

# **Fleet Safety**

for Safety Professionals and Fleet Managers

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**Editor**

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Park Ridge, Illinois USA



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# Preface

The chapters in this book provide a 360° perspective on fleet safety: both OSHA and DOT regulations, accident investigation, sustainability, and making a business case for investing in safety, are just some of the subjects. Moreover the information provided is from the best sources available, as a quick review of the extensive chapter bibliographies will reveal.

We have also included selected papers from the ASSE Professional Development Conference as chapter appendices. The presenters' insights provide additional perspectives and valuable information.

*Fleet Safety* examines fleet safety from a business perspective as well. In the chapter, "Cost Analysis and Budgeting" Fran Sehn presents loss analysis methods, and analyzes direct and indirect costs of accidents. The chapter by Anthony Veltri and Jim Ramsay in turn discusses how to use that information to demonstrate to management the value of investing in safety. And for a broader and more global perspective, the authors of the chapter on sustainability discuss ISO 26000 and the strategic role OS&H plays in social responsibility. They go on to discuss employee participation in safety and health and two-way communication regarding safety and health.

Ergonomics and vehicle design are presented from an applied perspective. The author, Dennis Andrews, is an expert in biomechanics with over 30 years of experience. Issues related to transit busses as well as trucks are discussed.

Equally important is the chapter on vehicles and accidents, which discusses in-depth vehicle inspections and maintenance, as well as accident investigation procedures. Accident reporting is further discussed Ed Musal in the chapter, "Benchmarking and Performance Criteria"—as "the foundation on which a fleet's benchmarking and performance appraisal system is built... ."

In the final chapter, the authors, Phil Moser, Carmen Daecher, and Amy Stewart, begin their discussion of best practices in fleet safety with risk management of fleet operations and expected outcomes. They then present a ten-step outline for creating a fleet safety initiative. As the authors point out, "Many safety professionals are not familiar with the steps necessary to create a comprehensive fleet safety initiative within their organization." The steps outlined will be valuable to anyone with fleet safety responsibility who wants to better manage the risks of motor-vehicle crashes, which were responsible for 21 percent of all worker fatalities in 2010 according to the Bureau of Labor Statistics.

# Introduction

Charlie Halfen

Workplace injuries take a tremendous toll on any organization. Not only are company employees injured and may miss work, the company may also face considerable costs associated with the injury. It has been estimated that employers pay almost \$1 billion per week for direct workers' compensation costs alone. Costs include workers' compensation payments, medical and legal expenses, not to mention the indirect costs associated with worker replacement and damage to the organization's reputation. The Bureau of Labor Statistics (BLS) reported that there were 2,976,400 recordable injuries in 2012, resulting in 905,700 days away from work.

Auto crashes still account for the highest number of severe injuries and fatalities in the workplace. According to the "2012 Motor Vehicle Crashes: Overview" published by the U.S. Department of Transportation (DOT), the U.S. lost 33,561 people in crashes on roadways in 2012. Corresponding with the increase in behind-the-wheel distractions, there has been a 3.7 percent increase in the number of people killed in crashes involving large trucks. The BLS also stated in their "Census of Fatal Occupational Injuries Summary, 2012" that transportation incidents accounted for more than 2 out of every 5 (41 percent) fatal work injuries in 2012.

Workplace safety is essential to any organization's success. The successful reduction of injuries and crashes will always begin with management. Management's level of acceptance is the foundation of any successful safety process, and the motivating force for organizing and controlling activities throughout the organization. Management will ultimately determine the success of the safety process of the organization.

Companies should not tolerate unsafe actions in the work area or behind the wheel. By meeting high safety standards, an organization contributes to the well-being of its employees, its company, and the communities it serves.

Steps for creating a fleet safety initiative are discussed in the section "Best Practices" by Phil Moser, Carmen W. Daecher, and Amy Stewart.

## **MANAGEMENT INVOLVEMENT**

For any organization to maintain an injury-free and crash-free workforce, policies and procedures must be defined companywide for management and non-management. Policies should establish the guidelines for how the company and its employees perform in any given situation.

Management should provide the means through which workers develop and confirm their own commitment to health and safety. Written policies must clearly establish procedures and methods that insist on employee involvement by providing visible top management support. Each level of management should be involved through its own allocation of people and resources. Management should be committed to encouraging the most effective safe practices in the workplace and on-road. Commitment must go beyond just discussing safety at the start of every meeting. Management must demonstrate by its actions how safety is a company core value.

In an effective process, management regards worker health and safety as an important value of the organization and applies its commitment to the environmental, health and safety process with as much strength as other organizational commitments. Explicit policies provide the outline for the management of the business. Defined policies are necessary

so all company employees possess the same understanding of the philosophies, guidelines, procedures, and methods that shape the company's future.

Investments strategies are reviewed and details discussed in the section, "Basic Economic Analysis and Engineering Economics," written by Anthony Veltri and James D. Ramsay.

Whether management personnel believe in the final policy or not, each has an obligation to carry out the policy for the well-being of the organization. All levels of management should be expected to understand the policy and be able to explain the reasons for the policy. Policies will provide a guide to employees so that their decisions and actions will also reflect the best interests of the company. Like management, all employees must be expected to follow the policies even if they don't agree with them.

Long-term safety commitment to these policies should outline the company vision. Management, with non-management input, should set short-term safety goals for continuous improvement. These short-term accomplishments help the business to achieve its companywide objectives.

Minimum safety standards for a successful organization are based on the personal values, safety skills and knowledge required for both entry-level and experienced employees. Outlined procedures and methods explain how to accomplish those safety standards successfully. Safety training based on the safest and most efficient methods is an ongoing concern.

## **TRAINING**

Training schools, workshops, computer courses, and other programs may be required to meet the needs of all employees. It is the responsibility of the management team to ensure that employees receive all of the necessary training, and that such training is effective in the prevention of injuries and auto crashes. Even though defined responsibilities are assigned to specific individuals, employees should always act as a cooperative team. While any safety training works to some degree, a one-on-one interaction on the safest methods will always be the most productive and meaningful. Through management's support, coaching and counseling, employees should be expected to develop the safety knowledge that is necessary for prevention of injuries and auto collisions.

The many costs associated with driver training are discussed in the section "Cost Analysis and Budgeting," written by Fran Sehn.

Once responsibilities have been established, a thorough review of the results will allow the organization to hold employees accountable for safety performance and compliance. The basic management skill of demonstrating the method and accountability for its performance will always produce the greatest comprehension.

Injury prevention policies and procedures should be communicated plainly and reinforced on a daily basis. Authority and resources must be delegated down to the front line for true accountability. Like management, all employees should have established goals and objectives. Responsibilities should be clearly assigned. The operational methods used in each job position throughout the organization should be adequately analyzed to identify any potential hazards that may cause an injury. Prevention techniques revealed for those potential injuries should then be merged into the current methods. If possible, always try to engineer hazards out of the workplace.

All new and existing employees should then be trained on how to use the safest methods and avoid the occupational hazards associated with their positions. Once trained, employees should be held accountable for their lack of use of these safe methods. Since failure to follow safe work methods will eventually lead to an injury, action must be taken to correct unsafe behavior before an injury occurs.

An organization must also maintain high standards of business conduct to ensure compliance with the applicable laws and regulations in which they operate. The amount of information that must be handled to effectively manage the health and safety of an organization has grown significantly over the last three decades. Increased regulatory activity by state and federal agencies has prompted many organizations to introduce several new internal programs designed to improve safety and reduce cost. No matter the agency, training and accountability are critical for compliance and prevention.

Nancy Bendickson outlines fleet exposure to these varied agencies in her section of this Guide, “OSHA and Other Regulations.”

A careless driver takes more chances and is more likely to be involved in an auto crash. They have learned their driving habits through their own experiences or poor training and will continue to take those same chances until they have a significant emotional event (a crash where they accept responsibility), or they receive instructional training to correct their bad methods. Companies can no longer accept the liability that comes with a poor driver. Trainers must have the tools to be successful in training safe driving skills.

The goal of safe driver training and education is to have each individual understand what is needed to prevent an auto crash. While all driver training, whether computer-based, classroom or hands-on, works to some degree, drivers need on-road training. Mental and physical habits, such as driving, cannot be taught in a classroom. Much like any sport, safe driving calls for continuous improvement so even the most experienced drivers need re-training on-road in the safest driving methods.

There are several things every driver should know about the hazards they face behind the wheel. First, distractions are the number one cause of all crashes. Driving requires the driver's undivided attention from start to finish. In other words, if the driver just pays attention and look for hazards while driving, the chances of having a crash are cut in half. The most common crashes are backing up and hitting stationary objects. A driver should learn how to handle the vehicle, and pay attention even when doing the simplest maneuver, such as parking. The same is true with backing up. No one feels comfortable moving backwards but it's something a driver does every time they drive. Learn to use the mirrors. The most serious injury-producing collisions are at intersections or head-on, rear-ending another vehicle, and hitting pedestrians or cyclists. While any crash can be deadly, these crashes cause the most injuries. With limited resources, organizations should concentrate training in these most dangerous and most common areas.

While on-road safe driving can be started in a classroom, the safe habits that the driver will use will be behind the wheel. Safety rides are used to observe and correct the driver's ability to recognize the hazards faced while driving. A good trainer should take the wheel during this ride and show the student how to keep his or her eyes scanning, recognizing those hazards that may affect the travel path and how to react accordingly. Constructive feedback on the mental and physical driving skills demonstrated by the driver should be given, since there will always be areas of improvement needed.

Managers and supervisors should monitor and track unsafe driving behaviors by drivers and follow company policies, including those related to discipline and incentives. Managers and supervisors must also “Walk the Talk” by regularly communicating and demonstrating their commitment to safe driving. An employee will never be accountable to follow the safe methods by an immediate supervisor who does not follow those same methods.

Every commercial motor vehicle is subject to the laws and regulations of the jurisdiction in which it is operated. The Department of Transportation (DOT), through the Federal Motor Carrier Safety Administration (FMCSA), continues to hold motor carriers responsible for driver behavior and job performance.

Gregory L. Smith details the history and focus of this agency in his section of the Guide, “DOT Regulations.”

The Compliance, Safety, Accountability (CSA) initiative is the FMCSA enforcement and compliance program used to reduce vehicle crashes, injuries, and fatalities. The program leverages the use of technology by using safety performance data collected during roadside stops and through crash reports to identify unsafe carriers and drivers and to identify safety performance problems. Within the CSA, the Safety Measurement System (SMS) quantifies the on-road performance of carriers and drivers to identify candidates for intervention, determine the specific safety problems exhibited, and to monitor whether safety concerns are improving. The SMS uses a motor carrier's data from roadside inspections, including all safety-based violations, state-reported crashes, and the federal motor carrier census to quantify performance in Seven Behavior Analysis and Safety Improvement Categories (BASICS).

## **HIRING GUIDELINES**

Along with the implementation of safe work and driving methods, it is also important to provide hiring personnel with guidance on how best to attract, screen, and qualify applicants who are most likely to adhere to company safety policies. Organizations should develop a job description for every position. Individual employees should be assigned roles that will establish hiring compliance with the company safety procedures. Ongoing training will ensure that these hiring officials can be held accountable in their role and have the current knowledge, training, and experience regarding essential job requirements.

With fleets, creating a safe driving workforce starts at the front door. Crash history is one of the stronger predictors of future crashes. Past behavior almost always predicts future behavior. If you hire a bad driver, you have a bad driver. Hoping they'll get better doesn't work. A bad driver will always be a bad driver unless they have a significant emotional event, such as a crash, or they get significant constructive training to overcome years of poor driving habits.

As pointed out in Dennis R. Andrews' section of this manual, "Vehicle Engineering and Ergonomics," training begins with the CDL application.

A company orientation should be held for all new employees on the first day of employment. Expectations and accountability must be established from the beginning. New employees that are left to learn from fellow employees will pick up bad habits that are hard to break. Even though it may be very time consuming for management, that initial one-on-one interaction with the new employee will pay off with future accountability. Any job training should include hands-on demonstrations.

## **EMPLOYEE PARTICIPATION**

With training tools in hand, employee participation should now be developed throughout the organization. This participation outlines employee responsibility and ensures involvement in safety awareness activities. Recognition and appreciation should be given where due to all employees for safety accomplishments.

One of the most important responsibilities of management is the development of the employees. Every employee must be fully prepared to perform the job assigned. Through training, support, coaching, counseling, and example, employees should be expected to develop the knowledge and skills that are necessary for success in their current job. When the time comes, this education will also help them assume positions of greater responsibility. Employees should be expected to take advantage of the training available throughout the organization. In turn, the company should provide employees with assignments and responsibilities that allow them to demonstrate their skills and develop their capabilities.

Employee involvement is the degree to which employees lead the process. Once clearly defined policies, procedures, and methods are in place, management must be able to shift ownership of the process to those with a vested interest, the employees. Roles and

responsibilities are delegated to ensure compliance and involvement. Every employee should know what safe methods are needed to successfully implement the safety policies and procedures. Employees should also learn that the use of an unsafe method, such as not lifting properly or not clearing an intersection, assures a greater chance of having an incident. The ultimate objective for introducing a safety system for the organization is to empower the employees to hold themselves accountable for following the safest methods at all times, giving them total control of their own safety, as well as those around them.

Cooperation and teamwork are necessary among all employees for the continued safety success of any organization. It's important to keep all employees informed about company activities. This will help them to understand company objectives and perform their jobs more efficiently. The most effective way to involve employees in the prevention of workplace injuries and the use of safe driving skills is through their participation in local occupational safety and health (OS&H) committees.

Committees must be organized and maintained as they affect behaviors, attitudes, work processes, compliance, and the general work environment. A companywide safety committee must detail the roles and responsibilities for each committee member in writing. These OS&H committees should consist of both management and non-management employees, equally sharing their thoughts and recommendations. Committee members are ultimately a conduit to the rest of the workforce.

Through local incident investigation, tracking and analysis, OS&H committees will see patterns and develop solutions for fellow employees. This education process will lead to the use of safer work methods and reduced injuries and crashes. Regulatory compliance will also improve significantly with OS&H committee involvement.

Immediate feedback on the outcome of prevention activities is important. As with any commitment, results matter. To maintain a viable OS&H committee, commitments must be obtainable. Even small, continuous gains should be applauded. A formal plan will lead to improved and sustainable results for the ever-changing committee membership.

There are some necessary traits for those on the OS&H committee. Members must be willing to listen to others. No matter how slight it may appear, every concern is important to some individual and should be addressed. Members must learn and use the safest work and driving practices at all times. Like management, committee members must "Walk the Talk". Leaders lead by example.

There should be an OS&H committee to cover all employees in all locations. Management should always encourage employee suggestions for safety improvements. In working together, employees create an environment of teamwork that will help to reduce injuries and crashes.

More on employee participation can be found in the section of this Guide, "Sustainability and the Safety, Health, and Environmental Professional," written by Kathy A. Seabrook, Robert Stewart, Jeffery Camplin, and Mike Taubitz.

Employees deserve recognition for accomplishments in their regular jobs. They also deserve recognition for the extra effort they make for the safety of their fellow employees. Management is responsible for recognizing the accomplishments of the employees. Recognition programs should be designed to reward and encourage safe behavior. While some employees may be motivated by public recognition or monetary gifts, some may just appreciate acknowledgement from their immediate supervisor or manager.

Organizations should make it a priority to recognize their employees and locations that follow safe work and safe driving methods leading to reductions in injuries and auto crashes. Operations should be allowed to provide recognition when certain group milestones of "safe work days" or "safe driving days" are reached.

Millions of people are licensed to drive on public roads. Some drive often and some drive well, but only a small group drive often and well, and they deserve recognition. The drivers in this group are on the road for many hours a day and never become involved in a

crash. Most are professionals and drive accordingly. Accomplishing such driving records is not by chance but only by the continued use of safe driving techniques.

Employee involvement provides the means through which employees develop and express commitment to their own safety as well as those around them. Once personal responsibility has been defined for each employee, OS&H committees have the ability to engage all levels in the safety process. Direct involvement in their own well-being will increase job satisfaction and organizations that give recognition for following safe work and driving methods will see a reduction in injuries and crashes. After all, employees will always be an organization's most valuable assets.

## **ANALYSIS**

Tracking injury, crash, and compliance indices enables the company to be aware of employees' safety performance and compliance with company policies, procedures, and methods. Starting with a baseline, safety performance measurements are required for sustained improvement. Analysis of this tracked information will lead to accountability for the results.

All companies should keep historical loss data, in terms of injuries and crashes. Employees should understand that history will repeat itself unless procedures are developed to prevent a reoccurrence. The most successful organizations are those that have employees help track and analyze their own injury and crash data.

More information on record-keeping systems can be found in Edward Musal's section of this Guide, "Benchmarking and Performance Criteria."

An analysis of the worksite involves several investigation approaches designed to identify and reduce existing hazards that may cause an injury or crash. These approaches include: analysis of data, analysis of job hazards, an audit of the facilities, and investigation of injuries and auto crashes.

Data analysis is a process of scrutinizing the injuries and auto crashes that have occurred in an operation by identifying trends and developing controls for those types of injuries and crashes. Analyzing prior injuries and crashes helps to confirm the preventative measures currently in place. Some of the trends identified may include: injury or crash type; location; equipment used; prior training; job hazards; work process; employee behavior; and time of day. Once trends are identified, specific action plans are developed to address the main sources of injuries and crashes. Data analysis highlights the jobs or tasks that have produced the most injuries or crashes, and may lead to further investigation using a job hazard analysis.

Job hazard analysis (JHA) is a method that breaks specific occupations into their component actions to identify contributions to injuries or crashes. Observation forms based on the current methods should be developed to evaluate employee behavior. These observations, as well as the historical data, are used together in the analysis. By truly defining the specific behavior that causes an injury or crash, companywide procedures may be changed to improve the outcome. Additional observations of the specific component action will determine further steps to decrease unsafe actions. Once refined, the safest and most efficient methods should be formalized and taught to all employees. A review of basic methods may be needed if incidents still occur with the use of safe work and driving methods. In most cases, the analysis will show a failure to follow prescribed safety methods in which case, lack of training or front-line accountability is responsible.

The audit of facilities is a comprehensive examination of all equipment and work locations within a facility. The most effective audits are completed by cross-functional teams with representatives from all different work groups, including both management and non-management. From injury prevention to regulatory compliance, the OS&H committee plays a vital role in comprehensive audits. To ensure ongoing training necessitated by turnover and to avoid complacency, a system of internal auditing is needed. These audits will verify the effectiveness of the company's safety process.

Injury and auto crash investigations identify the underlying causes of injuries and crashes and develop controls to prevent reoccurrence. An effective safety process includes the investigation of “near misses.” An injury investigation is the single most effective way to prevent future injuries. Unlike detailed company-injury prevention methods training on the job, driving habits, both good and bad, are set before the driver ever begins work at the company. To reduce risk, the company has an obligation to observe and retrain the new employee in the safest driving methods and any company-specific requirements.

While the DOT has its own definition of what’s recordable, companies should set a high standard and demand accountability for any auto incident. The most important aspect of auto crash prevention starts with the company’s definition of a “crash.. To eliminate any confusion, I would define the highest standard for an auto crash is as:

“Any occurrence in which a vehicle is in any way involved and which results in personal injury, property damage, or collision no matter how slight and regardless of fault.”

Without documenting every incident, any thorough analysis as to cause will never accomplish the ultimate goal of preventing future crashes. To validate a fair and employee-backed recognition process, some discretion must be given to a small percentage of drivers that were using safe driving methods as taught and did everything possible to avoid the crash. Based on the root cause of the incident, the crash may then be judged as “unavoidable.” Companies should always maintain high standards and work as hard to eliminate “unavoidable” crashes as they do “avoidable” ones, keeping in mind that almost all crashes can be avoided.

