEW COMMITTEE

The Safety and Accident Review Committee is organized into two parts. The main function of the Committee is to prevent accidents from occurring. A secondary purpose that directly relates to this prime objective is to evaluate accidents that have already happened. The organization of the Committee reflects these priorities. The main body of the Committee meets to discuss issues relating to safety and accident prevention. A sub-group of this main body is responsible for reviewing vehicle-related accidents and assessing whether or not they were preventable.

COMMITTEE ORGANIZATION

The people who serve on the Safety and Accident Review Committee should represent both the transportation organization and local community. Five or seven committee members allow the Committee to have a broad representative base and retain manageability. Small organizations may wish to only have three members on the safety committee, but this increases the workload since each person would have to participate in both accident prevention and accident review activities.

Representation on the Committee should include individuals from various parts of the transportation organization and independent representatives. Appropriate categories for employees to be represented include dispatchers, drivers, and mechanics (if applicable). Outside members could include representatives from local police, fire, or ambulance organizations. Other possibilities for outside representation include local officials, or insurance representatives (assuming they have no financial ties to the transportation organization).

The Safety and Accident Review Committee shall meet on a monthly basis to work on PVS Safety Program issues. At the meetings, members of the Committee will report on safety related concerns, review potential hazards, and designate individual members to investigate safety issues. Once a safety concern is brought to the attention of the Committee, one or more representatives will be chosen to evaluate the potential hazard. They will then report their findings at the next meeting.

ACCIDENT REVIEW ORGANIZATION

The accident review activities of the Safety and Accident Review Committee are handled separately from the other responsibilities. A group of Safety and Accident Review Committee members meets periodically to assess whether or not an accident was preventable. Guidelines for judging whether or not an accident is preventable are listed in Appendix D.

Due to the sensitive nature of the issues discussed in accident reviews, the determining body must be viewed as objective and impartial. The group that meets

for this purpose should be composed of at least one member each from *both* management and the vehicle operators, plus an independent evaluator from outside the transportation system.

The independent evaluator could be an insurance adjuster, police official or another person familiar with vehicle accidents. The most important criteria, is independence so that the Committee's decisions cannot be questioned by either side. A member of the Transportation System's Board of Directors, for example, would not be an appropriate person to serve on the Committee as an independent voice.

In some small systems, the system manager serves on the Committee. In larger systems, the head of operations may assume the responsibility of representing management. In either case, the management representative has the dual role of making sure that management's interest in discouraging accidents is represented while at the same time maintaining a sense of fairness throughout the evaluative process.

Driver Representation

Drivers should be chosen to serve on the Committee by, above all else, their accident history. Ideally, vehicle operators who assist in accident reviews should not have any accidents on their record and should have driven for the transportation system. In cases where this is not possible, transportation systems still have to use their best judgement from the people available. Many times the safest drivers are neither the most vocal nor most popular. However, the reason drivers with accident-free records should be chosen is that they have a critical eye towards accident prevention (defensive driving) as evidenced by their success. This perspective is different than the leadership qualities that both management and employees would like to see in a supervisor. Therefore, it is important to remember that drivers who have a *proven* record of safety be chosen.

Independent Representation

The independent representative(s) should have a background in accident investigation. If an appointed independent representative is an insurance adjuster or has a similar position in the insurance industry, he or she cannot have any financial connection to the transportation system. Other conflicts of interest include police officers or fire personnel who were dispatched to the accident scene.

Management Representation

The management representative(s) who are a part of the Safety and Accident Review Committee should present themselves as fair and impartial participants while at the same time upholding a strict interpretation of what is preventable.

Disciplinary action is the responsibility of management once the Safety and Accident Review Committee reaches a decision. Final determination obviously rests in the hands of the top manager of the transportation system. For this reason, it is probably best if that person is separated from the assessment process.

This page left intentionally blank.

THE SAFETY AND ACCIDENT REVIEW COMMITTEE

The Safety and Accident Review Committee performs two important functions. Members of the Committee conduct activities that focus on preventing accidents, and also analyze those accidents that do occur. Both functions are necessary because they act together to strengthen the safety program as a whole. Preventive functions keep the Transportation System active in addressing safety concerns. However, to direct those activities in the most effective means possible, analyses must be made of those accidents that do occur. This "check" can then be used to assist in evaluating safety activities and to direct safety program resources (e.g. personnel, money, time, etc.) appropriately.