The objective of the investigation is to determine and point out any errors in judgment or driving made by the driver for the purpose of making him or her a better driver and avoiding future similar incidents. A report on prevention should refer back to previous documented training as well as future remedial training that this driver will receive to prevent a reoccurrence. For liability reasons, if remedial training is needed, then it must be completed in a timely manner.

In the event of a serious injury or fatal crash, an organization’s standardized report format must be followed to document the investigation of the incident. The purpose of the investigation and report are to: (1) enable company attorneys to render legal advice; (2) provide information to assist company attorneys in anticipation of claims which may arise in connection with the incident; and (3) conduct a self-critical analysis with respect to company policies and procedures.

More information on accident investigation can be found in the “Vehicles and Accidents” section of this Guide, written by Jubal Hammernik and Peter M. Himpfel.

The goal of analyzing the worksite is to see injury and crash trends over time and develop patterns with common causes which can be identified and prevented. The OS&H committee, with management support and counseling, can make excellent use of this approach in overall safety prevention.

To feel the immediate impact of any incident, front-line operations should not only be held accountable for their automotive crash frequencies, they should also experience an immediate, one-time expense charge when any incident occurs. The allocation should be based upon an analysis of the current and prior year’s data and projections of actual expenses incurred. This expense should be based on the closed-case historical cost of the specific type of injury or crash. The cost chargeback should be updated regularly to reflect a running expense based on the incident type.

## **ACCOUNTABILITY**

The tracking and analysis of all injury and crash data gives an organization the ability to hold both management and non-management accountable for unsafe performance. With a comprehensive analysis of the tracked information, feedback is accurate and immediate,

both which are required to change habits. The most successful results are correlated with management's desire to "Walk the Talk," and hold employees accountable for safety performance. Management must accept responsibility for its own compliance with the safety policies, which can easily be determined by visiting an operation and observing if unsafe behaviors are being corrected by management. Upper-level management may initiate the process of creating a safer workforce but making it a habit requires ongoing support from all levels of management 100 percent of the time. The one-time acceptance of an unsafe act by an employee in front of management will be seen by all employees as a sign of approval.

Like management commitment, employees should also be held accountable for their results. Frequent evaluations should be held with all employees about their safety performance, including the use of safety methods in the building and safe driving skills while behind the wheel. Follow-up evaluations should be conducted to ensure the continued development of a safety culture in the workforce.

The primary cause of all injuries and crashes is employee behavior. When an employee is injured or involved in a crash, in all probability, this is not the first time that the employee has performed the same task in an unsafe manner. In this situation, their unsafe behavior has eventually caused the incident. In all likelihood, management has witnessed this unsafe behavior before and said nothing. Management is partly to blame. Management must eliminate all doubt as to the appropriate safe behaviors.

Once it has been determined that the employee has the skills, knowledge, and ability to work safely, then further training is not the answer. At this time, the employee's behavior must be addressed. Accountability that addresses behaviors instills a culture that will make the employee think about using safe methods on their own when performing the job. It is very easy for management to tell employees that the company pays them not to have injuries, but expecting an employee not to get injured while continuing to use unsafe methods is not realistic. The same is true in taking unnecessary chances while driving. Injuries and crashes will continue until the employee changes unsafe behavior.

Getting an employee to change unsafe behavior can be a challenge to the most experienced management. Taking disciplinary action when an incident occurs may seem the easiest way to address the problem, but it does not solve the underlying issue of not using safe work methods. More incidents will occur. Management should focus on the behavior of the employee and the use of safe methods instead of the eventual outcome when unsafe methods are used. Chances of injury or crash escalate with the increased use of unsafe methods. The vast majority of the time, employees are working safely, and are not involved in an injury or crash. When employees are working safely, positive reinforcement can be a building block to discuss unsafe methods.

Giving an employee positive feedback will always increase the employee's job satisfaction and lead to a renewed organizational commitment. Not only will positive reinforcement make a favorable impact on the reduction of incidents at work but creating a personal safety attitude will reduce incidents at home. The safe driving skills at work are the same at home. A driver who uses safe driving methods will have fewer crashes, both on and off work. On the other hand, an employee who does not wear a seat belt at home will not wear a seat belt at work, thus increasing the chance of injury with any incident.

The majority of employees that do not follow safe methods on a consistent basis to prevent injuries and crashes will improve with one-on-one methods review. A small number of employees will require a more disciplinary approach to correct unsafe habits. The purpose of discipline, is not to punish the employee, but rather focus attention toward achieving improvement in the use of safe work and driving methods. An employee who uses unsafe methods will have more injuries and crashes than an employee who works safely all of the time. To maximize the safety process, everyone in every location should understand that unsafe actions will not be accepted at any time for any reason.

Company safety policies must address progressive disciplinary action through written procedures. The procedures must be focused on how management can take corrective actions to ensure employees comply with injury prevention methods, safe driving skills, and regulatory compliance. A progressive disciplinary policy should include, among other things, written warnings and suspensions that may lead up to termination. Any disciplinary measures should correspond to the risk posed, with violations associated with high-consequence incidents punished more severely. To ensure fairness across the organization, the steadfast use of disciplinary procedures for unsafe methods is necessary.

Accountability for results can be the impetus for change to any organization. Injuries and auto crashes are no longer a cost of doing business; they are a failure of business. While all safety improvement is seen in the bottom line, gains are a direct result of the increased use of injury prevention methods and safe driving skills. Accountability is essential for a safety process to thrive, and to ensure that history does not repeat itself.

The safety of the employees and the general public should always be the highest priority of any organization. Workplace injuries and auto crashes have long been major concerns for most companies. The prevention of incidents has been an ongoing battle for years. Without a comprehensive safety process, injury and crash trends will go up and down over the years with no consistent improvement or solution. While changing entrenched mindsets is not easy, business results will be sustainable once a safety process is implemented within the organization.

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# Chapter 1

## DOT Regulations

Gregory L. Smith

### LEARNING OBJECTIVES

- Be able to define the rationale and scope of the Department of Transportation (DOT) Act.
- Describe areas where the DOT Act has cross-jurisdictional impact.
- Be able to interpret the goals of the DOT Act.
- Know how to differentiate between state and federal requirements.
- Be able to formulate strategies for transportation management.
- Estimate the impact of successful and unsuccessful company safety programs.

Before there was a Department of Transportation (DOT), transportation-related safety issues were often dealt with case by case. For example, on August 7, 1789, Congress federalized existing lighthouses built by the colonies and appropriated funds for lighthouses, beacons, and buoys. This was done to support the safety of the shipping industry by establishing a framework to provide continuity of maintenance, repair, and oversight. Shipping, and the rules governing it, grew and expanded throughout the country as expansion and population growth continued. Soon, roads and highways carried a significant portion of raw and finished goods to and from shipping points. Over time, the highway system and the regulations governing its use have grown and evolved significantly, requiring a much more comprehensive management effort than originally initiated. According to President Lyndon Johnson, when he signed the act creating the Department of Transportation on October 16, 1966 (DOT 1966):

The Act which I sign today is the most important transportation legislation of our lifetime. . . . It is one of the essential building blocks in our preparation for the future. . . . Transportation has truly emerged as a significant part of our national life. As a basic force in our society, its progress must be accelerated so that the quality of our life can be improved.

The diversity of areas requiring oversight mandated a different approach to maintain an appropriate level of competency. This diversity was the impetus behind creating the Department of Transportation (DOT). The signing of this act marked the beginning of the national highway system as we know it today. To address growing needs, separate agencies were created within the DOT. The DOT is currently made up of several agencies with specific missions and responsibilities. These agencies are often mirrored by the states to add additional oversight in areas that require attention due to location, population, or other specific needs.

Leadership of the DOT is provided by the Secretary of Transportation, who is the principal adviser to the president in all matters relating to federal transportation programs. The secretary is assisted by the deputy secretary in this role. The Office of the Secretary (OST) oversees the formulation of national transportation policy and promotes

intermodal transportation. Other responsibilities include negotiation and implementation of international transportation agreements, assuring the fitness of U.S. airlines and motor carriers, enforcing airline consumer-protection regulations, issuance of regulations to prevent alcohol and illegal drug misuse in transportation systems, and preparing transportation legislation. The following paragraphs describe the various agencies under the DOT banner.

### ***Federal Aviation Administration***

The Federal Aviation Administration (FAA) oversees the safety of civil aviation. Programs managed include Safety Hotline (maintenance improprieties, low-flying aircraft, aircraft incidents, and Federal Aviation Regulation (FAR) violations), safety advisories and alerts, data and statistics, the National Transportation Safety Board (NTSB), Security, and Awards.

### ***Federal Railroad Administration***

The Federal Railroad Administration (FRA) promotes safe and environmentally sound rail transportation with the responsibility of ensuring railroad safety throughout the nation. FRA's Office of Safety promotes and regulates safety throughout the nation's railroad industry. It employs more than 415 federal safety inspectors, who operate out of eight regional offices across the country. The inspectors specialize in five safety disciplines—hazardous materials, motive power and equipment, operating practices, signal and train control, track and structures, and industrial hygiene—and promote numerous initiatives under the Highway-Rail Grade Crossing and Trespasser Prevention programs.

### ***Federal Transit Administration***

The Federal Transit Administration (FTA) assists in developing improved mass-transportation systems for cities and communities nationwide. It currently covers areas including transit safety, emergency management, training and conferences, drugs and alcohol, safety and security, statistics, and publications.

### ***Maritime Administration***

The Maritime Administration (MARAD) is the agency within the U.S. Department of Transportation (DOT) that deals with waterborne transportation and ensures the viability of the U.S. Merchant Marine. Its programs promote the use of waterborne transportation and its seamless integration with other segments of the transportation system. The agency works in many areas involving ships and shipping, shipbuilding, port operations, vessel operations, national security, environment, and safety.

MARAD is also charged with maintaining the health of the Merchant Marine, since commercial mariners, vessels,

and intermodal facilities are vital for supporting national security. Thus, the agency provides support and information for current mariners, extensive support for educating future mariners, and programs to educate Americans about the vital role the maritime industry plays in their lives.

The Maritime Administration also maintains a fleet of cargo ships in reserve to provide surge sealift during war and national emergencies, and is responsible for disposing of ships in that fleet, as well as other noncombatant government ships, as they become obsolete.

MARAD recently realigned many of its functions to revitalize its role as an industry facilitator, and to bring greater focus to the areas of environment and safety.

### ***National Highway Traffic Safety Administration***

The National Highway Traffic Safety Administration (NHTSA) is responsible for reducing deaths, injuries, and economic losses resulting from motor-vehicle crashes. NHTSA sets and enforces safety performance standards for motor vehicles and equipment, and through grants to state and local governments enables them to conduct effective local highway-safety programs. Some of the areas managed by the NHTSA include aggressive driving, bicycles, child passenger safety, disabled drivers and passengers, drowsy and distracted driving, emergency medical services, enforcement and justice services, impaired driving, motorcycles, new drivers, occupant protection, older drivers, pedestrians, programs/grants, research and evaluation, safety materials catalogs, school buses, traffic tech publications, and the Safe Communities Program.

### ***Pipeline and Hazardous Materials Safety Administration***

The Pipeline and Hazardous Materials Safety Administration (PHMSA) oversees the safety of more than 800,000 daily shipments of hazardous materials in the United States and 64 percent of the nation's energy that is transported by pipelines. Areas of focus include training and outreach, special permits, approvals, rulemaking, state and local government partnerships, enforcement, security plans, drug and alcohol programs, and a pipeline-safety program.

### ***Research and Innovative Technology Administration***

The Research and Innovative Technology Administration (RITA) coordinates DOT's research programs and is charged with advancing the deployment of cross-cutting technologies to improve our nation's transportation system. RITA leads the DOT in coordinating, facilitating, and reviewing the department's research and development programs and activities; advancing innovative technologies,

including intelligent transportation systems; performing comprehensive transportation statistics research, analysis, and reporting; and providing education and training in transportation and transportation-related fields.

### ***Saint Lawrence Seaway Development Corporation***

The Saint Lawrence Seaway Development Corporation (SLSDC) is a wholly owned government corporation created to construct, operate, and maintain that part of the St. Lawrence Seaway between the Port of Montreal and Lake Erie, within the territorial limits of the United States. The mission of the SLSDC is to serve the U.S. intermodal and international transportation system by improving the operation and maintenance of a safe, reliable, efficient, and environmentally responsible deep-draft waterway, in cooperation with its Canadian counterpart. The SLSDC also encourages the development of trade through the Great Lakes Seaway System.

### ***Surface Transportation Board***

The Surface Transportation Board (STB) is an independent, bipartisan, adjudicatory body organizationally housed within the DOT. It is responsible for the economic regulation of interstate surface transportation, primarily railroads, within the United States. The agency has jurisdiction over railroad rate and service issues and rail-restructuring transactions (mergers, line sales, line construction, and line abandonment); certain trucking-company, moving-van, and noncontiguous ocean shipping-company rate matters; certain intercity passenger-bus-company structure, financial, and operational matters; and rates and services of certain pipelines not regulated by the Federal Energy Regulatory Commission.

### ***Federal Highway Administration***

The Federal Highway Administration (FHWA) coordinates highway transportation programs in cooperation with states and other partners to enhance the country's safety, economic vitality, and quality of life, as well as the environment.

## **REGULATORY RULEMAKING**

As federal entities, these agencies follow standard rule-making processes. To create new regulations or execute revisions to existing regulations, a public notice of proposed rulemaking is published in the *Federal Register*. As an example from the DOT, the FHWA proposed a requirement for the use of high-visibility safety apparel for workers who are working within federal-aid highway right-of-ways. This was posted in the *Federal Register* on April 24, 2006, as a proposed rule. It would require

workers whose duties place them on or in close proximity to a federal-aid highway to wear high-visibility safety apparel.

Each of these agencies has specific agendas and regulatory requirements. It is impossible to give detailed insights into each agency's operations within the scope of this chapter. Specific details, ranging from organizational histories and mission statements to rules and regulations, may be found on the respective agencies' Web sites. Additionally, changes to regulations and the implementation dates for those changes may be found on the Web site by searching for "rulemaking changes" or similar terms. This type of search will deliver a synopsis of reports in chronological order under the heading of the "Rulemaking Management System." The primary agency involved with fleet safety operations, as discussed below, is the Federal Motor Carrier Safety Administration (FMCSA).

### **Federal Motor Carrier Safety Administration**

The FMCSA was established within the DOT on January 1, 2000, pursuant to the Motor Carrier Safety Improvement Act of 1999 (FMCSA 1999). Formerly a part of the FHWA, the FMCSA's primary mission is to prevent commercial motor-vehicle-related fatalities and injuries. The FMCSA focuses heavily on commercial cartage operations, and specifically interstate commerce. The FMCSA Safety and Fitness Electronic Records (SAFER) System offers company safety data and related services to industry and the public over the Internet. Users can search FMCSA databases, register for a USDOT number, pay fines online, order company safety profiles, challenge FMCSA data using the DataQs system, access the Hazardous Material Route registry, obtain National Crash and Out of Service rates for Hazmat Permit Registration, get printable registration forms, and find information about other FMCSA Information Systems. The SAFER system may be accessed at [www.safer.fmcsa.dot.gov](http://www.safer.fmcsa.dot.gov). The remainder of this chapter will review those areas that commonly come under FMCSA oversight.

## **APPLICABILITY OF REGULATIONS**

Operators of any of the following types of commercial motor vehicles in interstate commerce must comply with the applicable U.S. Department of Transportation (USDOT) safety regulations:

1. A vehicle with a gross vehicle weight rating or gross combination weight rating (whichever is greater) of 4537 kilograms (kg) (10,001 pounds (lb)) or more;

2. A vehicle designed or used to transport between nine and fifteen passengers (including the driver) for compensation;
3. A vehicle designed or used to transport sixteen or more passengers; or
4. Any size vehicle used in the transportation of materials that are considered hazardous under the Hazardous Materials Transportation Act and that require the motor vehicle to be placarded under the hazardous materials regulations.

These regulations include areas concerning commercial driver's licenses (CDLs); controlled substances and alcohol testing for all persons required to possess a CDI; driver qualifications (including medical exams); driving of commercial motor vehicles; parts and accessories necessary for safe operations; hours of service; and inspection, repair, and maintenance.

Pursuant to Title 49 CFR Part 107, Subpart G (§107.601–107.620), certain offerors and transporters of hazardous materials, including hazardous waste, are required to file an additional annual registration statement with the USDOT and to pay a fee.

## AREAS OF INTEREST IN REGULATORY COMPLIANCE

### Interstate Commerce

*Interstate* commerce is defined as *trade, traffic, or transportation involving the crossing of a state boundary*. Either the vehicle, its passengers, or its cargo must cross a state boundary, or the intent to cross a state boundary must exist in order for an activity to be considered interstate commerce. *Intrastate* commerce is *trade, traffic, or transportation within a single state*. Operations that include interstate commerce in addition to intrastate commerce must comply with applicable federal safety regulations and operating-authority rules in addition to state and local requirements. The state in which a vehicle is registered must be notified of the intention to operate it in interstate commerce to ensure that the vehicle is properly registered for purposes of the International Registration Plan (IRP), and International Fuel Tax Agreement (IFTA). The base state collects the appropriate fees and distributes a portion of those fees to the other states in which the commercial motor vehicle operates.

### Intrastate Commerce

Companies that operate exclusively in intrastate commerce must comply with applicable state and local regulations. The only federal regulations that are applicable to

intrastate operations are the commercial driver's license (CDL) for drivers operating commercial motor vehicles as defined in 49 CFR 383.5; controlled substances and alcohol testing for all persons required to possess a CDL; and minimum levels of financial responsibility for the intrastate transportation of certain quantities of hazardous materials and substances.

A USDOT number is required for vehicles over 10,000 lb if they are transporting between nine and fifteen passengers (including the driver) for compensation, if they are transporting sixteen or more passengers, or if they are hauling hazardous materials in interstate commerce. No fee is required. Carriers must complete the MCS-150, Motor Carrier Identification Report (FMCSA 2007), to obtain a USDOT number. The MCS-150 can be completed online or copies can be printed, completed, and mailed to the address indicated.

### For-Hire Carrier

A *for-hire carrier* is a person or company that provides transportation of cargo or passengers for compensation. In addition to the USDOT number, for-hire carriers must obtain an operating authority [motor carrier (MC) number]. Generally, for-hire motor carriers of regulated commodities or passengers in interstate commerce must also obtain an interstate operating-authority (MC) number unless the operation is limited to the transportation of exempt commodities or is within a commercial zone that is exempt from the interstate operating-authority rules. Information about commercial-zone exemptions is in 49 CFR 372. Administrative Ruling No. 119 (FMCSA n.d. a). A list of commodities that are not exempt from the operating-authority rules can be found in 49 CFR 372.115. Both are also available online at the FMCSA's Web site ([www.fmcsa.dot.gov](http://www.fmcsa.dot.gov)).

Form OP-1, Application for Motor Property Carrier and Broker Authority (FMCSA 2013e), is required for a motor carrier of property. Form OP-1(P), Application for Motor Passenger Carrier Authority (FMCSA 2013d), is a proposed revision of the form designed to enhance safety for nondomestic carriers. Part of Section V (Safety Certifications) is the acknowledgment that the applicant will "maintain current copies of all U.S. DOT Federal Motor Carrier Safety Regulations, Federal Motor Vehicle Safety Standards, and the Hazardous Materials Regulations (if a property carrier transporting hazardous materials), *understands and will comply* with such Regulations, and has ensured that all company personnel are aware of the current requirements. . . ." An Application for Motor Passenger Carrier Authority is required for motor carriers of passengers.

For-hire carriers must have an operating-authority (MC) number. Carriers must (1) complete and file the appropriate OP-1 application along with the filing fee for each type of authority requested; (2) have their insurance company file the appropriate insurance forms for the type of authority requested with the FMCSA; and (3) submit or have a process-agent service submit a BOC-3, Designation of Process Agent form (FMCSA 2013a). (A *process agent* is a representative upon whom court papers may be served in any proceeding brought against a motor carrier, and creating this designation is one of the precicensing requirements that must be met by the carrier before authority is issued.)

Passenger carriers who are Federal Transit Administration Grantees (Transit Benefit Operators) under 49 U.S.C. 5307, 5310, or 5311 are required to maintain liability insurance at least as high as the highest level required for any of the states in which the transit service is located. This is to ensure that both parties are protected in the event of an accident or incident. The filing fee is waived for the Transit Benefit Operator application. To travel within the United States as a for-hire motor carrier, a carrier must file for an operating authority (active MC number). The appropriate OP-1 application may be completed online at [www.safer.fmcsa.dot.gov](http://www.safer.fmcsa.dot.gov), and the required filing fee can be paid with a credit card; a copy of the application form can be downloaded from the DOT Web site, or a copy of the OP-1 application can be requested and an application will be mailed. A filing fee is currently required for each type of authority requested. No insurance information can be submitted until the carrier has been assigned its MC number.

Once the application is received and accepted, the MC number will be assigned. The applicant will receive a letter stating the MC number and detailing any additional information needed to achieve compliance. Once the carrier's insurance company has filed the correct insurance form and the process agent has filed Form BOC-3 (Designation of Process Agent), the official operating authority in the form of a certificate and/or permit will be issued (FMCSA 2013a). Operating a carrier is not permitted until this information has been submitted and the certificate and/or permit is officially issued. Leasing of services to a for-hire carrier with a valid number is permissible if there is full compliance with the requirements under Section 376.11.

The regulations currently state that if a company operates as both for-hire and private carriage, once the USDOT number is issued, the carrier may operate as a private motor carrier. Operation as a for-hire motor carrier is not permitted, however, until an operating authority (an active MC number) is issued.

## Exempt and Regulated Commodities

If a company transports exempt commodities and possesses a USDOT number, it is permitted to operate as an exempt for-hire interstate motor carrier without an MC number.

Transport of regulated commodities in interstate commerce prior to having obtained operating authority (certificate and/or permit) and received the single-state registration is not allowed. Simply applying for operating authority is not sufficient; the certificate and/or permit must be issued.

Administrative Ruling No. 119 is a guide to what is and is not exempt (FMCSA n.d. a). The booklet is no longer in print, but the information is still correct. The list of exempt commodities changes frequently, but this booklet can be used as a general guide. Also, a list of commodities that are not exempt can be found in the FMCSR in section 372.115.

## OPERATING-AUTHORITY ISSUANCE

To check whether operating authority has been issued, carriers can visit [www.li-public.fmcsa.dot.gov](http://www.li-public.fmcsa.dot.gov). There is also a 24-hour automated phone verification system. FMCSA will fax the operating authority only if ten or more working days have passed since the service date and the operating authority has not yet been received. Once the operating authority has been issued, the regulations do not allow for its voluntary suspension; however, voluntary revocation of the operating authority is allowed. To accomplish a voluntary revocation, a carrier must (1) complete Form OCE-46, Request for Revocation of Registration (FMCSA n.d. b); (2) have it notarized; and (3) mail it back to the FMCSA. Upon receipt of the form, the information will be coded into the system. The date coding occurs is when the operating authority will be voluntarily revoked.

A carrier can reinstate an operating authority by requesting reinstatement of the authority and paying a fee. This can be done online at [www.safer.fmcsa.dot.gov](http://www.safer.fmcsa.dot.gov) and paid for with a credit card. A carrier can also request reinstatement of the operating authority by mailing the MC number and the legal name of the carrier along with payment of the fee by check, money order, or credit card payable to FMCSA. The carrier's insurance company must file the BMC-91 (FMCSA n.d. c) or 91X (FMCSA n.d. d) and/or BMC-34 (FMCSA n.d. e), if necessary, to meet the proof-of-insurance requirement. A valid Designation of Process Agents (BOC-3) filing must also be in effect (FMCSA 2013a). The operating authority will not be reactivated until updated insurance filings have been received and accepted. The carrier will receive a

reinstatement notification from the FMCSA after the operating authority has been reinstated. To validate the reinstatement or to validate any carrier's number, check the Web site under Carrier Search. There is also a 24-hour automated system.

### Common, Contract, and Broker Authority

*Common carriers* provide for-hire truck transportation to the general public. Common carriers must file both liability (bodily injury and property damage—BI & PD) insurance and cargo insurance. *Contract carriers* provide for-hire truck transportation to specific individual shippers based on contracts. Contract carriers must file only BI & PD insurance. A *broker* is a company that, for compensation, arranges for truck transportation of cargo belonging to others using for-hire carriers to provide the actual transportation. Brokers must file either a *surety bond* or a *trust fund agreement*. A contract carrier cannot broker loads without first applying for and receiving a license to operate as a broker of freight.

### Common Carrier Authority

A common carrier of property must file Form OP-1, Application for Motor Property Carrier and Broker Authority (FMCSA 2013e), and a common carrier of passengers must file Form OP-1(P), Application for Motor Passenger Carrier Authority (FMCSA 2013d). Carriers can file for operating authority online or can download a copy of the application forms. They may also call 1-800-832-5660 and request that an application be mailed or faxed.

Carriers are also required to file an MCS-150, Motor Carrier Identification Report (FMCSA 2007), to obtain a USDOT number. Carriers can file for the USDOT number online or call the toll-free number and request that the form be mailed or faxed. Form OP-1(P), Application for Motor Passenger Carrier Authority (FMCSA 2013d), is required for passenger authority. This reflects more stringent rules that are in effect for the transportation of personnel. Carriers can file for this authority or download a copy of the application online. They can also call the toll-free number and request that a copy be mailed or faxed.

### Transfer of Operating Authority (MC Number) and USDOT Numbers

It is important to maintain an information chain to track training and liability issues. This information can be lost if proper transfer protocols are not followed. Transfer

applications can be faxed directly. A transfer application can also be requested via phone or mail.

USDOT numbers are not transferable. Carriers can file for a USDOT number online or call to request a copy of the MCS-150, Motor Carrier Identification Report (FMCSA 2007). If transporting regulated property from one state to another, for-hire carriers are required to have both a USDOT number (MCS-150) and an operating authority (active MC number, OP-1).

### Brokers

To become a broker, one must file Form OP-1, Application for Motor Property Carrier and Broker Authority (FMCSA 2013c). This operating authority requires an entity to have on file with the FMCSA either a surety bond (BMC-84 form provided by an insurance company) or a trust fund. A BMC-85 form (FMCSA 2013b) may be obtained by request to the Insurance Compliance Division at FMCSA, as well as a Designation of Agents Form BOC-3 (FMCSA 2013a). It is important to ensure that the broker is a valid entity to maintain proper liability for shipment safety.

### Freight Forwarders

A *freight forwarder* is a company that arranges for the truck transportation of cargo belonging to others, using for-hire carriers to provide the actual truck transportation. In the ordinary course of its business, a freight forwarder usually assembles and consolidates less-than-truckload (LTL) shipments at their origin and disassembles and distributes truckload (TL) shipments at their destination. The freight forwarder assumes responsibility, including responsibility for some safety issues, for the transportation from origin to destination, but it uses a for-hire carrier for the line-haul movement. Freight forwarders must register with the FMCSA by filing Form OP-1(FF), Application for Freight Forwarder Authority (FMCSA 2013c). This authority can be applied for or downloaded online or obtained by calling the toll-free number and requesting that a copy be mailed or faxed.

### APPORTIONED TAGS

License plates and stickers are state matters. Companies can contact their state department of motor vehicles for requirements but must ensure that registrations and safety inspections are current prior to allowing movement. The correct department can usually be located on the Internet home page of the state government where licensing is desired.

## INFORMATION CHANGES FOR MOTOR CARRIER OPERATIONS

Current information is important in the event of an accident or incident requiring notification of management. There are separate filing procedures for changing a carrier's name with or without a change in the ownership, management, or control of the company. There is a fee for a name change. If there is a change in ownership, management, or control of the company, a transfer application must be filed.

A company wishing to change its legal or trade name must send a letter to the FMCSA along with a check or money order. The letter must contain the current name, the new name, and a statement that there is no change in ownership, control, or management of the company. If the company is incorporated, it must send a copy of its articles of incorporation with the letter. A copy of the letter should be kept on file for verification of safety training for employees who worked under the former company name.

Some requests for name changes can be processed online, but they require additional documents for verification:

1. If an immediate family member is added or deleted, a notarized letter must be presented in order for the change to become effective. (*Immediate family member* means husband, wife, brother, sister, mother, or father.)
2. If a name is to be deleted from the operating authority because of the death of a spouse or a partner already on the operating authority, a copy of the death certificate is required.
3. If a partner is being added as a result of marriage, a copy of the marriage license must be presented.
4. If a partner currently on the operating authority is being deleted, a notarized letter from the partner being removed must be presented.

After a carrier receives a re-entitlement decision, it has a 30-day window to refile the proof of insurance and designation of agents (BOC-3) in its new name (FMCSA 2013a). Upon completion, the name will be changed on the MC number and USDOT number.

Address changes can be made online. A letter to the FMCSA Licensing Division will also be accepted. The letter must reference the MC number and include former and current addresses and telephone numbers and be signed by the applicant or applicant's representative. The address change will be updated for both the MC number and the USDOT number. No fee is currently required.

If a name change is executed, the company keeps its MC number. However, instead of receiving a new certificate or permit, it will receive a re-entitlement decision that should be attached to the original operating authority.

A USDOT number may be updated by filing an MCS-150, Motor Carrier Identification Report (FMCSA 2007). Carriers that update online need a personal identification number (PIN) and can apply for it online. The USDOT record may also be updated by filing an MCS-150 by mail. The carrier should make all necessary changes on the form and mark it "update." MCS-150 forms may be obtained by calling the toll-free number and requesting that a copy be mailed.

## INSURANCE REQUIREMENTS

To apply for common carrier authority, carriers must have on file evidence of both BI & PD and cargo insurance. This requirement promotes a greater attention to safety issues because insurance costs are directly related to recorded incidents. To apply for contract authority, carriers are required only to have evidence of BI & PD insurance on file. Common carriers hauling low-value goods (49 CFR 387.301(b)) may request exemption from cargo-insurance requirements by requesting a cargo-exemption form. The forms BMC-91 (FMCSA n.d. c) and BMC-91X (FMCSA n.d. d) are both used to make liability insurance filings with the FMCSA. The insurance company making the filing maintains its own supply of forms. In fact, many insurance carriers are set up to make the required insurance filings electronically.

## COMPLIANCE, SAFETY, AND ACCOUNTABILITY (CSA)

In December 2010, FMCSA rolled out a new safety program called Compliance, Safety, and Accountability (CSA). The purpose of the program is to identify high-risk motor companies and drivers, then deploy a range of corrective interventions to address specific safety concerns. The centerpiece of the program is the safety measurement system (SMS), which analyzes all safety-based violations from inspections and crash data to determine a commercial motor carrier's potential for unsafe outcomes during operations.

The system quantifies the on-road safety performance of both carriers and drivers to identify candidates for interventions, determines the specific safety problems that a carrier or driver exhibits, and monitors whether safety problems are improving or worsening. SMS has replaced SafeStat as the new review, assessment, and action process.

The data from roadside inspections, including all safety-based violations, state-reported crashes, and the

federal motor carrier census is used to quantify performance in seven Behavior Analysis and Safety Improvement Categories (BASICS). These categories are:

1. **Unsafe Driving:** *Example violations:* Speeding, reckless driving, improper lane change, and inattention (FMCSR Parts 392 and 397).
2. **Hours-of-Service (HOS) Compliance:** *Example violations:* HOS RODS, and operating a CMV while ill or fatigued (FMCSR Parts 392 and 395).
3. **Driver Fitness:** *Example violations:* Failure to have a valid and appropriate commercial driver's license (CDL) and being medically unqualified to operate a CMV (FMCSR Parts 383 and 391).
4. **Controlled Substances/Alcohol:** Operation of CMVs by drivers who are impaired due to alcohol, illegal drugs, and misuse of prescription or over-the-counter medications. *Example violations:* Use or possession of controlled substances/alcohol (FMCSR Parts 382 and 392).
5. **Vehicle Maintenance:** *Example violations:* Brakes, lights, and other mechanical defects, failure to make required repairs, and improper load securement (FMCSR Parts 392, 393 and 396).
6. **Hazardous Materials (HM) Compliance:** *Example violations:* Release of HM from package, no shipping papers (carrier), and no placards/markings when required (FMCSR Part 397 and Hazardous Materials Regulations Parts 171, 172, 173, 177, 178, 179, and 180).
7. **Crash Indicator:** Histories or patterns of high crash involvement, including frequency and severity based on state-reported crash information.

Once a categorization is conducted, a carrier's measurement for each BASIC will depend on the following:

- The number of adverse safety events (violations related to the BASIC, or crashes)
- The severity of violations or crashes
- Timing of the adverse safety events (more recent events are weighted more heavily as being indicative of current trends)

After a measurement is determined, the carrier is then placed in a peer group (e.g., carriers with similar numbers of inspections). Percentiles from 0 to 100 are then determined by comparing the BASIC measurements of the carrier to the measurements of other carriers in the peer group. A percentile of 100 indicates the worst performance record. Many companies have similar internal programs to rate performance but may lack the benchmarking component of the peer group (FMCSA 2014).

## CONCLUSION

The regulation of safety in transportation, as in other areas, is constantly changing. Companies should keep in mind that, regardless of the number and scope of regulations governing a subject, regulations are *de facto* minimums. There is no substitute for proactive pursuit of safety by the personnel involved in the tasks, the safety department as a real-time resource, and full support and commitment by all levels of management.

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## **RECOMMENDED RESOURCES**

Federal Aviation Administration ([www.faa.gov](http://www.faa.gov))  
 Federal Railroad Administration ([www.fra.dot.gov](http://www.fra.dot.gov))  
 Federal Transit Administration ([www.fta.dot.gov](http://www.fta.dot.gov))  
 Maritime Administration ([www.marad.dot.gov](http://www.marad.dot.gov))  
 National Highway Traffic Safety Administration  
 ([www.nhtsa.dot.gov](http://www.nhtsa.dot.gov))  
 Pipeline and Hazardous Materials Safety Administration  
 ([www.phmsa.dot.gov](http://www.phmsa.dot.gov))  
 Research and Innovative Technology Administration  
 ([www.rita.dot.gov](http://www.rita.dot.gov))

Saint Lawrence Seaway Development Corporation  
 ([www.seaway.dot.gov](http://www.seaway.dot.gov))  
 Surface Transportation Board Federal Highway  
 Administration ([www.stb.dot.gov](http://www.stb.dot.gov))

## **ADDITIONAL READING**

### **DOT COMPLIANCE AND AUTO SAFETY\***

Charlie Halfen  
 CNH Safety, LLC  
 UPS Fleet Safety Manager (retired)  
 Austin, TX

### **Introduction**

No matter the size of your fleet, you must have safety processes in place to ensure a reduction of on-road risk. Minimum safety standards for a successful fleet are based on the personal values, safety skills and knowledge required for both entry-level and experienced motor vehicle operators.

For a carrier to maintain a safe on-road fleet, policies and procedures must be defined companywide for management and non-management. Policies should establish the guidelines for how motor carriers and their employees behave in any given situation. Management commitment and employee involvement must be complementary. In an effective process, management regards worker health and safety as a fundamental value of the organization and applies its commitment to the health and safety process with as much vigor as to other organizational purposes. Management should provide the means through which workers develop and express their own commitment to health and safety. Written policies must also clearly establish procedures that insist on employee involvement by providing visible top management support. All levels

of leadership should be involved through the allocation of people and resources.

Outlined procedures explain how to accomplish those policies successfully. Communication of these policies and procedures should outline a motor carrier's commitment so that everyone understands the expectations. Individual personnel will be assigned roles and responsibilities that will establish compliance with the company procedures. Subject matter training will then give personnel the adequate skills and knowledge to perform their assigned role. Once training has taken place and responsibilities have been established, then tracking results will enable the carrier to be aware of their employees' safety performance and compliance with its policies and procedures. With results in hand, the motor carrier now can take action to maintain or improve their employee's behavior, whether by positive reinforcement or disciplinary action led by refresher training.

Taken together, the Safety Management Processes, as outlined by the Federal Motor Carrier Safety Administration (FMCSA), help to provide a framework for motor carriers to identify and correct breakdowns or safety compliance issues before or after they have occurred. This framework can be applied to all of the seven Behavior Analysis and Safety Improvement Categories (BASICS): Unsafe Driving, Hours-of-Service Compliance, Driver Fitness, Controlled

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Substances/Alcohol, Vehicle Maintenance, Hazardous Materials Compliance, and Crash Indicator.

## Driver Selection

Prior to the implementation of these company processes, we must start with the initial selection of new employees, our future drivers. Creating a safe driving workforce starts at the front door. If you hire a bad driver, you have a bad driver. Hoping they'll get better doesn't work. A bad driver will always be a bad driver unless they have the significant emotional event, *the crash*, or they get significant constructive training to overcome years of poor driving habits. A safe workforce starts with the application.

It is important to provide hiring personnel with guidance on how best to attract, screen, and qualify applicants who are most likely to adhere to driver fitness regulations and company safety policies. Carriers should develop a job description for each position that requires driving. Individual employees should be assigned roles that will establish hiring compliance with the company safety procedures. Ongoing training will ensure that these hiring officials can be held accountable in their role and have the current knowledge, training, and experience regarding driver fitness regulations, both interstate and intrastate. I have listed some of the regulations below that require employment compliance with federal DOT regulations.

### *General qualifications of drivers (391.11)*

A person shall not drive a commercial motor vehicle unless they:

- are at least 21 years old,
- can read and speak English sufficiently,
- can operate the vehicle safely,
- are physically qualified,
- have a current driver's license
- have furnished the carrier with a list of convicted traffic violations
- have successfully completed a road test

### *Application for employment (391.21)*

Employment applications should capture all of the safety information that is required by the Federal Motor Carrier Safety Regulations (FMCSRs). That would include 3 years of history pertaining to employers and previous crashes and violations. For drivers applying for a Commercial Drivers License (CDL) position, applicants must supply 10 years of employment history. Review and evaluate gaps in employment and frequent job changes. The applicant must sign the application to certify that all of the information is true.

### *Investigation and Inquiries (391.23)*

Carriers must request a Motor Vehicle Record (MVR) from each state where the applicant held a license during the preceding 3 years. A copy of the MVR must be placed in the Driver Qualification File (DQF). Carriers must also investigate the 3 year safety performance history of applicants for CDL positions. The results of the investigation must be placed in the Driver Investigation History File (DIHF).

The FMCSA has a program that helps motor carriers make more informed hiring decisions by providing electronic access to a driver's crash and inspection history. Pre-Employment Screening Program (PSP) records are available for commercial drivers and persons conducting pre-employment screening services for the motor carrier industry.