ACCIDENT PREVENTION ACTIVITIES

The Safety and Accident Review Committee works to develop the PVS Safety Plan and to implement the PVS Safety Program. Members of the Committee conduct safety reviews and assess potential hazards on an individual basis. One of the main functions of the Committee is to serve as the body that develops and reviews training programs and assesses the appropriateness of their content. Members of the Committee also have the responsibility of searching for new training opportunities that could improve the Transportation System's safety performance.

A major focus of the Safety and Accident Review Committee activities is to identify and neutralize potential hazards. To do this, it concentrates on work activities and safety issues such as route analyses, driving techniques, and boarding and discharging.

In addition to conducting hazard analyses when problems are brought to its attention, the Safety and Accident Review Committee is also charged with conducting safety reviews. These reviews can concentrate on any aspect of operations and include work practices, facility inspections, emergency preparedness, or any other part of the Transportation System. Reviews conducted by the Safety and Accident Review Committee serve to:

- determine compliance with management policies, rules, regulations, standards, codes, procedures and assigned safety system responsibilities;
- identify significant recurring accidents and residual hazards that are to be resolved by the organization being reviewed; and
- recommend specific action plans for correcting or minimizing the effects of identified accident causes.

In addition to preventive measures such as safety reviews and assessments, the Safety and Accident Review Committee is the body primarily responsible for the promotion of safety. Activities in this area include safety awareness campaigns, safety award programs and special safety-related events such as dinners and roadeos.

ACCIDENT REVIEW ACTIVITIES

Another responsibility of the Safety and Accident Review Committee is to objectively review accidents to determine whether or not they were preventable.

The Transportation System bases its concept of expert safe driving practices on those outlined in defensive driving courses; the ability to avoid accidents in spite of the wrong actions of other drivers and regardless of roadway or weather conditions. A preventable accident, therefore, is any occurrence involving a Transportation System vehicle that results in property damage and/or personal injury, in which the driver in question failed to do everything he or she reasonably could have done to prevent the occurrence.

Due to the sensitive nature of the Committee's activities some of its decision's may be controversial. For this reason, Committee members should be chosen on the basis of whether their judgement will be respected by others.

SAFETY AND ACCIDENT REVIEW COMMITTEE MEMBERS

A listing of Safety and Accident Review Committee members is listed separately on Table 5-2.

HAZARD ASSESSMENT

Although it is impossible to accurately identify and correct every dangerous situation, many accidents can be avoided through careful prior analysis. This practice is called Hazard Assessment, and it has two important components.

The first component is to determine the likelihood that the hazard could produce an accident. This process entails a full evaluation of how frequently the hazard is encountered. For example, low head clearance on one type of vehicle could be encountered frequently by both passengers and the driver. Another, less likely hazard could involve the potential combustion of hazardous materials in the central storage area due to extreme heat. In either case, an accurate assessment of the possibility that an accident could occur is crucial to assessing the hazard correctly.

The second component of performing Hazard Assessment is the determination of the potential severity of an accident. This process involves carefully estimating the potential effects of an accident caused by the hazard. In the two examples used

**Table 5-2
MEMBERS OF THE SAFETY AND ACCIDENT REVIEW COMMITTEE**

MEMBERS OF THE SAFETY AND ACCIDENT REVIEW COMMITTEE	
<u>Name</u>	<u>Organization/Position</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

previously, the severity of each would be very different. In the case of the low head clearance, it is possible that a passenger or employee might get a concussion. The second example (the combustion of hazardous materials) has the potential for death or serious injury.

The practice of hazard assessment combines these two components (likelihood and potential severity) to form an overall determination of the hazard. A complete safety program therefore incorporates this type of analysis into its activities.

Sample Hazard Identification and Analysis Methodology

One way to conduct hazard assessments is to use a "Hazard Assessment Matrix" (Figure 5-1). The Matrix condenses "hazard assessment" into a chart and prioritizes those hazards that are evaluated.

Two hazard severity categories used to designate the magnitude of the "worst case" potential effects of the hazard are as follows.

- Category I — Critical

Hazard can result in severe injuries or death to passengers, employees, or others who come into contact with the Transportation System and/or cause major property damage.

- Category II — Marginal

Hazard can result in minor injury or negligible property damage.

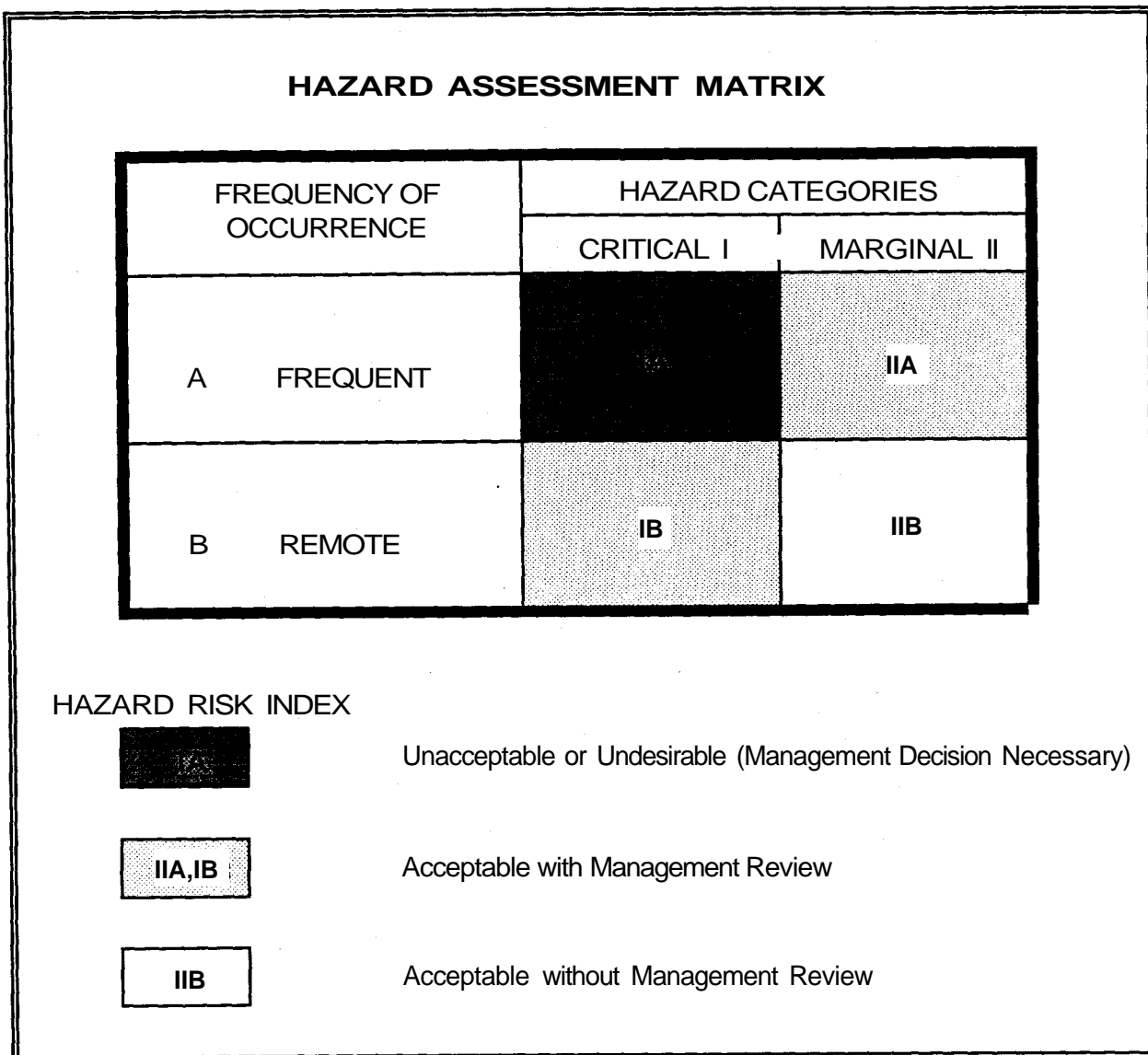
After hazards are assessed for their potential severity, they can be examined to determine the probability that they may lead to an accident. As an increase in knowledge about safety is established through the course of the PVS Safety Program, prior accident information will be factored into the probability analysis if it is appropriate to do so.

- A Frequent

The hazard is likely to cause an accident on a recurrent basis.

- B Remote

An accident is unlikely but possible during the life of the hazard.



**Figure 5-1
HAZARD ASSESSMENT MATRIX**

Hazard Resolution Methods

After the magnitude and likelihood of possible accidents due to apparent hazards have been assessed, the list will be prioritized into risk categories. As illustrated in the Hazard Assessment Matrix (Figure 5-1), each hazard will be judged to be:

- unacceptable or undesirable (management decision required);
- acceptable with management review; or
- acceptable without management review.