Prospective DOT regulated employers must investigate the required alcohol and substance testing and verify that applicants for safety-sensitive positions do not have a current controlled substance and/or alcohol problem by querying them and checking with their employers over the previous 3 years regarding controlled substance and alcohol violations, related background, conditions and behaviors indicative of controlled substance and/or alcohol abuse or misuse, and by conducting pre-employment testing as required by regulation and company policy. Create a detailed written record of each inquiry.

### *Pre-Employment Testing (382.301)*

Prior to the first time a driver performs safety-sensitive functions (CDL), the driver shall undergo testing for controlled substances.

### *Road Test (391.31)*

The road test assures the carrier that the driver can physically and safely operate a company vehicle. No person shall drive a commercial motor vehicle unless they have successfully completed a road test given by the carrier and has been issued a Certificate of Driver's Road Test. The road test should be signed by the person who gave it and if it is successfully completed then the Certificate should be completed and a copy given to the driver tested. The original road test and the original Certificate of Road Test must be kept in the driver's Driver Qualification File (DQF).

### *Equivalent of Road Test (391.33)*

A motor carrier may accept a valid Commercial Driver's License (CDL) or a copy of a Certificate of Driver's Road Test completed within the last 3 years in place of the carrier's road test. If the carrier accepts the CDL or Certificate, then a copy of the CDL or Certificate must

be kept in the driver's DQF. A carrier may always require a road test as a condition of employment.

### ***Physical Qualifications for Drivers (391.41)***

A person must not operate a commercial motor vehicle unless they are medically certified as physically qualified to do so. Once certified, they must have their current medical examiner's certificate on their person while on-duty.

### ***Driver Investigation History File (DIHF) (391.53)***

Carriers should ensure that prospective drivers will drive safely by querying applicants, checking with previous employers and references, and obtaining necessary documents regarding the drivers' safety performance going back three years. Detailed written records of each inquiry relating to the investigation into the safety performance history of prospective drivers for hiring decisions should be maintained in a secure location with limited and controlled access for as long as the driver is employed and for 3 years thereafter. The file must include:

- The driver's written authorization for the carrier to seek information about the driver's alcohol and controlled substance history
- Investigative responses received from previous employers or documentation that the carrier made good faith efforts to contact them.

## **Unsafe Driving**

The FMCSA continues to hold motor carriers responsible for the job performance of those who work for them. Therefore, motor carriers are held accountable for their employees' poor driving.

### ***Applicable Operating Rules (392.2)***

Every Commercial Motor Vehicle (CMV) must be operated in accordance with the laws, ordinances and regulations of the jurisdiction in which it is operated. Speeding is a highly cited violation.

### ***Use of Seat Belts (392.16)***

A commercial motor vehicle which has a seat belt assembly installed at the driver's seat shall not be driven unless the driver is properly restrained. Failing to wear a seat belt is a very common violation.

### ***Prohibition Against Texting (392.80)***

No driver shall engage in texting while driving and no motor carrier shall allow or require its drivers to engage in texting while driving. While texting is a major driver distraction, something so simple as talking to passengers

can divert a driver's attention from the task of operating a motor vehicle. Remember, driving needs your undivided attention. The consequences are not worth the risk.

### ***Using a hand-held mobile telephone (392.82)***

No driver shall use a hand-held mobile telephone while driving a CMV and no motor carrier shall allow or require its drivers to use a hand-held mobile telephone while driving. Like the prohibition on texting, mobile phones may not be used while stopped in traffic.

While on-road safe driving can be started in a classroom, the safe habits that the driver will use for life will be set behind-the-wheel. Safety rides are used to observe and correct the driver's ability to recognize the hazards they face while driving. A good trainer should take the wheel during this ride and show the student how to keep their eyes scanning, recognizing those hazards that may affect their travel path and how to react accordingly. Constructive feedback should be used on the mental and physical driving skills demonstrated by the driver since there will always be areas of improvement noted.

Getting employees involved in their own safety is critical. Safety committees should be developed and maintained since they can affect behaviors, attitudes, work processes, compliance, and the general work environment. A safety committee process should be outlined in detail as to how people at all levels can work together to make improvements for the good of their fellow employees. Daily, weekly and monthly commitments by safety committees should be outlined in writing for all to see. Immediate feedback on prevention activities with their results is important. As with any commitment, results matter. To maintain this process, commitments must be obtainable.

## **HOS Fatigued Driving**

Hours of Service (HOS) regulations were developed to get tired drivers off the road before serious accidents could occur. These rules apply to those carriers with vehicles that have a gross vehicle weight of over 10,000 pounds or transport hazardous materials that require placarding. Both employers and drivers have an obligation to comply. The roles and responsibilities of all personnel as they pertain to HOS policies and procedures should be reviewed in new-hire, initial and refresher training.

### ***Rest Breaks (395.3(a)(3)(ii))***

After June 30, 2013, driving is not permitted if more than 8 hours have passed since the end of the driver's last off duty.

All drivers should be trained on the hours of service requirements and how to maintain a complete, legible, and accurate driver's daily log or how to enter data into electronic on-board recording system and perform all necessary calculations. Managers and dispatchers should be held responsible for reviewing the driver's Record of Duty Status (RODS) for accuracy and making sure that all RODS are collected and stored per regulations. Disciplinary measures, if needed, should focus on taking corrective action to ensure all personnel comply with hours of service regulations.

## Driver Fitness

Motor carriers are required by law to use qualified drivers to move their passengers and goods. It is also in the best interest of the carrier since a safe, dependable driver can be their top asset.

### *Annual Inquiry and Review of Driving Record (391.25)*

Carriers must, at least every 12 months, make an inquiry to the appropriate state agency to obtain the MVR for each employee that drives one of their vehicles. A note is required naming the person who reviewed the MVR. A copy of the new MVR and the review note must be kept in the DQF.

### *Record of violations (391.27)*

Carriers must, at least every 12 months, require employees that drive one of their vehicles to furnish it with a list or certification of convictions of motor vehicle traffic laws for the preceding 12 months. A copy of this list or certification should be kept in the DQF.

Roles and responsibilities of managers and supervisors must be outlined for providing training and maintaining safe driving qualifications for all drivers. Serious consideration should be given to violations such as speeding, reckless driving, operating under the influence of alcohol or drugs, or any indication that the driver has disregarded the safety of the general public.

## Controlled Substances/Alcohol

### *Drugs and Other Substances (392.4)*

No driver shall be on duty and possess, be under the influence of, or use, any regulated controlled substance.

### *Alcohol Prohibition (392.5)*

No driver shall use alcohol or be under the influence of alcohol within 4 hours before going on duty or operating a CMV.

Carriers must develop a written company policy incorporating all regulations regarding controlled substances and alcohol use, testing, training, and records retention for all employees. Personnel in safety-sensitive positions should receive the required training on the importance of responsible lifestyle behaviors and personal choices regarding controlled substance and alcohol use.

## Vehicle Maintenance

A carrier's inspection and maintenance programs are critical to a carrier's on-road safety process. Vehicle maintenance helps to prevent crashes caused by vehicle deficiencies. Worn, failed or incorrectly adjusted components can cause or contribute to an incident. Preventive maintenance and periodic inspection procedures can help prevent mechanical failures from occurring while vehicles are being operated. Vehicle inspections help to ensure that vehicles are in a safe operating condition while being driven. Required inspection procedures and documentation assist the process.

### *Pre-trip Inspection (396.13)*

The pre-trip inspection of your vehicle is required by state and federal regulations. It is forbidden to operate any vehicle in such condition that its operation would be hazardous or likely to result in a crash or breakdown. A quality pre-trip provides a safe operating vehicle for the driver and general public. Drivers must make a pre-trip inspection of their vehicle every day prior to going on the road to be satisfied that the vehicle is in safe operating condition.

### *Post-trip Inspection (396.11)*

Every motor carrier must require its drivers to prepare a Driver Vehicle Inspection Report (DVIR) at the completion of each day's work on each vehicle that the driver operated. The DVIR should cover at least the following parts:

- Service brakes, including trailer brake connections
- Parking brake
- Steering mechanism
- Lighting devices and reflectors
- Tires
- Horns
- Windshield wipers
- Rear vision mirrors
- Coupling devices
- Wheels and rims
- Emergency equipment

A system of preventive automotive maintenance for compliant, safe, and efficient fleet operations, including a schedule for periodic maintenance, inspection, and recordkeeping should be developed. This system should

be coordinated with the manufacturer recommendations, the carrier's own experience, and regulatory requirements.

### ***Hazardous Material Compliance***

Transporting hazardous material can be extremely dangerous, not only to the driver but the general public. The general public is subject to a greater safety risk if hazardous materials are involved in a motor carrier crash and any unmarked or poorly marked cargo can result in a less effective emergency response leading to injuries or fatalities for emergency responders.

Policies and procedures must be developed to address the regulatory requirements for HAZMAT transportation registration, recordkeeping, packaging, securement, marking, labeling, placarding, reporting, documentation, security, and emergency response. Roles and responsibilities must be defined of drivers, dispatchers, managers, and other designated personnel in relation to regulations and company policies and procedures. Disciplinary measures must be implemented to insure accountability.

### ***Crash Indicator***

Maintain high standards when it comes to crash avoidance. An auto crash is any occurrence in which a vehicle is in any way involved and which results in personal injury, property damage, or collision. While the DOT has its own definition of what's recordable, as listed below, a carrier should track and demand accountability on any incident no matter how slight and regardless of fault.

### ***Definition (390.5)***

An accident means an occurrence involving a commercial motor vehicle operating on a highway in interstate or interstate commerce, which results in:

- A fatality
- Bodily injury to a person who, as a result of the injury, immediately receives medical treatment away from the scene of the accident
- One or more motor vehicles incurring disabling damage as a result of the accident, requiring the motor vehicle to be transported away from the scene by a tow truck or other motor vehicle.

The driver and the local management team must investigate and fill out a detailed prevention report, detailing what should have been done to prevent the crash. The objective of the investigation is to determine any errors in judgment or driving made by the carrier's drivers, and to point them out to them for the purpose of making them better drivers, and thus, avoiding future similar incidents. These prevention reports should also refer back to previous documented training as well future remedial training that this driver will receive to prevent a reoccurrence. For liability reasons, if remedial training is needed, then it must be completed in a timely manner.

Not only should front-line operations be held accountable for their automotive frequencies, they should also experience an immediate one-time expense charge when an incident has occurred. Immediate feedback is required to change habits. This expense should be based on the closed-case historical cost of the specific type of accident. This cost chargeback should be updated regularly to reflect a running expense based on the incident.

### **Compliance Is Safety**

DOT regulations and fleet safety are not mutually exclusive. Compliance is a matter of safety and must be used to reinforce policies and procedures that lead to a safer on-road fleet. Communication about concerns helps to disseminate the safety message throughout the company and reinforce upper level commitment. Documented training on roles and responsibilities throughout the ranks introduces accountability for the use of safe methods. Tracking results and taking corrective action where needed closes the loop for company-wide accountability.

Injuries and fatalities are no longer a cost of doing business; they are a failure of business. As carriers begin to use these Safety Management Processes, injuries and fatalities will decline.



# Chapter 2

## OSHA and Other Regulations

Nancy Bendickson

### LEARNING OBJECTIVES

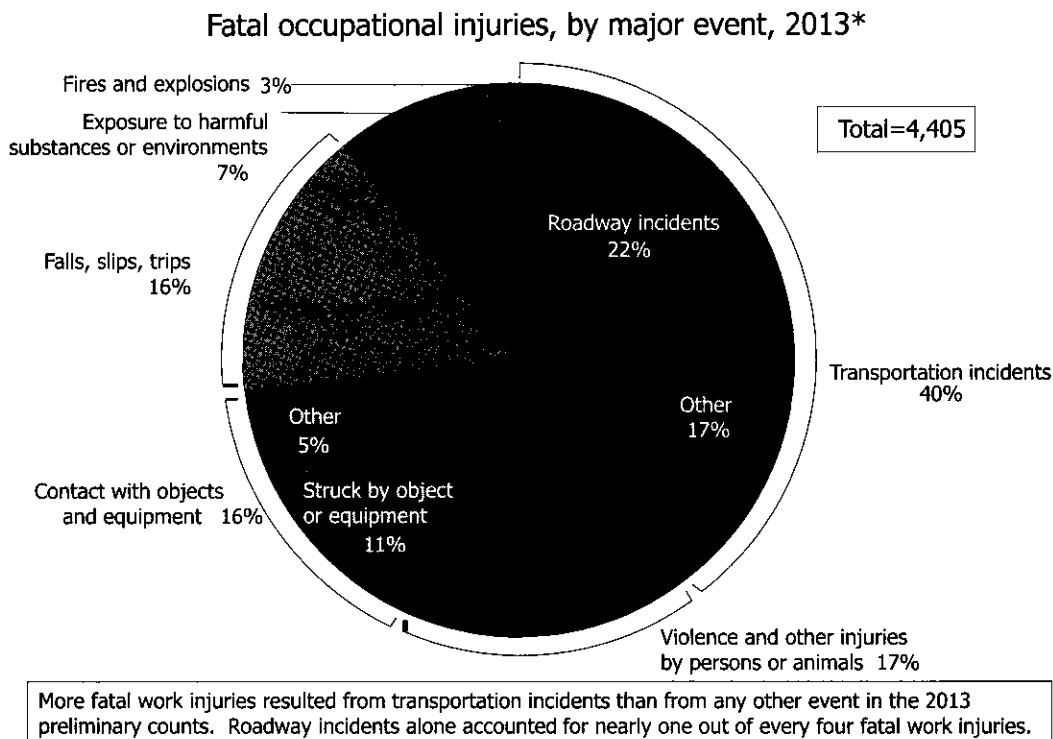
- Identify OSHA regulations that pertain to organizations with motor-vehicle exposures.
- Identify other federal agencies that address motor fleet safety, including DOT, FAA, PHMSA, EPA, CDC, and NIOSH.
- Explain commonly cited standards for SIC 4200 (Motor Freight Transportation and Warehousing).
- Be familiar with the regulations for construction vehicles.
- Know what rollover protective structures for material-handling equipment are required for construction and agricultural vehicles.
- Explain what is covered under the OSHA Marine Terminal Vehicle Regulations.
- Understand the expanded role OSHA has taken to address motor-vehicle safety as outlined in OSHA Motor Vehicle Guidance.
- Understand how OSHA has addressed distracted driving as a special focus initiative.

Organizations with fleet exposures are affected by a number of different regulatory agencies. This chapter will provide an overview of key regulatory issues and guidelines developed to address motor-vehicle safety. The Department of Transportation (DOT) regulations, history, and some other areas are covered in the first chapter of this section of the handbook. The primary focus of this chapter will be on the Occupational Safety & Health Administration (OSHA) and the jurisdictional role of federal agencies with regard to fleet exposures.

Data from the Bureau of Labor Statistics (BLS) showed that, in 2012, 1,923 fatal work injuries resulted from transportation incidents (BLS 2014), making them consistently the leading cause of occupational fatalities in the United States. In 2013, highway incidents accounted for one out of every five fatal work injuries—a total of 40 percent (see Figure 1). Risk of work-related motor-vehicle crashes cuts across all industries and occupations. Workers who drive on the job may be “professional” drivers whose primary job is to transport freight or passengers. Many other workers spend a substantial part of the work day driving a personal vehicle or one owned or leased by their employer. Considered to be hidden or grey, it is difficult to estimate the number of these fleets in operation. There is no specific percentage of hired/non-owned vehicle use documented in literature for the United States. Arval (a U.K. Fleet Management company) did a study within the U.K. that found one in four vehicles operated for business use was a non-owned vehicle (Road Safe Summer 2008).

Traditional fleet safety processes have typically addressed the driver of a company-owned vehicle. The historical approach to fleet safety has been to address company-owned vehicles and not to address non-owned vehicle exposures.

OSHA does not have specific standards that address passenger-vehicle operations. However, Section 5(a)(1) of the OSH Act, often referred to as the General Duty Clause, requires employers to “furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees” (OSHA 1970). Occupational motor-vehicle operation does present a



\*Data for 2013 are preliminary.

Note: Transportation counts presented in this release are expected to rise when updated 2013 data are released in spring 2015 because key source documentation detailing specific transportation-related incidents has not yet been received. Percentages may not add to 100 due to rounding.

Source: U.S. Bureau of Labor Statistics (U.S. Department of Labor, 2014).

**FIGURE 1. Manner in which fatal work injuries occurred, 2013 (Source: BLS 2014)**

recognized hazard since it has been the leading cause of worker fatalities in the workplace year after year.

An initiative was launched on October 4, 2010, by the Department of Labor (DOL) and the Department of Transportation (DOT) to combat distracted driving. OSHA created a Web page directed at those employees whose workplaces are cars, vans, and trucks that deliver goods and services and their employers. The online resource provides information on workers' rights; employers' responsibilities to provide safe workplaces that extend to the operation of a motor vehicle; and best practices and policies to achieve safe workplaces in motor vehicles (OSHA 2007b).

OSHA's distracted-driving initiative addresses texting while driving. Employers are directed to prohibit any work policy or practice that requires or encourages workers to text while driving. Allowing the practice of texting while driving will violate the OSH Act.

Additional guidance for employers on fleet safety can be found on the "Motor Vehicle Safety" page of OSHA's Web site.

Reduction in transportation crashes requires implementation of motor fleet safety-management controls that combine traffic safety principles and fleet safety-management practices.

## MAJOR JURISDICTIONAL AGENCIES

OSHA has jurisdiction over off-highway loading and unloading, such as would occur at warehouses, plants, retail locations, marine terminals, wharves, piers, and shipyards (OSHA 2007c).

In addition to federal OSHA regulations, there are OSHA state plans that incorporate motor-vehicle regulations. An example of this is Washington state. The Washington Administrative Code (Chapter 296-865 WAC) has regulations for Motor Vehicle Statutory Authority (WISHA Rules—Motor Vehicles 2007). The regulations cover motor-vehicle operation, transportation of passengers, motor-vehicle equipment, trucks and trailers, dump trucks, semitruck brakes, and truck/trailer loads. Trucking companies that have operations in states with OSHA state plans need to review their specific rules to determine if there are additional regulations that would pertain to a fleet operation.

DOT has jurisdiction over interstate highway driving, hours of service, driver qualification standards, and roadworthiness of vehicles. The Environmental Protection Agency (EPA) has jurisdiction over the natural environment and pollution prevention programs. OSHA can be preempted for jurisdiction by another federal agency *only* for a specific task or activity. The ultimate

responsibility for the safety and health of all employees rests with OSHA.

OSHA has developed an “OSHA Assistance for the Trucking Industry” page on its Web site that provides information about preventing occupational illness and injury in the trucking industry through links to summaries, training presentations, publications, and other resources. It also offers a one-stop location to find applicable DOT and EPA compliance requirements related to worker protection (OSHA 2007c).