The investigators will report back to the Committee with a description of the hazard and a recommendation on how the potential hazard should be categorized. This assessment is to be recorded and become part of the permanent record of the Safety and Accident Review Committee's activities. In addition, investigators are to be prepared to discuss several alternative solutions to each safety problem and its associated costs. These procedures are established to expedite the process of implementing solutions.

The order of priority in finding solutions for potential hazards is: elimination of the hazard; control of the hazard; and acceptance of the hazard. Measures that may be recommended by the Safety and Accident Review Committee to counteract potential hazards can include:

- design changes;
- safety devices;
- warning devices; and/or
- safety procedures.

When attempting to mitigate a potentially hazardous situation, members of the Safety and Accident Review Committee must conduct trade-off analyses that take into account both safety issues and costs, potential losses and service impacts. For this reason, resolution strategies must be flexible to match an appropriate solution to each situation.

PROGRAM IMPLEMENTATION AND MAINTENANCE

The Transportation System has established this PVS Safety Plan as part of its effort to make safety a priority in all aspects of its operations. In order for the PVS Safety Program to remain a vital part of these activities it must be periodically maintained and updated. The Lead Safety Officer is the individual who is primarily responsible for this continuous process. To ensure that he or she can perform this function, the top manager of the Transportation System is obligated to provide the necessary resources to develop the PVS Safety Plan and to implement the PVS Safety Program.

SAFETY GOALS AND OBJECTIVES

On an annual basis, the Safety and Accident Review Committee will record safety statistics for the previous year and develop goals for the next year. Meeting or exceeding safety goals is the driving force behind creating a commitment to safety throughout the organization. To emphasize their importance, the Safety and Accident Review Committee and the manager of the Transportation System are responsible for developing incentive systems that reward individual, department and system safety performance. A listing of safety rules is included in Appendix A of this PVS Safety Plan.

PROGRAM SCHEDULE

The schedule for performing and implementing the PVS Safety Program is contained in Appendix B. The schedule identifies those activities that must be performed during the first six months after the plan's approval. These efforts include the establishment of the Safety and Accident Review Committee, and the goals needed to form the foundation of the PVS Safety Program.

The Safety and Accident Review Committee is responsible for developing the schedule and adjusting it as necessary. It is responsible for making sure that an updated version of the schedule is available for all personnel.

REQUIREMENTS FOR PLAN UPDATES

The Project Director or System Manager and members of the Safety and Accident Review Committee are jointly responsible for maintaining and updating the PVS Safety Plan. The revisions made to the plan must be approved by the Board of the Transportation System or oversight agency.

This page left intentionally blank.

**APPENDIX A
OPERATIONS AND MAINTENANCE SAFETY RULES**

DIRECTIONS

Incorporate the following safety rules into your employee manuals. If you do not have an employee manual, you should post the rules prominently.

Some small systems may not employ maintenance personnel. In such cases, the rules addressing maintenance safety practices can be discarded.

This page left intentionally blank.

**APPENDIX A (Continued)
OPERATIONS AND MAINTENANCE SAFETY RULES**

MAINTENANCE SAFETY RULES

- (1) Vehicles that are not safe to operate are not allowed to be on road.
- (2) The Lead Mechanic ultimately decides whether or not a vehicle is safe to drive (not the System Manager or Project Director).
- (3) Only authorized maintenance personnel can certify that a vehicle is safe to drive.
- (4) Explanations are required on all defect cards detailing the repairs made to fix the problem or why no repairs were necessary.

DRIVER SAFETY RULES

- (1) Before a vehicle can be placed in service a pre-trip inspection must be completed and the operator must be satisfied that the vehicle is safe to operate.
- (2) If a defect is identified before beginning service a supervisor or approved mechanic must sign-off on the vehicle before it can be placed into service.
- (3) Vehicles cannot be moved unless all occupants (including the driver) are appropriately seated, belted, and if appropriate have their wheelchairs secured.
- (4) If a defect develops during the day, it must be marked on a vehicle defect card at the completion of the tour and the vehicle may not be placed into service until a supervisor or approved mechanic signs off on it.

This page left intentionally blank.

**APPENDIX B
SAFETY STATISTICS AND GOALS**

DIRECTIONS

Appendix B should be used to establish goals for safety performance and to record results. The first column displays the results of the previous statistical period. The second column records the goals set for that period. The third and last column displays the Safety and Accident Review Committee's goals for the current period.

Accident and safety activities vary widely in relation to the size and operating environment of each transit system. For example, smaller systems may go more than a year without a vehicle accident while larger systems could have vehicle accidents on a monthly basis. The term statistical period is used to leave the type of measurement up to each individual transportation system. Small systems may wish to measure accidents per 500,000 miles. Large systems, on the other hand, may wish to keep safety statistics on an annual, semi-annual, or quarterly basis.

Whichever period of performance you decide to use, make sure to state it at the bottom of the page in the space provided.

This page left intentionally blank.

APPENDIX B (Continued)
SAFETY STATISTICS AND GOALS

SAFETY STATISTICS AND GOALS SHEET

Date _____

	Total Last Period	Goal Last Period	Goal for Current Period
<u>Vehicle Accidents</u>			
Clearly Preventable	_____	_____	_____
Clearly Nonpreventable	_____	_____	_____
Borderline	_____	_____	_____
<u>Types of Collisions</u>			
Other Vehicle	_____	_____	_____
Fixed Object	_____	_____	_____
Other (animals, etc.)	_____	_____	_____
<u>Passenger Accidents</u>			
Total Passenger Accidents	_____	_____	_____
Passenger Falls	_____	_____	_____
Other Incidents	_____	_____	_____
Number of Claims	_____	_____	_____
<u>Employee Injuries</u>			
Total Employee Injuries	_____	_____	_____
Driver Injuries	_____	_____	_____
Other Employee Injuries	_____	_____	_____
Driver Days Lost	_____	_____	_____
Other Employee Days Lost	_____	_____	_____

NOTE: One statistical period equals _____

This page left intentionally blank.

**APPENDIX C
PROGRAM SCHEDULE**

DIRECTIONS

Appendix C should be used to assign a due date to elements of the PVS Safety Program. Several possible tasks are listed but this list is not comprehensive. Tasks that do not apply to your program can be crossed out from the list. In addition, you may wish to add tasks which are not listed but are appropriate to your program.

This page left intentionally blank.

APPENDIX C (Continued)
PROGRAM SCHEDULE

PROGRAM SCHEDULE	
	Due Date
Formalize approval of PVS Safety Plan	_____
Select Lead Safety Officer	_____
Establish Safety and Accident Review Committee	_____
Collect Safety Data	_____
Set Goals and Objectives	_____
Update and Refine PVS Safety Plan	_____
Select Outside Representatives	_____
Conduct Facility Safety Reviews	_____
Train All Employees on the Use of Fire Extinguishers	_____
Develop Plans for a Bus Roadeo	_____
Set Date for Vehicle Evacuation Simulation Exercises	_____
Complete Review of Emergency Preparedness	_____
Inspect All Accident Kits	_____

Professional drivers should be held accountable for avoiding intersection collisions due to poor decisions or driver skills or others. Lane crossings, excessive speed, and sudden emergencies from blind spots by other drivers do not alter the fact that the accident could have been prevented.

This page left intentionally blank.

**APPENDIX D
SAFETY AND ACCIDENT REVIEW COMMITTEE GUIDELINES
FOR DETERMINING THE PREVENTABILITY
OF AN ACCIDENT**

In order to judge the preventability of an accident, the Safety and Accident Review Committee should use criteria that have been developed by the National Safety Council. The basic rule is that a preventable accident is one in which the driver failed to do everything he or she could reasonably have done to avoid it. A non-preventable accident, therefore, is one in which the driver did everything he or she could do to prevent it. In order to clarify what is and is not preventable, the National Safety Council has prepared the following list of preventable accidents.

INTERSECTIONS

It is the responsibility of professional drivers to approach, enter, and cross intersections prepared to avoid accidents that might occur through the action(s) of other drivers. Complex traffic movement, blind intersections, or failure of the "other driver" to conform to law or traffic control devices will not automatically discharge an accident as "non-preventable." Intersection accidents are preventable even though the professional driver has not violated traffic regulations. His/her failure to take precautionary measures prior to entering the intersection are factors to be studied in making a decision. Professional drivers should be held accountable for avoiding intersection collisions due to decisions or driving skills of others. Lane crossings, excessive speed, and sudden emergencies from blind spots by other drivers do not alter the fact that the accident could have been prevented.

VEHICLE AHEAD

Regardless of the abrupt or unexpected stop of the vehicle ahead, your driver can prevent rear-end collisions by maintaining a safe following distance at all times. This includes being prepared for possible obstructions of the highway, either in plain view or hidden by the crest of a hill or the curve of a roadway. Overdriving headlights at night is a common cause of rear-end collisions. Night speed should not be greater than that which will permit the vehicle to come to a stop within the forward distance illuminated by the vehicle's headlights.