## OTHER AGENCIES: AN OVERVIEW

When a federal agency other than OSHA has regulated a working condition, OSHA is preempted by Section 4(b)1 from enforcing its regulations. Some examples of this are provided below:

- Department of Transportation (DOT) regulates driving over public highways, the health and safety of drivers involving their use of drugs and alcohol, hours of service, and use of seatbelts. In addition, states have additional regulations for intrastate trucking. Most states adopt many, if not all, of the federal regulations regarding a driver’s qualifications, hours of service, drug and alcohol testing, and more.
- DOT also regulates the roadworthiness of trucks and trailers and has specific requirements for the safe operation of trucks.
- DOT has jurisdiction over *interstate* trucking operations, while OSHA has jurisdiction over *intrastate* motor vehicles operated in the workplace and not on public roads, except those handling hazardous materials. DOT has issued regulations regarding the shipping, packaging, and handling of these materials. However, if a truck driver becomes an emergency responder in the event of a spill, then OSHA has jurisdiction.
- Interstate versus intrastate highway driving operations: DOT preempts OSHA’s jurisdiction if a vehicle is traveling on public roads. OSHA has broader jurisdiction over intrastate trucking operations. Intrastate is defined as *operating strictly within a single state*. Examples of this type of trucking operation include: gravel/sand haulers, logging, agriculture, cement and concrete mixers. DOT has jurisdiction over the transportation of hazardous materials for both an interstate or intrastate trucking operation.
- Federal Aviation Administration (FAA) regulates flight crews and some aspects of the safety of ground crews. For example, if there is a working condition in an operational plan negotiated between the carrier and the FAA, FAA has jurisdiction over that working condition. Otherwise, OSHA covers most working conditions of ground crews and baggage handlers.
- Environmental Protection Agency (EPA) works with industries and all levels of government on pollution prevention programs. They have developed a number of environmental screening checklists and workbooks that can be used to screen and evaluate an industry or government agency’s compliance with EPA environmental regulations. The *Environmental Screening Checklist and Workbook for the Trucking Industry* (August 2000) and *Profile of the Ground Transportation Industry: Trucking, Railroad, and Pipeline*, EPA Office of Compliance Sector Notebook Project (September 1997), provide examples of screening checklists that the transportation industry can utilize (see Figure 2).
- The Pipeline and Hazardous Materials Safety Administration (PHMSA) has public responsibilities for the safe and secure movement of hazardous materials to industry and consumers by all modes of transportation, including the nation’s pipeline. PHMSA is part of the U.S. Department of Transportation. This function was previously the responsibility of the Research and Special Programs Administration (RSPA). RSPA ceased operations on February 20, 2005. RSPA programs were moved to the following agencies: Pipeline and Hazardous Materials Safety Administration, Research and Innovative Technology Administration, and the Office of Emergency Transportation moved to the Office of the Secretary. The regulations governing hazardous materials are complex. Specific information about the regulations for hazardous materials can be found at [www.phmsa.dot.gov](http://www.phmsa.dot.gov).
- The Centers for Disease Control (CDC) recognize motor-vehicle-related injuries and deaths as a serious public health problem. The agency, which is part of the Department of Health and Human Services (DHHS), supports research and prevention efforts. The CDC has developed fact sheets on a number of motor-vehicle safety topics, including: child passenger safety, teen drivers, older adult drivers, impaired driving, distracted driving, Native American road safety, pedestrian safety, and global road safety (NIOSH 2010).
- National Institute of Occupational Safety and Health (NIOSH), which is a part of the CDC, was established to assure safe and healthful working conditions for working men and women by providing research, information, education, and training in the field of occupational safety and health. The NIOSH Workplace Safety and Health Topic: “Motor Vehicle Safety” offers comprehensive information on subjects such as general crash statistics and prevention, vehicle safety for fire fighters and emergency responders, highway work zones, research initiatives, and motor-vehicle injuries (NIOSH 2010).

**ENVIRONMENTAL CHECKLIST FOR TRUCKING INDUSTRY**

**1.0 WASTE MANAGEMENT\*\***

|   |   |   |
|---|---|---|
| Hazardous Waste Generation, Storage, and Transport* | Does the facility have an EPA hazardous waste generator ID number? (p. W-6)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>                                   |
|   | Does the facility store hazardous waste in appropriate storage containers? (p. W-6)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>                                   |
|   | Does the facility meet all hazardous waste storage (quantity and time) requirements? (p. W-7)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>                                   |
|   | How does the facility dispose of its hazardous waste? (p. W-7)  | Ships haz waste off site /Disposes of hazardous waste on site and is a RCRA-permitted TSDF /Other/NA                |
|   | Does the facility have a written contingency plan or basic contingency procedures in place for responding to spills and releases of hazardous waste? (p. W-8) | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>                                   |
| Used Oil and Filters*                               | Are used oil containers/tanks and associated piping labeled "used oil?" (p. W-10)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>                                   |
|   | Are used oil containers/tanks and associated piping leak free? (p. W-10)  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>                                   |
|   | Does the facility prevent the mixing of used oil with hazardous waste? (p. W-10)  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>                                   |
|   | How does the facility manage/dispose of used oil? (p. W-11)   | Sent off site for recycling /Burned in on-site space heater /Burned off site /Other /NA                             |
|   | How does the facility manage/dispose of used oil filters? (p. W-13)   | Recycle /Srcv Co / Other /NA  |
|   | How does the facility manage/dispose of used fuel filters? (p. W-14)  | Recycle /Srcv Co / Managed as haz waste /Other /NA  |
| Used Antifreeze*                                    | In terms of storage, is used antifreeze contained, segregated, and labeled? (p. W-15)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>                                   |
|   | Has the facility determined if it generates any antifreeze that is hazardous waste? (p. W-16)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>                                   |
| Used Battery Storage and Disposal*                  | If storing used batteries, does the facility protect them from storm water contact? (p. W-19)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>                                   |
|   | How does the facility manage/dispose of used batteries? (p. W-19)   | Return to supplier/ Recycle/ Srcv Co / Sent to Universal waste handler/ Sent to hazardous waste landfill/ Other/ NA |
| Used Shop Rags/ Towels*                             | How does the facility manage/dispose of used shop rags and towels? (p. W-21)  | Laundry service / Burned for heat / Other /NA   |
| Absorbents*   | Does the facility determine if used absorbents are hazardous before disposal? (p. W-22)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>                                   |
| Used Tires  | How does the facility manage/dispose of used tires? (p. W-23)   | Resale / Retread / Recycle / Other / NA   |
| Brake Repair*                                       | How does the facility manage asbestos brake pads and asbestos-containing material (ACM) waste? (p. W-25)  | Recycled off site / Disposed of by vendor /EPA-approved disposal site /Other /NA                                    |

**FIGURE 2. Environmental screening checklist for the trucking industry** (Source: Environmental Protection Agency 2000, www.epa.gov)

| <b>ENVIRONMENTAL CHECKLIST FOR TRUCKING INDUSTRY (cont.)</b> |   |   |
|--|---|---|
| <b>2.0 WASTEWATER AND STORM WATER MANAGEMENT**</b>           |   |   |
| Wastewater and Storm Water Management*                       | Can the facility identify the final destination of all its drains? (p. W-29)  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
|  | If the facility discharges to a surface water does it have an NPDES permit? (p. W-31)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
|  | Does the facility have a storm water permit?  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
|  | If Yes, does the facility have a storm water pollution prevention plan (SWPPP)? (p. W-32)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
|  | If discharging to a municipal sanitary sewer, has the facility notified the publicly owned treatment works (POTW) and received approval for discharges? (p. W-32) | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
|  | If discharging to an underground injection control (UIC) well, does the facility comply with UIC program requirements? (p. W-33)                                  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
|  | How does the facility manage the sludge from an oil/water separator? (p. W-34)  | Off-site disposal as haz waste / Off-site disposal to other facility / On-site disposal / NA                                |
| Activities Generating Wastewater/Storm Water*                | If the facility stores materials outside, are they protected from contact with storm water? (p. W-35)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
| Equipment Cleaning and Spent Solvents*                       | If halogenated solvents are used in cleaning equipment, has the facility submitted a notification report to the air permitting agency? (p. W-39)                  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
|  | How does the facility manage/dispose of spent solvents? (p. W-40)   | Third-party vendor / Permitted discharge to storm sewers or surface waters / Sanitary sewer with POTW approval / Other / NA |
| Fueling*   | Do fuel delivery records indicate compliance with appropriate fuel requirements? (p. W-42)  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
|  | Does the facility use overfill protection measures, spill containment methods, and spill response equipment during fueling? (p. W-44)                             | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
| Asbestos Concerns*   | Has the facility assessed all buildings and structures built prior to 1980 for their potential for containing asbestos and treated accordingly? (p. W-45)         | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
| Construction Activities*                                     | Are there any endangered species which may be affected by construction activities? (p. W-47)  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
|  | Has the facility obtained a Section 404 permit for any projects that may impact wetlands? (p. W-47)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
| Pesticide Use*   | Are restricted use pesticides (RUPs) applied only by a certified commercial applicator? (p. W-49)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
| Yard Dust Control*   | Does the facility prohibit the use of used oils or other liquid wastes to suppress dust? (p. W-51)  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
| Painting/Paint Removal*                                      | Does the facility have air permits? (p. W-52)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
|  | How does the facility manage/dispose of paint stripping wastes and baghouse dusts? (p. W-53)  | Municipal or hazardous landfill / Other / NA  |
|  | When not in use, does the facility store paints in labeled container? (p. W-54)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>   |
|  | How does the facility manage/dispose of used paints and painting waste products? (p. W-55)  | Return to supplier / Reuse / Recycle / Other / NA   |

**FIGURE 2. Environmental screening checklist for the trucking industry** (Source: Environmental Protection Agency 2000, www.epa.gov)

| ENVIRONMENTAL CHECKLIST FOR TRUCKING INDUSTRY (cont.)  |  |   |
|--|--|---|
| Air Conditioning Repair*                               | How does the facility dispose of appliances containing ozone-depleting refrigerants? (p. W-61)   | Landfill/Waste hauler/Scrap metal recycler/Other/NA                               |
| <b>4.0 STORAGE TANKS, SPCC, AND EMERGENCY RESPONSE</b> |  |   |
| Underground Storage Tanks                              | Has the State/Tribal UST program office been notified of any USTs located on site? (p. W-64)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/> |
|  | Does the facility conduct leak detection for tank and piping of all on-site USTs? (p. W-64)  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/> |
|  | Do USTs at the facility meet requirements for spill, overfill, and corrosion protection? (p. W-65)   | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/> |
| Aboveground Storage Tanks*                             | Does the facility inspect ASTs on a periodic basis for leaks and other hazardous conditions? (p.W-67)  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/> |
| SPCC and Emergency Response*                           | Does the facility have a Spill Prevention, Control, and Countermeasures (SPCC) plan signed by a professional engineer? (p. W-69)                           | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/> |
|  | Is the phone number for the National Response Center posted on site for immediate reporting of oil spills? (p. W-70)                                       | Y <input type="checkbox"/> N <input type="checkbox"/>                             |
| <b>5.0 RECORDKEEPING</b>                               |  |   |
| Recordkeeping*   | <b>NPDES:</b> Does the facility keep accurate records of monitoring information for the minimum requirement of 3 years? (p. W-71)                          | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/> |
|  | <b>Air:</b> Does the facility meet the recordkeeping requirements of its air permit(s)? (p. W-72)  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/> |
|  | <b>Air:</b> If the facility owns/operates appliances that contain ozone-depleting refrigerants, does the facility maintain all required records? (p. W-73) | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/> |
|  | <b>RCRA:</b> Does the facility keep copies of its manifests for the 3-year minimum requirement? (p. W-73)  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/> |
|  | <b>USTs:</b> Does the facility maintain leak detection records? (p. W-75)  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/> |
|  | <b>USTs:</b> Does the facility maintain corrosion protection records? (p. W-75)  | Y <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/> |

\*For additional questions regarding these environmental compliance issues, refer to the workbook.

\*\*In addition, the workbook includes environmental compliance questions regarding metal machining (p. W-26), on-site disposal of nonhazardous waste (p. W-49), and PCB-containing equipment (p. W-56).

**FIGURE 2. Environmental screening checklist for the trucking industry** (Source: Environmental Protection Agency 2000, www.epa.gov)

- NIOSH Transportation Initiative: This initiative coordinates NIOSH-wide activities in all industry sectors to reduce motor-vehicle crashes, the leading cause of traumatic occupational fatalities. The initiative currently supports: (1) collaborative work with the National Center for Injury Prevention and Control (NCIPC) to address both occupational and nonoccupational issues related to motor-vehicle safety; and (2) efforts promoting global road safety, including a NIOSH-sponsored “International Conference on Road Safety at Work” (NIOSH 2008), and NIOSH participation in the United Nations Road Safety Collaboration and in the federal agency, Global Road Safety Roundtable (NIOSH 2007a), coordinated by the U.S. Department of State. NIOSH houses the global online library for resources related to the prevention of road traffic injuries and deaths while at work.

Reference the Road Safety at Work Library of Training Materials and Practice Tools (Geolibary 2005).

## OSHA STANDARDS FOR THE TRUCKING INDUSTRY

OSHA regulations govern the safety and health of workers and the responsibilities of employers to ensure their safety at docks, warehouses, construction sites, and other places where truckers deliver and pick up loads. Even self-employed truckers, who are not regulated by OSHA, are covered by OSHA regulations when they enter workplaces to deliver or receive goods. Organizations that operate commercial motor vehicles need to be familiar with OSHA standards and take appropriate action to implement any relevant regulations.

Trucking companies must comply with General Industry Standard (29 CFR 1910). The ten most frequently issued citations for SIC 4200-*Motor Freight Transportation* from October 2008 to September 2009 involved (OSHA 2007c):

- Powered industrial trucks: 1910.178;
- Hazard communication: 1910.1200;
- Electrical—general requirements: 1910.303;
- Wiring methods, components, and equipment for general use: 1910.305;
- Portable fire extinguishers: 1910.157;
- Forms: 1910.29;
- Abrasive wheel machinery: 1910.215;
- Annual summary: 1910.2;
- Oxygen-fueled gas welding: 1910.253; and
- Guarding floor and wall openings and holes: 1910.23

## ADDITIONAL STANDARDS COMMONLY CITED FOR THE TRUCKING INDUSTRY

In addition to the frequently cited standards discussed above, the following list highlights other standards that address common hazards in the trucking industry:

- 1910.151, Medical Services and First Aid
- 1910.176, Materials Handling, General
- 1904.7, Recordkeeping
- 1910.120, Hazardous Waste Operation and Emergency Response
- OSHA Act of 1970, General Duty Clause
- 1904.2, Log and Summary of Occupational Injuries and Illnesses
- 1910.146, Permit-Required Confined Spaces
- 1910.141, Sanitation
- 1910.106, Flammable and Combustible Liquids
- 1910.272, Grain Handling Facilities
- 1910.177, Servicing Multi-Piece and Single Piece Rim Wheels
- 1910.266, Logging Operations

These regulations can be found on the OSHA Web site at [www.osha.gov/SLTC/trucking\\_industry/index.html](http://www.osha.gov/SLTC/trucking_industry/index.html) (OSHA 2007a).

## OSHA CONSTRUCTION-VEHICLE REGULATIONS

Motor-vehicle standards have been promulgated for the construction industry. These standards are found in CFR 1926, Subpart O, *Motor Vehicles, Mechanized Equipment, and Marine Operations* (OSHA 2007e). An overview of these regulations is provided below:

- 1926.600 Equipment – This section covers general requirements for parking unattended equipment at

night, use of a safety tire rack or cage for work on tires with split rims or rims with locking devices, blocking of equipment parts when work is performed under elevated parts, parking brake use, cab glass construction, battery charging, procedures to follow when work is performed near energized power lines, and blocking of railroad cars on spur tracks.

- 1926.601 Motor Vehicles – Coverage applies to those vehicles that operate within an off-highway job site, not open to the general public. General requirements for this section include: brake systems; lighting standards; audible warning devices at operator's station; reverse alarms and use of observers for equipment with an obstructed rear view; windshields with powered wipers and defrosting system; cab shield or canopy to protect operator from falling or shifting cargo when it is loaded by crane, backhoe, or power shovel; tool securement within the cab; secured seats with adequate number for employees carried; seatbelts installed and used to meet federal motor-vehicle safety standards; means of supporting elevated dump body during inspection/maintenance; means to prevent accidental tripping of levers for dumping or hoisting devices; trip handles located so operator is in clear; fenders or mud flaps on rubber-tired equipment; and equipment inspection done before each shift to assure parts, equipment, and accessories are in safe operating condition.
- 1926.602 Earthmoving Equipment – This section applies to scrapers, loaders, crawlers or wheel tractors, bulldozers, off-highway trucks, graders, agricultural and industrial tractors, and similar equipment. Specific rules for compactors and rubber-tired, skid-steer equipment is not included in this standard, pending development of standards for this equipment. General requirements are outlined for: seatbelts, with an exemption for seatbelts when equipment is for stand-up operation or where a rollover protective structure (ROPS) is not provided; access roads and grades; brakes; fenders; audible horns; reverse alarms; and powered industrial truck rules, including operator training. The section states that equipment must meet CFR 1926, Subpart W, requirements for ROPS and overhead protection.
- 1926.1000, Subpart W – This section covers rollover protective structures (ROPS) for material-handling equipment and outlines requirements for ROPS. Key performance criteria include: ROPS shall be designed, fabricated, and installed in a manner that will support, based on ultimate strength of metal, at least two times the weight of the prime mover applied at the point of impact. The design objective is to minimize the likelihood of a complete overturn and thereby minimize the possibility of an operator being crushed as a result of a rollover or upset.

## OSHA AGRICULTURAL VEHICLE REGULATIONS

Safety for agricultural motor vehicles is addressed in CFR 1928.51, *Rollover Protective Structures for Tractors Used in Agricultural Operations*. This agricultural standard defines what type of tractor is required to have ROPS and their design requirements. Where ROPS are required, employers should provide each tractor with a seatbelt, ensure that the employee tightens the seatbelt sufficiently to confine him/her to the protected area provided by ROPS, and ensure that the seatbelt meets the requirements set forth by the Society of Automotive Engineer Standard, SAE J4C, 1965 Seat Belt Assemblies (2), except when the seatbelt is used on a suspended seat. Then, the seatbelt should be fastened to a movable portion of the seat. Additional information is provided on material for seatbelt webbing, ROPS marking, different styles of tractors and ROPS requirements, operating practices, and ROPS remounting requirements (OSHA 2009).

## OSHA MARINE TERMINAL VEHICLE REGULATIONS

The requirements of vehicle safety regulations for marine terminals are outlined in CFR Part 1917.44, *Marine Terminals, General Rules Applicable to Vehicles*. This is a comprehensive standard that covers signs for traffic control, distance of vehicles at check-in, securement of vehicles/trailers, employee transport-vehicle rules, servicing of multi-piece and single-piece rim wheels, and cargo securement of pipe or other rolling stock cargo while it is being loaded or unloaded from flatbed trailers (OSHA 2009).

Traffic accidents are a serious problem at marine terminals, and OSHA developed a guidance document in 2007 to help improve traffic safety in terminals. Marine terminal operations need to go beyond complying with the OSHA standards on powered industrial trucks and vehicle operations to also develop traffic safety programs for vehicle and pedestrian safety. The guidance document on the OSHA Web site is "Traffic Safety in Marine Terminals" (OSHA 2007c).

### Factors that Contribute to Traffic-Related Injuries and Fatalities in Marine Terminals

There are many factors that can contribute to traffic accidents in marine terminals. Often, accidents are caused by a combination of factors. The following points illustrate common traffic safety problems:

- **Unsafe equipment.** Broken, improperly maintained, or missing safety equipment, such as lights, seatbelts, brakes, and horns, can lead to accidents and injuries.