VEHICLE BEHIND

Investigation often discloses that drivers risk being struck from behind by failing to maintain a margin of safety in his/her own following distance. Rear-end collisions preceded by a roll-back, an abrupt stop at a grade crossing, when a traffic signal changes, or when your driver fails to signal a turn at an intersection, should be

charged preventable. Failure to signal intentions or to slow down gradually should be considered preventable.

PASSING

Failure to pass safely indicates faulty judgement and the possible failure to consider one or more of the important factors a driver must observe before attempting a maneuver. Unusual actions of the driver being passed or of oncoming traffic might appear to exonerate a driver involved in a passing accident; however, the entire passing maneuver is voluntary and the driver's responsibility.

BEING PASSED

Sideswipes and cut-offs involving a professional driver while he is being passed are preventable when he fails to yield to the passing vehicle by slowing down or moving to the right where possible.

ONCOMING

It is extremely important to check the action of the driver when involved in a head-on or sideswipe accident with a vehicle approaching from the opposite direction. Exact location of vehicles, prior to and at the point of impact, must be carefully verified. Even though an opposing vehicle enters your driver's traffic lane, it may be possible for your driver to avoid a collision. For example, if the opposing vehicle was in a passing maneuver and your driver failed to slow down, stop, or move to the right to allow the vehicle to re-enter his/her own lane, he/she failed to take action to prevent the accident. Failing to signal the opposing driver by flicking the headlights or sounding the horn should also be taken into account.

FIXED OBJECTS

Collisions with fixed objects are preventable. They usually involve failure to check or properly judge clearance. New routes, staged delivery points, resurfaced pavements under viaducts, inclined entrances to docks, marquees projecting over traveled sections of road, and similar situations are not, in themselves, valid reasons for excusing the driver from being involved. He or she must be constantly on the lookout for such conditions and make the necessary allowances.

PEDESTRIANS

Traffic regulations and court decisions generally favor the pedestrian hit by a moving vehicle. An unusual route of a pedestrian at mid-block or from between parked vehicles does not necessarily relieve a driver from taking precautions to prevent such accidents. Whether speed limits are imposed in the area or not, speed too fast

for conditions may be involved. School zones, shopping areas, residential streets, and other areas with special pedestrian traffic must be traveled at reduced speeds equal to the particular situation. Bicycles, motor scooters, and similar equipment are often operated by young and inexperienced operators. The driver who fails to reduce his/her sight distance has failed to take the necessary precautions to prevent an accident. Keeping within posted speed limits is not taking the proper precaution when usual conditions call for voluntary reduction of speed.

PRIVATE PROPERTY

When a driver is expected to make pick-ups or drop-offs at unusual locations, or on driveways not built to support heavy commercial vehicles, it is his/her responsibility to discuss the operation with the transportation management and to obtain permission prior to entering the area.

PASSENGER ACCIDENTS

Passenger accidents in any type of vehicle are preventable when they are caused by faulty operation of the vehicle. Even though the incident did not involve a collision of the vehicle, it must be considered preventable when your driver stops, turns, or accelerates abruptly. Emergency action by the driver to avoid a collision that results in passenger injury should be checked to determine if proper driving prior to the emergency would have eliminated the need for the evasive maneuver.

NON-COLLISION

Many accidents, such as overturning, or running off the road, may result from emergency action by the driver to preclude being involved in a collision. Examination of his/her driving procedure prior to the incident may reveal speed too fast for conditions, or other factors. The driver's actions prior to involvement should be examined for possible errors or lack of defensive driving practices.

FAILURE TO ADJUST FOR CONDITIONS

Adverse weather conditions are not a valid excuse for being involved in an accident. Rain, snow, fog, sleet, or icy pavement have never caused an accident. These conditions merely increase the hazards of driving. Failure to adjust driving to the prevailing weather conditions, should be cause for deciding an accident preventable. Failure to use safety devices such as chains, sanders, etc., provided by the company, should be cause for a preventable decision when it is reasonable to expect the driver to use such devices.

MISCELLANEOUS

Improper use of doors or interlock systems, or passenger accidents resulting from passengers hanging out of a window are preventable by the driver.

**APPENDIX E
PASSENGER, VEHICLE AND SYSTEM
SAFETY FORMS**

DIRECTIONS

Please include all of the safety forms your organization has decided to use in Appendix E.

This page left intentionally blank.

**APPENDIX E
PASSENGER, VEHICLE AND SYSTEM
SAFETY FORMS**

(Transportation System to add own forms such as preventive maintenance and others)

This page left intentionally blank.