- **Inadequate traffic controls.** Inadequate traffic controls, such as lack of proper signage or marking, may lead to accidents.
- **Condition of terminal driving surfaces.** Many marine terminals, particularly larger ones, have paved terminal driving surfaces. Paved surfaces, which are smoother, are desirable because they reduce the potential for vehicle tipovers, cargo and equipment shifting, and operator bouncing, and allow for improved road markings, such as lane markings. However, smoother driving surfaces also require heightened awareness because they can become slippery when wet and contribute to excessive vehicle speed. Road surfaces need to be maintained properly because, over time, paving material can settle and result in uneven surfaces, potholes, and sinkholes that can lead to tipovers or other vehicle accidents.
- **Driving obstacles.** Vessel equipment, stacked materials, containers, and repair crews are some of the driving obstacles that increase the risk of traffic accidents at marine terminals.
- **Weather.** Ice, fog, and rain can create hazardous conditions, including slippery surfaces and poor visibility, in marine terminals. Also, the sun may cause glare on certain types of driving surfaces and vehicle windshields.
- **Inadequate illumination.** Poor lighting, particularly at night, as well as shadows, can make it difficult for drivers to see and avoid pedestrians, hazardous driving surfaces, and other obstacles.
- **Welding.** Welding flashes can distract vehicle and crane operators.
- **Unsafe vehicle operation.** Factors such as improperly loaded equipment, speed, and distractions (such as cell phones) can contribute to traffic accidents.
- **Improper parking.** Hazards can be created by improper parking of personal or company-provided vehicles and powered industrial trucks in areas where cargo is being worked on or heavy machinery is being used.
- **Lack of communication.** Accidents often occur because of poor communication. Technicians, mechanics, and other employees fail to alert vehicle operators of their location, and employers fail to notify employees of changes to traffic routes. In addition, noisy terminal environments can hinder effective communications. In some cases, there may be inadequate accommodations for persons with hearing impairment or language barriers.
- **Lack of training and awareness.** Accidents can occur when drivers and equipment operators do not have adequate training in the safe operation and maintenance of equipment and vehicles. Likewise,

pedestrians walking in marine terminals are at risk of injury if they do not receive training on the potential for traffic accidents and how to avoid them.

- **Shift changes.** Marine terminal employers report that accidents often occur just before the end of a work shift or while employees are parking equipment at the end of the work shift.
- **Fatigue.** Marine terminal employees often work long and irregular hours, which can lead to fatigue and sleepiness. Fatigue and sleepiness can impair operator performance and contribute to workplace accidents and fatalities.
- **Substance abuse.** Substance abuse may contribute to vehicle accidents in marine terminals (OSHA 2007c).

## OSHA SAFETY GUIDANCE FOR MOTOR VEHICLES

Since the roadway is not a closed environment, employers need to develop strategies that combine traffic safety principles and sound safety-management practices. An employer cannot control the roadway condition; however, he or she can promote safe driving behavior by providing safety information to workers and by setting and enforcing driver safety policies. Crashes are *not* an unavoidable part of doing business.

OSHA highlights resources available through the National Safety Council (NSC), the National Highway Traffic Safety Administration (NHTSA), the National Institute for Occupational Safety and Health (NIOSH), the Institute for Highway Safety (IHS), and the Network of Employers for Traffic Safety (NETS).

A suggested prevention strategy for crash reduction is provided on the policies page of OSHA's Motor Vehicle Safety Web site. This prevention strategy is based on a publication by NIOSH (2004a) and includes the following steps:

- Policies
  - Assign a key member of the management team responsibility and authority to set and enforce a comprehensive driver safety policy.
  - Enforce mandatory seatbelt use.
  - Do not require workers to drive irregular hours or drive far beyond normal work hours.
  - Do not require workers to conduct business on a cell phone while driving.
  - Develop work schedules that allow employees to obey speed limits and to follow applicable hours-of-service regulations.

- Fleet Management
  - Adopt a structured vehicle maintenance program.
  - Provide company vehicles that offer the highest levels of occupant protection.
- Safety Programs
  - Teach worker strategies for recognizing and managing driver fatigue and in-vehicle distractions.
  - Provide training to workers operating specialized motor vehicles or equipment.
  - Emphasize to workers the need to follow safe driving practices on and off the job.
- Driver Performance
  - Ensure that workers assigned to drive on the job have a valid driver's license and one that is appropriate for the type of vehicle being driven.
  - Check driving records of prospective employees and perform periodic rechecks after hiring.
  - Maintain complete and accurate records of workers' driving performance.

## ADDITIONAL RESOURCES FOR PREVENTION STRATEGIES

The "Best Practices" chapter within this section of the handbook provides extensive information about prevention strategies and resources, such as ANSI/ASSE Z-15.1 2006, *Safe Practices for Motor Vehicle Operations*. This standard sets forth practices for safe operation of motor vehicles owned or operated by organizations, including:

- definitions
- management, leadership, and administration
- operational environment
- driver considerations
- vehicle considerations
- incident reporting and analysis

These practices are designed for use by those having the responsibility for the administration and operation of motor vehicles. This is an excellent resource that should form the basis of an organization's fleet safety-management system (ANSI/ASSE 2006).

## SUMMARY

This chapter provided an overview of OSHA and the jurisdictional role that other federal agencies have with regard to fleet safety. Motor-vehicle safety is a concern for

many agencies because the risk of roadway crashes affects millions of U.S. workers and continues to be the leading cause of occupational fatalities in the United States.

The following federal agencies have initiatives or regulations that address fleet safety exposures: Department of Transportation (DOT), Federal Aviation Administration (FAA), Pipeline and Hazardous Materials Safety Administration (PHMSA), Centers for Disease Control (CDC), National Institute of Occupational Safety and Health (NIOSH), and the Environmental Protection Agency (EPA). NIOSH is involved in a global partnership on road safety at work and is housing an online library devoted to global road safety resources.

Distracted driving is the subject of several safety initiatives and regulation in 2010. OSHA considers texting to be a recognized hazard, and enforcement action will be taken against organizations that do not manage this exposure (OSHA 2007b).

Fleet safety initiatives within the regulatory agencies are changing. Safety professionals will need to monitor the Web sites of the federal agencies to stay current on motor-vehicle safety prevention strategies and regulations.

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# Chapter 3

## Vehicles and Accidents

Jubal Hamernik and Peter M. Himpel

### LEARNING OBJECTIVES

- Utilize vehicle-selection criteria to properly choose fleet vehicles.
- Establish and carry out proper vehicle maintenance programs and procedures for fleet vehicles.
- Understand and implement recommended practices for accident investigation.

Practicing fleet safety is an active, ongoing process, not just a policy statement. Each step, from purchase to salvage, should be undertaken with safety concerns in mind. Fleet safety can be improved through educated vehicle selection, proper vehicle maintenance, and thorough accident investigations. This chapter seeks to address these issues and give insight into good fleet safety practices.

### VEHICLE CONSIDERATIONS

For any new fleet of vehicles or addition to an existing fleet, vehicle selection is important. When selecting new fleet vehicles, issues such as safety, cost, crashworthiness, and environmental friendliness should be considered. The first step is to determine the type and class of vehicle needed. Essentially, the fleet should be tailored to use so that it can accommodate the expected range, load, and so on required of the vehicle. The Federal Motor Carrier Safety Administration's (FMCSA) Commercial Driver's License Program (CDL/CDLIS) outlines the different classes of commercial vehicles. This information may be useful in determining the class of vehicle needed and the associated license requirements for fleet drivers. Vehicle classes A through C are determined by vehicle weight, towing capacity, and passenger size. Vehicle type can be found at the Federal Highway Administration (FHA) Web site under *FHWA Vehicle Types*. Once fleet use is determined and the type and class of vehicle have been identified, the practices outlined in this chapter may be referenced to help select a specific vehicle.

### Safety Features

Vehicle selection should include consideration of the following safety features: seatbelts, airbags, antilock brakes, traction and stability control, tire-pressure monitoring system, head restraints, and a design that provides visual clarity for the driver.

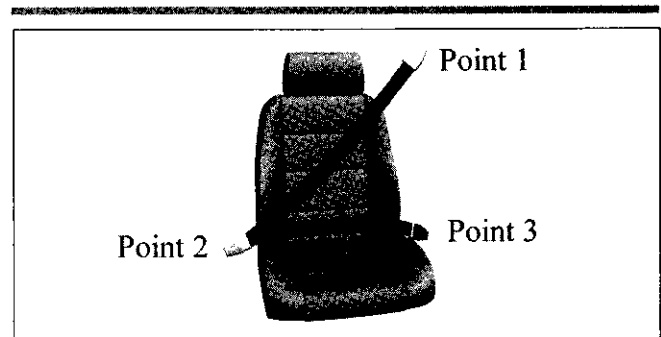
### Seatbelt System

Seatbelts are a critical component of vehicle safety. Seatbelt type and proper seatbelt usage are both crucial factors for proper safety compliance and injury prevention. A three-point seatbelt system is preferred to a lap-only system (see Figure 1). A fleet may have more than one driver operating a vehicle. To accommodate all drivers, look for vehicles where belt height is adjustable (see Point 1 in Figure 1). If the seatbelt is comfortable, a driver may be more likely to wear it—and if it is not, the driver might be deterred from using it. Avoid passive, automatic seatbelts. Passive seatbelt systems may be by default a two-point belt system in which the lap belt must be attached separately from the shoulder belt (automatic). Sometimes the driver will not attach the lap portion; utilizing only the automatic portion increases the risk of injury. Some vehicles are equipped with an innovative seatbelt reminder system, indicating to the driver when seatbelts are not buckled. Such indicators are good for safety monitoring.

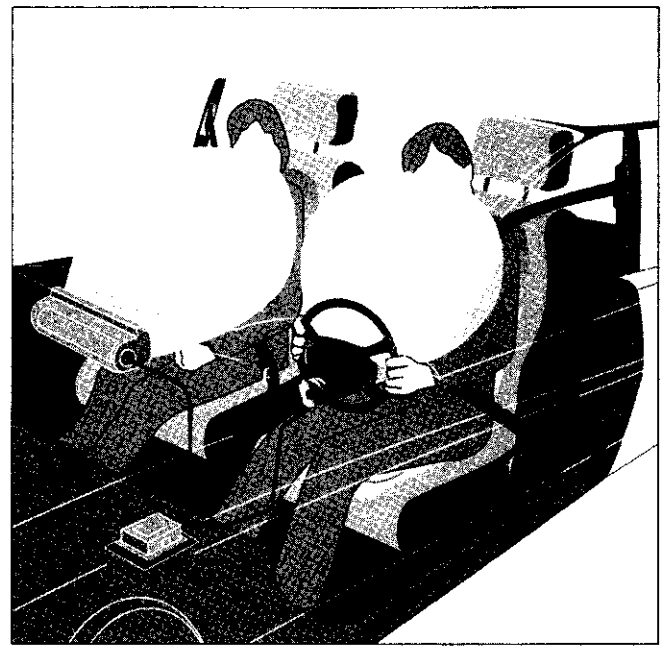
### Airbags

Driver and passenger airbags have been standard equipment in all passenger vehicles since 1998 and in light trucks since 1999. In order for an airbag to function properly, the occupant must be wearing a seatbelt, and the occupant's chest should be located ten inches or more away from the steering wheel (see Figure 2). Because an airbag inflates over a short time interval, being too close to the airbag may cause injury or death. Some newer vehicles are equipped with advanced airbag systems, which utilize extra sensors to monitor vehicle and passenger characteristics and compute the specific output force of the airbag, in an attempt to reduce the chance of airbag-induced injuries. If the fleet is intended to transport children under the age of twelve, then it is recommended that the children sit only in the rear passenger seats. The National Highway Traffic Safety Administration (NHTSA), in the "Airbags" section on its Web site ([www.nhtsa.dot.gov/people/injury/airbags/airbags03/page3.html](http://www.nhtsa.dot.gov/people/injury/airbags/airbags03/page3.html)), provides useful resources on airbag safety and risks. The FMCSA does not currently have any rules or regulations mandating airbags in commercial vehicles ([www.fmcsa.dot.gov/rules-regulations/rules-regulations.htm](http://www.fmcsa.dot.gov/rules-regulations/rules-regulations.htm)).

Vehicles equipped with side airbags offer protection to the torso and head in the event of a side-impact collision (see Figure 3). These airbags can deploy from the vehicle's roof rail, door, or seat. In addition to side-impact safety tests, many side airbag systems have been tested to determine safety in the event that the driver or occupant is out of position. Vehicles that have passed a battery of tests regarding safety in the event of



**FIGURE 1.** Three-point seatbelt system refers to three anchor locations for the seatbelts.



**FIGURE 2.** Driver and passenger airbags (Source: IIHS)



**FIGURE 3.** Side curtain airbags (Source: IIHS)

out-of-position occupants are listed in NHTSA's *Buying a Safer Car* publication available for download as a pdf file at [www.safercar.gov](http://www.safercar.gov).

### Antilock Brake System (ABS)

When used properly, antilock brake systems can aid in maintaining control of a vehicle on slippery surfaces and assist in retaining steering capabilities during full braking. In order for ABS to be effective, the driver must know how to properly apply the brakes. In an ABS-equipped vehicle, when the ABS system engages, it modulates brake-line pressure and causes the brake pedal to counteract a force on the driver's foot. In such instances, the driver should continue to depress the pedal as necessary to reduce speed or stop. In an ABS-equipped vehicle, the driver must not pump the brakes.

### Traction Control and Stability Control

Successors to the antilock brake system, both traction and stability control systems are based on the components and concepts of the ABS system. Traction control systems available in cars today offer electronic monitoring and control of wheel spin, essentially doing for acceleration what the ABS does for braking. Traction control systems monitor wheel spin and prevent excessive wheel spin (slip) under heavy acceleration or when roadway conditions offer limited traction. When slip is sensed, the system can cut engine power and/or apply braking to maintain traction and control.

Stability control systems take this concept one step further with the addition of a yaw rate sensor. *Yaw* can be defined as the rotation about a vertical axis that passes through the car's center of gravity. The addition of a yaw rate sensor gives the stability control system the ability to sense and mitigate vehicle yaw by activating individual brakes or by applying a combination of brake and throttle in order to maintain the steering angle the driver inputs.

The presence of both traction control and stability control in a wide range of consumer vehicles continues to increase. Both systems can be useful in accident prevention and safety by assisting the driver in maintaining control of the vehicle under a variety of conditions.

### Tire-Pressure Monitoring System

Tire-pressure monitoring systems, when available, work by monitoring the individual pressure of each tire. Accessible indicators can warn the driver of over- or underinflated tires. Overinflated tires can reduce vehicle traction, whereas underinflated tires can affect the vehicle's fuel efficiency and stability.

### Head-Restraint Design

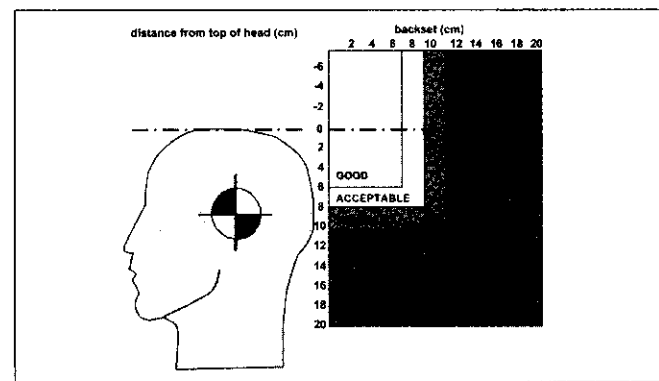
Head-restraint systems are important for the prevention and reduction of whiplash-type injuries, which are discussed later in this chapter. A head restraint should be sufficiently tall to reach the upper portion of the driver's or passenger's cranium (see Figure 4). Second, if possible, the head restraint should be nonadjustable. Although an adjustable head restraint may sit high on the occupant's head, in the event of a large force acting on it, the adjustable head restraint may collapse and may result in adverse loading of the head and neck.

### Visual Clarity

Vehicles should be chosen so that drivers have a clear view of the roadway and surrounding areas of the vehicle (see Figure 5). Avoid placing obstructions within the driver's field of view that reduce sight capabilities (e.g., large devices mounted to the windshield). In California, a device such as a GPS unit may only be mounted at the corners of the windshield. Alternative options include dashboard mounts, vent mounts, and adhesive discs. Vehicles should be equipped with two sideview mirrors and one rearview mirror. Additional convex mirrors can be added to existing sideview mirrors for visual assistance on larger vehicles.

### Crashworthiness

In selecting a vehicle, one should also consider its crashworthiness. *Crashworthiness* encompasses how a vehicle will perform in an accident, how the vehicle will protect the occupants, and how the vehicle will resist costly repairs in low- to moderate-speed accidents. The Federal Motor Vehicle Safety Standards' (FMVSS) *Quick Reference Guide to Federal Motor Safety Standards* is a set of standards and regulations to which manufacturers of motor



**FIGURE 4.** Head-restraint positioning ratings  
(Source: IIHS)

vehicles must conform (FMVSS 2011). The adherence to and surmounting of such standards may improve the crashworthiness of a vehicle. The FMCSA's *Regulatory Guidance for Federal Motor Carrier Safety Regulations* sets out regulations for large trucks and buses. Note that when evaluating vehicle crashworthiness ratings, comparison should be made between vehicles of the same class.

**Low-Speed Collisions**

Low-speed collisions account for a substantial portion of all reported traffic accidents. Occupant protection and minimal vehicle damage are concerns when evaluating a vehicle's low-speed crashworthiness. Vehicle bumpers can protect the vehicle from excessive damage during low-speed collisions. Quality safety belts and proper head restraints can minimize the likelihood of occupant injury during such accidents.

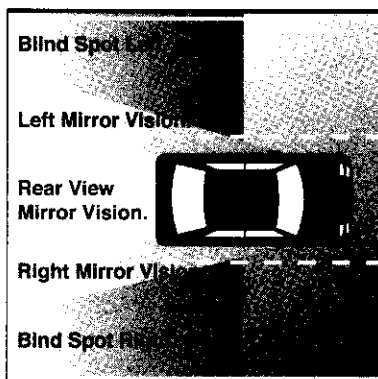
- **Bumpers:** Bumper systems are designed to protect the vehicle's body and structure in order to minimize expensive repair costs. Bumper systems can reduce induced damage to vehicle components such as fenders and quarter panels, which can occur by the transfer of mechanical forces. Preferably, these bumper systems and cosmetic covers should wrap around the corners of the vehicle and extend to the wheel wells, creating a larger area of protection. The FMVSS standard for passenger vehicles requires a minimum bumper strength of 2.5 miles per hour (mph), meaning at any speed below 2.5 mph, the bumper should resist permanent damage apart from minor scuffs and scraps. However, sport utility vehicles (SUVs), vans, and trucks are not required to comply with this standard. Vehicles that exceed this standard are preferred. Bumper systems that incorporate energy-absorbing material or piston isolators are preferred to simple bumpers made of stamped metal.

- **Whiplash:** Rearend-type accidents can result in biomechanical movement that leads to bodily injury. When a vehicle is hit from the rear, the vehicle will accelerate forward. If the head of the occupant is not adequately supported by the vehicle head restraint, it will lag behind the forward motion of the torso. This unsynchronized movement (see Figure 6) will cause neck extension and may produce whiplash-type injuries. Thus proper design and positioning of the head restraint is important in reducing whiplash-type injuries.

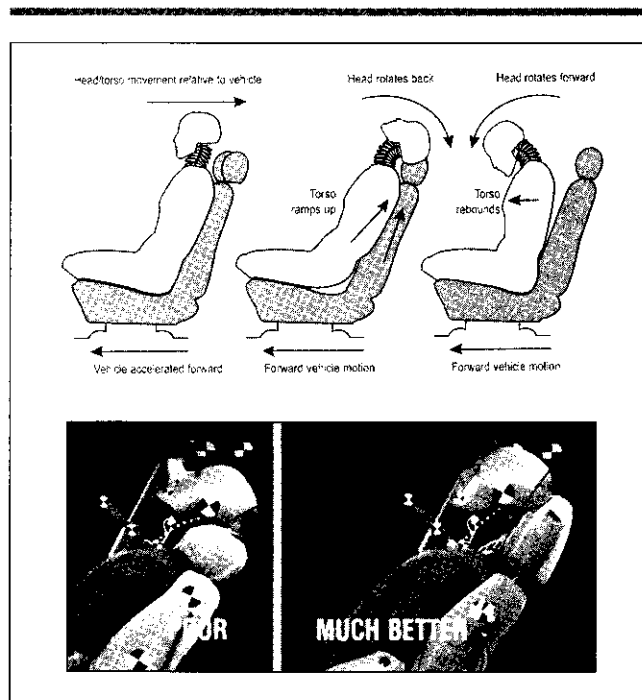
**High-Speed Collisions**

In case of high-speed vehicle accidents, vehicles should be designed to aid in the protection of the occupant(s). Components such as crumple zones, occupant compartments, rollover ratings, and restraint systems are all important in protecting the occupant in the event of a high-speed collision.

- **Crumple Zones and Occupant Compartments:** Crumple zones are areas that crumple or crush upon vehicle impact in order to reduce the deceleration experienced by the occupant(s). By testing and design, these zones can absorb a significant amount of energy during collisions. An occupant compartment



**FIGURE 5. Blind spots**  
(Source: Colorado Department of Revenue)



**FIGURE 6. Occupant response when hit from behind with different head restraint designs**  
(Source: IIHS)

or protection cage is important in absorbing damage during a crash while keeping the occupant safe. Offset frontal crash tests performed by the Insurance Institute for Highway Safety (IIHS) are helpful in assessing the performance of vehicle structure and can be viewed at the institute's Web site.

- **Rollovers and Side Impacts:** Different vehicles have varying susceptibility to rolling, which is often termed vehicle rollover. A vehicle with a low center of gravity is preferred to reduce the chance of a rollover. The NHTSA provides rollover ratings for test vehicles based on a five-star rating system. These ratings and other information about rollovers can be viewed at the NHTSA Web site. Good rollover ratings are important for helping prevent the chance of rollover occurrence. The best form of occupant protection in the event of a rollover is proper seatbelt usage. A large percentage of occupant deaths due to rollover collisions resulted from occupants being ejected from the vehicle. Newer technology available in some vehicles includes rollover airbags or side curtain airbags, which stay inflated longer in an attempt to keep the occupant in the vehicle during a rollover.

## Economic Considerations

Economic considerations almost always play a role in vehicle selection. Besides examining initial vehicle costs and overhead, attention should be paid to the long-term benefits and shortcomings of the prospective vehicle. Some considerations are outlined in the following paragraphs.

**Fuel Efficiency:** Estimated miles per gallon for city and highway driving should be considered with regard to the types of conditions under which the vehicle will be operating. A cost-benefit analysis should be performed to evaluate the economic impact of purchasing a more fuel-efficient vehicle. Information regarding estimated miles per gallon, fuel-saving tips, and alternatively fueled vehicles can be found at the Department of Energy Fuel Economy Web site. Also, the American Trucking Association offers a guide to fuel-saving practices for fleet managers.

**Historically Low Maintenance:** A good vehicle should have a reliable and low-maintenance engine, transmission, electrical system, and so on, often based on previous models or manufacturer projections. The vehicle's part-replacement costs, service fees, reliability, and expected life should also be considered.

**Engine Type:** The type of engine that is chosen (diesel, gasoline, or hybrid electric) will affect the overhead, maintenance, and fueling costs. Diesel engines generally have a longer life expectancy, are better suited for pulling heavy loads, and are generally more fuel-efficient

in comparison with an equivalent gasoline engine. Gas engines, on the other hand, are quieter and cheaper to purchase and have a fuel supply that is more readily available. Hybrid electric vehicles may have a higher initial cost, but lower fuel consumption per mile may be preferred in stop-and-go driving environments.

**Depreciation and Salvage Value:** Current vehicle depreciation and salvage value projections must be considered in order to recapture capital upon fleet retirement.

**Upgrades Based on Change in Usage:** Vehicle upgrades should be made specific to terrain, load, mileage, and similar factors. For example, if the fleet is used in an area that is consistently snowy, then snow tires for the fleet should be considered. If the maximum vehicle load or towing capacity is insufficient, then larger, more capable vehicles should be added to the fleet, or more vehicles should break up the transportation of heavy loads. If the fleet is consistently required to travel long distances, then more fuel-efficient vehicles should be considered.

## Other Considerations

**Environmentally Friendly Vehicles:** A vehicle should produce emissions that are below minimum Environmental Protection Agency (EPA) limits and state emission requirements while minimizing noise pollution. Emission ratings for passenger vehicles manufactured from 2000 to 2011 can be found in the EPA's *Green Vehicle Guide* (EPA 2011).

It should be noted that, for every class of vehicles, there are differences with respect to safety features, failure properties, and crashworthiness. One can reference the IIHS Web site to verify which of these safety features are included in the prospective vehicle. Consumers may also refer to other safety sources mentioned previously, along with the *Automotive Safety Handbook* (Seiffert and Wech 2003) and *Consumer Reports*, for vehicle safety, cost, and reliability information. An in-person evaluation of the vehicle being considered is recommended as well. A sample evaluation checklist is outlined here.

### IN-PERSON VEHICLE EVALUATION CHECKLIST

1. Ask the manufacturer or retailer about the existence and status of the following:
  - a. Airbags
  - b. Antilock brake system (ABS)
  - c. Tire-pressure monitoring system
  - d. Stability control and/or traction control
  - e. Automatic or manual seatbelt system
2. Enter the vehicle and use the seatbelt. Take note of its condition, whether it is adjustable, and whether it is comfortable.

3. See if the driver and passenger seats are adjustable in height and/or lateral distance to accommodate for different drivers. See if the steering wheel is adjustable.
4. Test-drive the vehicle.
5. Check for available warranties.
6. If the vehicle is used, hire a mechanic to perform a safety inspection.
7. If the vehicle is used, perform a vehicle history report to determine accident involvement, previous owners, and so on. ([www.carfax.com](http://www.carfax.com)).

## FLEET MAINTENANCE

Fleet maintenance is important for safety, efficiency, and the cost-effective operation of a fleet. All vehicles must be properly maintained at all times. The vehicle should undergo two types of inspections: daily inspections and biannual inspections. Fleet maintenance requirements vary depending on the vehicle type. The FMCSA requires a minimum annual inspection on all operated carrier vehicles. For normal passenger vehicles, check with state regulations for applicable requirements. It is recommended for passenger and carrier vehicles alike that in-depth inspections be performed more than once a year to serve as a safety check for preventive maintenance and to determine whether a vehicle should be deemed out-of-service. An out-of-service “red flag” indicates when a fleet vehicle is in need of maintenance and is unsafe to operate.

### Record Keeping

Each vehicle should have an individual record of its history that is accessible and can be easily referenced if necessary. It is important to keep records for all maintenance performed on the vehicle and previously existing problems so that diagnostics and repair are more easily addressed. For carrier vehicles, record keeping must follow part 396.3 of the FMCSA regulations. For passenger vehicles, similar applicable procedures should be followed.

### Daily Inspection

Daily inspections are important. They serve as preventive measures to ensure safe daily operation of the vehicle. These inspections should become a habitual part of fleet operation. The following list outlines safety criteria that should be performed before and after operating a vehicle.

#### PRE-OPERATION INSPECTION LIST

1. Review the last driver inspection report; sign it if any defects were noted to indicate that the current driver has reviewed the report and verified that defects were repaired.

#### 2. Exterior:

- a. Check for body or glass damage. If any exists, check with maintenance before use to determine if the damage is old or new.
  - b. Check the operation of all turn signals, brake lights, headlights, and taillights. Do not use the fleet vehicle until all defective lights and signals have been repaired.
  - c. Examine tire condition, wear, and tire pressure. Add air if needed. If tire wear is beyond manufacturer specifications, deem the vehicle out-of-service and in need of replacement tires.
3. Safety Equipment: Make sure the vehicle’s spare tire and emergency equipment are accessible and in working condition.
  4. Under the Hood (after each refueling): Check fluid levels and refill as necessary. Make note of any fluid added.
  5. Interior: Check for proper operation of seatbelts, starting system, fuel level, instruments, mirrors, and so on. If any problems exist, check with maintenance before use.
  6. During Operation:
    - a. Look for properly operating instruments.
    - b. Smell for any strange or unusual odors.
    - c. Listen for any unusual or abnormal sounds.
    - d. Feel for any unusual vibrations or abnormal handling of the vehicle.
    - e. Monitor fuel consumption and make note of any excessive or unusual fuel usage.

#### POST-OPERATION INSPECTION LIST

(Required for all carrier vehicles; recommended for passenger vehicles)

Check the following components:

1. Service brakes, including trailer brake connections
2. Parking (hand) brake
3. Steering mechanism
4. Lighting devices and reflectors
5. Tires
6. Horn
7. Windshield wipers
8. Rearview mirrors
9. Coupling devices
10. Wheels and rims
11. Emergency equipment

Other inspections unique to specific fleet vehicles should also be performed. If the vehicle is excessively

dirty, the vehicle should be washed to ensure proper operation of instruments, full visibility of lights and signals, and ease in recognizing new damage to the vehicle. When any unusual or abnormal conditions exist, report such cases to fleet maintenance as soon as possible so that the issue can be further inspected before the vehicle is allowed back in service.

### Unscheduled or Unanticipated Maintenance

Sometimes required maintenance cannot always be predicted. In the event of a roadside breakdown or tire failure, follow the procedure outlined in the driver's manual for bringing your vehicle to a stop. Make sure to turn on the emergency hazards and place triangle reflectors and flares (if visibility is poor) behind the vehicle. Call fleet management to alert them to the problem. If the fleet employee is capable, and it is safe to do so, he or she may change the vehicle's wheel. Depending on the spare tire available, it may be necessary to service the vehicle as soon as possible, in which case the vehicle should be driven to the appropriate maintenance location. If the vehicle or tire is unserviceable, tie something white to the vehicle antenna and raise the hood to let emergency personnel know you need assistance. Then stand away from the vehicle and roadway and call for assistance.

### In-Depth Inspections and Maintenance

More in-depth, thorough inspections of components and systems should be performed two to three times per year by a qualified mechanic. For carrier vehicles, appendix G of part 396.6, FMCSA regulations, lists the necessary maintenance procedures. For passenger vehicles, applicable procedures based on these regulations should be followed. Thorough inspections and maintenance should be scheduled so that downtime is minimized and fleet productivity is maximized.

These inspections should assess overall vehicle condition and review feedback from driver reports and any potential problems. Maintenance should meet or exceed manufacturer recommendations. The minimum requirements for annual inspections on carrier vehicles set forth by the FMCSA are outlined in the following list. Fleet managers should perform an in-depth review of criteria for an out-of-service vehicle. The FMCSA or other professional organizations, such as the Commercial Vehicle Safety Alliance, with its *Out of Service Criteria*, provide these criteria. Certain organizations and companies, such as the state associations of the American Trucking Association, or private industry groups, such as J. J. Keller and Associates (*2011 Transport Catalog*), offer preprinted inspection forms that can assist the mechanic with inspection procedures and record keeping.

### Minimum Periodic Inspection Standards

(Required for all carrier vehicles; recommended for passenger vehicles)

Check the following:

1. Brake systems
2. Coupling devices
3. Exhaust system
4. Fuel system
5. Lighting devices
6. Safe loading
7. Steering mechanism
8. Suspension
9. Frame
10. Tires
11. Wheels and rims
12. Windshield glazing
13. Windshield wipers

If repairs are required, all manufacturer warranties that apply should be considered. It is recommended that all repairs be made using OEM or OEM-equivalent parts. After repairs have been performed, vehicles should be road-tested to check that all parts and systems operate as expected and that no other problems exist.

If a vehicle is in need of major repairs, then a cost-benefit analysis should be performed to determine whether repair or replacement is more appropriate.

**Industry and Manufacturer Recalls:** Check for safety- and performance-related recalls of the specific fleet vehicle on a regular basis. Information regarding recalls can be found at the NHTSA's Office of Defects Investigation Web site ([www-odi.nhtsa.dot.gov](http://www-odi.nhtsa.dot.gov)). If necessary, contact the manufacturer for details so that required repairs can be performed.

### ACCIDENT INVESTIGATION

When a fleet vehicle is involved in an accident, a thorough investigation should be conducted. Accident investigation is important to understand the cause(s) of the accident and to see if any preventive steps can be implemented to reduce the likelihood of reoccurrence. In the event of litigation, scene evidence collected by fleet employees can assist in assessing fault.

To aid in proper accident investigation, each vehicle should be equipped with all documentation required by law: driver's license, vehicle registration, and proof of insurance. In addition, a disposable camera, tape measure, investigation checklist (see the following list), notepad, and pen can assist in evidence collection.

Vehicles should also carry relevant contact information and emergency daytime and nighttime phone

numbers for appropriate company personnel. Persons in charge of receiving accident-related calls should have easy access to all driver emergency-contact and medical history information.

Should an accident occur, depending on severity, the following procedure should be considered.

### ACCIDENT PROCEDURE

1. Activate emergency four-way flashers (hazard lights), evaluate safety of vehicle's position, and move vehicle to safe location if it is safe and legal to do so.
2. Stop vehicle immediately, turn the ignition off, and set the parking brake.
3. Exit the vehicle if it is safe to do so.
4. Take reasonable precautions to prevent further accidents through proper use of emergency flares, triangle reflectors, and so on.
5. Contact authorities and emergency personnel (follow state regulations regarding accident procedures and reporting, often outlined in the state driver's manual).
6. Report accident to fleet vehicle management.
7. Collect evidence (see next section).

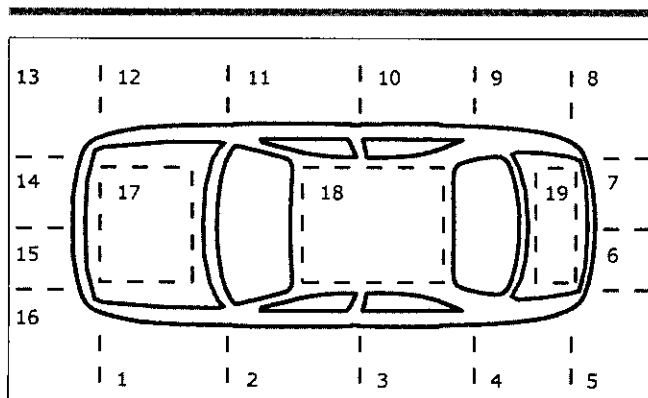
### Evidence Collection

Initial evidence should be collected by the driver if it is safe to do so. The following information should be obtained/collected by the driver if it is safe to do so. The following information should be obtained.

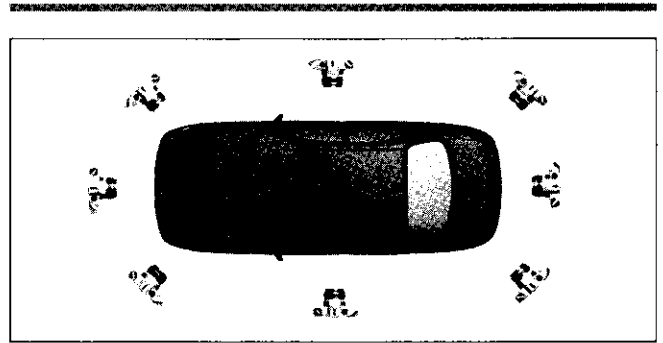
### EVIDENCE COLLECTION PROCEDURE

(Perform only if not injured and it is safe to do so.)

1. Write down driver name, vehicle make and model, insurance information, and license plate numbers for all vehicles involved.



**FIGURE 7.** Example vehicle-damage diagram



**FIGURE 8.** Photograph the vehicle from multiple angles.

2. Take notes and witness statements, with witnesses' names and contact information included.
3. Examine the vehicle where the contact or collision point occurred. Mark the damage, if any, on a diagram similar to the example in Figure 7 for all vehicles involved.
4. Examine other parts of the vehicle to determine whether other damage is related to the accident or previously existed and document any new damage.
5. Write down any damage descriptively (e.g., shattered light, 2-inch circular dent, 5-inch scrapes/scuffs).
6. Take pictures of the vehicle(s) from a distance and from multiple angles (see Figure 8), including the total roadway and intersection in the field of view.
7. Take pictures of the damaged section from multiple angles with an extended tape measure in the photos (see Figure 9).
8. Take pictures of the skid marks, starting from the beginning of the skid marks until the final vehicle location.



**FIGURE 9.** Example photo of vehicle damage

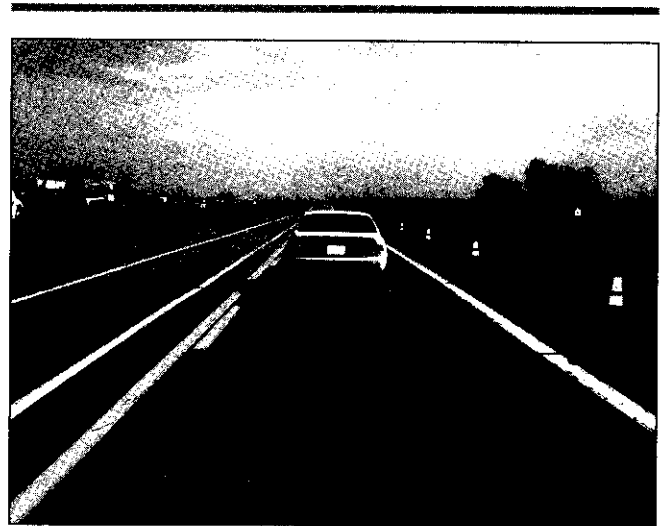


**FIGURE 10. Proper photographic technique**

- Vehicle ending point is visible
- Total skid mark is visible
- No people in the picture



**FIGURE 11. Improper photographic technique: Vehicle ending point is not visible**



**FIGURE 12. Improper photographic technique: Total skid mark is not visible**

9. Photograph the accident scene (e.g., tire marks, gouges, obstructions, vehicle ending positions, roadway) (See examples in Figures 10–12).
10. Make note of weather and road conditions.
11. Describe the accident and events preceding and following the accident.
12. Get a copy of the police report of the accident from the local precinct for fleet records.

All of the evidence collected at the scene should be maintained by the fleet and submitted to the insurance company. The fleet vehicle involved should be checked for government or factory recalls. The driver should also document any vehicle defects or conditions that may have contributed to the accident as well as defects occurring after the accident.

For serious accidents, a trained staff of independent or in-house accident investigators should be sent to the accident site as soon as possible. This is to make sure that all available scene evidence is collected and preserved. These trained investigators will be able to obtain relevant data from the roadway, vehicles, and witnesses.

Proper collection of accident-related information and, when appropriate, additional investigation and analysis will provide the best means of managing the economic impact of a motor-vehicle accident involving a fleet vehicle.

**Event Data Recorders (EDRs)**

Many vehicles are equipped with Event data recorders (EDRs) that may provide data relevant to an accident ([www.NHTSA.gov/EDRs](http://www.NHTSA.gov/EDRs)). Fleet vehicle management should note which vehicles are equipped with EDRs and take the appropriate steps to have a qualified technician

download and evaluate any available data in the event of an accident. United States Code of Federal Regulations, Title 49, Part 563, specifies:

... uniform, national requirements for vehicles equipped with event data recorders (EDRs) concerning the collection, storage, and retrievability of onboard motor vehicle crash event data. It also specifies requirements for vehicle manufacturers to make tools and/or methods commercially available so that crash investigators and researchers are able to retrieve data from EDRs.

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## **ADDITIONAL READING**

# SAFE DRIVING FOR EVERY SEASON\*

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Trooper, PA

### **Introduction**

Have you ever heard of an affliction known as “Seasonal Driving Amnesia” (SDA)? Don’t feel bad if you haven’t; it was “invented” for the purposes of this article. However, just because it was made up does not mean that it doesn’t really exist. Think about it. For those of you who drive in areas that receive snow, have you ever noticed that there are an inordinate number of vehicle crashes during the first snowfall of the season? Why does this happen!? Do people forget how to drive in the snow from one year to the next? Do they forget that, when the roads are slippery, they need to slow down and leave a greater following distance? There is a case here to substantiate the existence of SDA.

In reality, there are specific driving dangers and challenges associated with all four of the seasons. This article covers each of these seasonal issues and provides solutions that will help drivers remain safe throughout the entire year.

### **Spring**

Spring is such a wonderful time of year. For many, this is the season of renewal. The weather is getting warmer, flowers are blooming, the rain is falling and, as a result, cars are hydroplaning. Spring brings a set of specific driving dangers and challenges.

### ***Rain***

April showers bring May flowers and hazardous driving conditions. The steady and prolonged rainstorms associated with spring create challenges on the roadways. Each of these will be addressed separately.

### ***Lights***

Many vehicles have daytime running lights (DRLs). This is fantastic. Having lights on in the front of the vehicle decreases the risk of a vehicle-to-vehicle daytime frontal collision by 25%. If you do not have DRLs, turn on your headlights. If you have a vehicle that has the “auto”

position on your light switch, you need to be cautious during inclement weather. If you have an “auto” position, all you need to do is place the switch in this position and the lights turn on automatically when it begins to get dark. There is a sensor on the dashboard that detects darkening conditions and automatically turns on the vehicle’s headlights and taillights. What you need to be aware of is that, during normal lighting conditions, only the DRLs will be illuminated in the front of the vehicle. If it begins to rain, or if there is fog, it may not get dark enough for all of the lights to turn on automatically. In bad weather, you definitely want your taillights lit. You want to be visible to those who are approaching from behind. A simple rule to follow is: Wipers on/Light switch on. For those areas that have a “lights on during bad weather” law, DRLs do not fulfill the requirement. You must turn on all of your lights.

### ***Wipers***

Most drivers realize that they need to replace their wiper blades when they turn on their wipers and they aren’t getting the job done. There are streaks and gaps and the wipers are jumping across the windshield like a squirrel that has just downed a double-shot espresso. Typically, the next time that these same drivers remember that they need to replace their wipers is the next time it rains and they can’t see a thing. Get into the habit of replacing your wipers at the beginning of each season. By doing so, you will be assured that you will be able to see where you are going when there is bad weather. This will help you avoid all of those other drivers with worn out wiper blades.

### ***Tires***

If we all lived in areas where we always had dry clean road surfaces to drive on, the safest tires we could have on our vehicles would be racing slicks; in other words, smooth tires that have no tread. These tires provide a greater amount of tire to road surface contact and therefore provide more traction. The reason we have tread on our tires is because we do have to drive in rain, fog, slush and snow.

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The tread design helps the tire to cut through and dissipate the moisture, snow, mud, slush etc. This tread design will only work properly if the tire is inflated properly. Check your owner's manual, the inside of the vehicle's door jam, or the sidewall of the tire to determine what the proper air pressure is. To avoid a false high reading, always check the tire when it is cold. Considering that a tire's air pressure can change with the hit of every chuck hole on the road, it is important to get into the habit of checking your vehicle's tire air pressure on a weekly basis. Also, you want to be certain that the depth of the tread is sufficient. You may have heard of using a typical U.S. penny to check the tread depth. If you place the penny into the tire tread and the top Lincoln's head is exposed, there is not enough tread for the tire to work effectively in bad weather. Replace that tire.

### ***Hydroplaning***

Hydroplaning occurs when one, two, three or all four of your vehicle's tires ride on top of the water, thus losing contact with the road surface. If all four of your tires are hydroplaning, unless you have a rudder for your vehicle, you have lost control. The two tires that typically hydroplane first are the front tires. This stands to reason, considering that they are the first to encounter the water. The rear tires usually track behind the front tires after the water has been dissipated by the front tires.

Hydroplaning occurs for a number of reasons. The most common cause of hydroplaning is speed. The faster a vehicle travels, the more water it encounters and the less time the tread has to disperse the water. A simple solution is to slow down. This seems simple enough. However, the mistake that many drivers make is not allowing more time to arrive at their destinations when it is raining. As a result, they will drive at the same speed on the wet road as they would on a dry road. To make matters worse, in the likely event of a weather-related crash, the traffic is going to be backed up, and once the driver clears the crash area, will now drive even faster to make up for the time lost due to the heavy traffic. All of this was probably created by a driver who failed to allow more travel time, even though it was raining. It's all one big, ongoing weather-related crash zone.

Another reason hydroplaning occurs is due to improperly inflated tires. As stated earlier, it is very important to check the vehicle's tire pressure. If a tire is underinflated, the center of the tire will suck in allowing only the edges to touch. If the tire is over inflated, only the center of the tire will make contact.

High water is another reason why vehicles hydroplane. Avoid driving in puddled areas, especially at higher speeds. Scan well ahead and look for water being thrown up by other vehicles in order to determine where these areas of high water are located.

Do not use cruise control when it is raining. If a vehicle hydroplanes, and the cruise control is set, it may give the cruise control a false reading and the vehicle will actually accelerate at a time when power should be decreased to the drive wheels of the vehicle.

If you find yourself in a hydroplane, come off the gas, do not over steer the vehicle and reduce your speed gently. You do not want to apply heavy brake pressure. Stab lightly at the brakes in quick successions in order to reduce the vehicle's speed.

### ***Allergies***

Another challenge created by the spring season is allergies. Every year, there are reported instances of "sneeze accidents." These collisions occur when a driver experiences a series of sneezes in a row while they are driving. Drivers involved in these incidents have been known to swerve off the road, into other traffic lanes and have struck other vehicles from behind. If you find yourself sneezing, try to hold the wheel steady and avoid any unintended quick steering maneuvers.

Another situation that is created by allergies is impaired driving due to allergy medications. These medications may be purchased over the counter or they may be prescribed medications. Either way, they can, and do cause impairment behind the wheel. Many drivers are surprised that they can be charged for driving under the influence by simply taking an allergy medication. Read all warnings on all medications. Ask your doctor or pharmacist about the risk of impairment. Lastly, if you are taking a medication for the first time, take it at a time when you do not have to drive. You want to see what effect the medication has on you prior to getting behind the wheel.

### **Summer**

AHHH—The good old summertime! For many, this is the time for vacation. The time of year when you can get away from work and get some much needed rest and relaxation. You spend time with your family and recharge your battery. This is also a time for drunk driving due to summer holidays, sporting events and backyard barbecues. During the summer you can also count on sudden and severe weather, more pedestrians on the roads and fatigue-related crashes. Not exactly a Beach Boys song, but it is the reality of this season.

### ***Vacation***

Driver safety typically does not come to mind when people are thinking of vacation. However, understanding the risks associated with driving to, from and while on vacation can prevent a vacation from turning into a nightmare.

### **Fatigue**

There are many drivers who, when driving to a vacation destination, refuse to stop for a rest. They believe that any time spent stopping will decrease the amount of their expected vacation “fun” time. The fact that the rest of their family requires a much-needed break means nothing to this marathon driver. This is not only inconsiderate; it is just plain unsafe. Fatigue can come upon a driver very rapidly. A fatigued driver is just as dangerous as an alcohol, or drug-impaired driver. There are a number of tricks fatigued drivers will utilize in order to combat their impaired condition. Rolling the windows down and turning the air conditioning to the arctic setting, turning up music to high levels, and consuming mass quantities of caffeinated beverages are all very common. Drivers who utilize these methods are commonly cold, suffer hearing loss and urgently need to utilize restroom facilities, but they are still tired. The only true way to combat fatigue is to rest. If you have not had enough sleep, do not drive. Even if you have had enough rest, you should stop at least every two hours. Some will argue that, if they stop that often, they will never get to their destination. If they don’t stop, they may very well not arrive at their destination at all. Vacation crashes related to fatigue are unfortunately all too common.

### **Sudden and Severe Weather**

Summer thunderstorms create obvious and unique driving hazards. If you encounter a torrential downpour, turn your light switch to the full on position, slow down, and consider finding a safe place to legally park. Get off the road at the nearest exit and find a safe parking lot to sit in until the storm blows over. For obvious safety reasons, do not park under trees and power lines. Avoid stopping along the side of the road. Crashes occur when other drivers see vehicles on the side of the road, and due to the decreased sight distance caused by the storm, assume that this is a travel lane. If conditions are so severe that you are having difficulty seeing the hood of your vehicle, you must understand that other drivers are going to have trouble seeing you. In these conditions consider turning on your vehicle’s emergency flashers. Some areas have laws that forbid the use of emergency flashers while driving. Common sense must prevail here. Consider your conditions and decide what the safest course of action is.

### **Summer Events and Alcohol**

Parties, picnics and sporting events are very common summer activities. For many of these, alcohol is included as the beverage of choice. As a society, we are geared towards this. Think of all of the advertisements that depict people at summertime gatherings having a great time as they drink down icy cold alcoholic beverages. They all

appear to be having the time of their lives, and the beverages play a large role in these fun festivities. At the end of many of these advertisements, there is a quick statement that tells us to “Please drink responsibly.” These notices are similar to car alarms; nobody pays attention to them. Every driver has to make the decision to not drink and drive. It is truly a personal decision. The difficulty with summertime gatherings is that consuming alcoholic beverages is the norm. Many people feel left out if they don’t participate. This leads to drunk driving, and this leads to motor vehicle crashes and all of the associated hardships.

Judgment is one of the first things affected by alcohol. There are numerous accounts of people who become aggressive and loud after drinking. These people won’t back down and have been known to pick on the biggest, meanest and strongest person they can find. Many times these people have their heads handed to them, but at the time, due to their alcohol related impaired judgment, these inebriated pugilists actually thought they would win. The same is true with impaired judgment regarding driving. People who drink think that they are capable of safe driving. They think they are “all right” to drive. This is the alcohol talking. Considering that judgment is impaired as soon as we begin to drink, arrangements need to be made prior to the first drink. Plan to stay at the location of the event, have a designated driver, or have it arranged that a cab will be called for you. If you are hosting an event, it is your responsibility to make sure others do not attempt to drive after they have consumed alcohol. Let your guests know ahead of time that this is a requirement at your event.

As drivers, we need to be on the lookout for impaired drivers. This is especially true during the holidays and when driving in the vicinity of sports venues. If you see any of the following driving activities, it is very possible that you are witnessing a drunk driver:

- Weaving within a lane from the center line to side marker line
- Fluctuations in speed for no apparent reason
- Erratic braking
- Last-second stops for red lights and stop signs
- Failure to pull away when a light turns green
- Cutting corners wide and cutting corners short
- Failure to dim high beam lights at night
- Driving with no lights or just parking lights at night
- Tailgating you and following your every move

If you spot a suspected drunk driver, and they are in front of you, keep them there. You do not want to pass a suspected impaired driver. If they are in front of you, they can’t hit you. If you want to notify the police, pull off to a safe place and provide a description of the vehicle and the route of travel. Do not get too close. Drunk drivers are dangerous and unpredictable.

### ***Motorcycles, Bicycles and Pedestrians***

With warm weather, there is an increase in the number of motorcyclists, bicyclists and pedestrians using our streets. The best advice that can be given to avoid conflict with these individuals is to look more than once. In other words, when you come to an intersection, get into the habit of scanning often to make sure that you have not missed seeing an approaching motorcycle, bicycle or pedestrian. They are much harder to see than a typical car, and they may blend into the surroundings. Be aware of this and be diligent. Also, use caution when driving in areas where there may be increased pedestrian activity, such as parks and pool areas.

### **Autumn**

Fall is such a wonderful time of year. For many there is a change in the weather. The leaves are changing, there is a crisp coolness in the air and the holiday season is approaching. This season also means that school is back in session, leaves are on the roadways, frost is on windshields, and the deer are on the move.

### ***Schools in***

This means buses, increased pedestrian traffic in school zones and overloaded and stressed schedules for parents that have children who are involved in school activities.

Learn the school bus routes in the areas where you drive. Plan your route accordingly so that you can avoid getting behind a bus that makes frequent stops to pick up and drop off school students. Besides not being delayed by the bus, you can avoid the inevitable likelihood of a kid in the back seat of the bus making faces at you.

Watch for children going to and from school. May times they are distracted by one another and they may not be doing everything necessary in order to remain safe. Use extra caution.

If you are the parent of a child who is involved in school activities, you understand the stress associated with making sure that the kids are dropped off and picked up from their activities in a timely manner. If you have more than one child involved with school activities, you may want to consider being cloned. Since cloning is not a viable solution, consider arranging your work schedule so that you minimize those times where schedules are tight. Also, enlist the help of relatives, neighbors and other parents. You cannot be at two places at once. Ask for help.

### ***Leaves***

The fall foliage is very pleasant to look at. However, when the leaves begin to fall they can mix with moisture on the roadway and create slick conditions. Be aware of this and adjust your driving accordingly. Slow down on curves

where there are overhanging trees and watch for leaf-covered intersections where it may be difficult to stop.

### ***Frost***

Frost on vehicle windows drastically cuts down on visibility. The obvious solution is to scrape your windows and/or let the vehicle run until they are defrosted. However, how many Times have you seen somebody driving down the road with the only cleared-off area directly in front of the driver, and it is about the size of an orange? Take the time to clear your windows. Get up earlier if you have to make sure you have the time to accomplish this task. The few minutes it takes to clear off the windows of your vehicle could save you or someone else a life.

### ***Deer***

Autumn is the time of year when deer go into rut. In other words, this is their breeding season. During this time, they are more active, and, as a result, they are on roadways a great deal more. Also, in many areas, this is the time of year when deer hunting season occurs. This will also cause deer to be on the move. If you encounter a deer on the road, avoid the urge to swerve. Many drivers have become involved in more severe crashes as a result of trying to avoid a deer collision. Slow down in the areas where you know there are higher deer populations. Many times these areas are indicated by deer crossing signs. Use your high beam lights as much as legally possible at night and watch for their reflective eyes. If you see one deer, expect more. They are herd animals.

### **Winter**

Winter is such a wondrous time. The joys associated with the holidays, the cool weather and all of the year-end events. Winter also brings issues with weather, impaired driving associated with holiday parties", snow birds" and year-end work related pushes.

### ***Slipping and Sliding***

With the onset of frozen precipitation, there is an obvious increase for the risk of skid related crashes. There are basically three skids that are associated with winter driving. They are the oversteer, the understeer and the all-wheel skid. Each of these will be addressed separately.

### ***The Oversteer***

This is the situation where the rear of your vehicle spins to the left or right. In this situation, come off the gas and don't touch the brake. Turn your steering wheel in the direction of the skid. In other words, if the rear of your vehicle slides to the right, turn the steering wheel to the

right. If it turns to the left, turn the steering wheel to the left. Turn the wheel far enough to bring the vehicle back to a straight path. As soon as the vehicle is straight, recover your steering back to center. This will prevent you from going into a secondary skid.

### ***The Understeer***

An *understeer* occurs when you try to turn your vehicle but the front end plows out in a straight line. This happens at bends in the road, on ramps and when attempting to make turns. In this situation, look where you want to go. This may sound unimportant, but if you look where you want to go, you will react. If you stare at the area where the vehicle is plowing out towards, you may freeze up. Come off the gas. You can attempt to slow down by stabbing lightly at the brake. Do not apply heavy brake pressure and do not oversteer the vehicle.

### ***All-wheel Skid***

This type of skid has been pretty much eliminated now that most vehicles come equipped with anti-lock brakes as standard equipment. An all-wheel skid occurs with a vehicle has standard brakes and a driver applies too much brake pressure and the tires lock up. Simply release brake pressure and the skid will end.

### ***Holiday Parties***

As with summer parties and picnics, winter holiday parties increase the risk of impaired driving. Follow the same guidelines discussed earlier in this article to avoid being an impaired driver and to avoid drunk drivers.

### ***“Snow Birds”***

For those who live in warm weather climates, you probably have an increase in population during the winter months. Just as the robins and geese migrate south, there is a migration of people who head south in order to avoid the cold winter weather of the north. Be aware of this increased traffic, of people who are driving in unfamiliar areas and of drivers who may have reduced skill levels due to age related reductions in hearing, sight and reflexes.

### ***Year-end Push***

For those who drive as part of their work, the end of the year often brings with it an increase in activity in order to meet year-end work demands. This increase in activity can lead to overloaded schedules, and distracted driving. Be realistic with your schedule and remain focused when you are behind the wheel. Understand that the most important task you accomplish each day is arriving home safely.

## **Final Thoughts**

Realizing that every season presents certain challenges, understanding those challenges and preparing accordingly will assist you with being safe. This article pointed out some of the hazards associated with each of the seasons. The areas where you drive may have specific hazards that you need to address. Driving is a skill that must be worked on every time you get behind the wheel. Be diligent, be safe and don't forget that you must adjust your driving to all of the seasonal conditions. You don't want to be accused of being afflicted with SDA.

# IDENTIFYING AND CHANGING BEHAVIORS THAT CONTRIBUTE TO TRUCK DRIVER INJURIES\*

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## Introduction

The cost of worker injuries has a significant impact on trucking operations. The impact goes beyond the cost workers compensation medical and indemnity. Injuries are a significant disruption to the lives of the workers and can take a good driver off the road. The cost of your worker compensation insurance could be double that of a competitor with the same size of operation. Not being able to control the costs of injuries has caused some trucking companies to go out of business.

Liberty Mutual's best practice studies, meeting with individual truckers, and comparing programs shows us companies can be run differently and have successful programs. Management styles and practices vary but common styles or safety program elements exist at companies with lower crash or injury rates. These are:

- Select drivers based on their history and ability to perform the job
- Establish and communicate expectations on how jobs should be performed
- Monitor performance against the expectations
- Provide feedback on performance
- Change behavior that does not meet expectations
- Document their policies and actions

This report will provide you with an understanding of the:

- Work activities responsible for injuries in the trucking industry
- Work activities your employees were engaged in when they were injured
- How your injury rates compare to other trucking operations
- Steps you can take to reduce the risk of injuries with your work force

Management actions, programs, policies, and involvement in the day to day activities provide you with a greater chance of reducing the potential for injuries compared with "driver training". Our report focuses on

specific steps you can take to reduce your cost of risk. Each company will need to identify tasks their drivers perform and have expectations for performing those tasks that reduce the potential for injuries. The report is intended to lay out a basic framework for a process to identify risk and reduce exposure.

## Trucking Industry Loss Sources

Liberty Mutual conducted a study of trucking injuries for the Standard Industrial Classification code 42XX. The study reviewed 5 years of injury data valued shortly after the end of the 5 year time period. There were 37,000 injuries with costs in the study. The 7,000 injuries with incurred costs (current paid and reserved) greater than \$9,999 were reviewed. The injury description allowed us to identify the task the worker was performing when the injury occurred.

Some injury activities have the same exposure across all types of trucking. The frequency of the task will vary by operation, such as LTL drivers, who enter and exit their vehicles more frequently than long haul drivers. Some tasks, such as tarp work, will be limited to specific types of operations and specific loads. Each of the activities identified should have a control plan when the work activity is part of the operation.

The tasks that were responsible for 2% or more of the total incurred costs are shown in Table 1.

## Comparing Injury Rates

Injury rates cannot be compared across all trucking companies due to the different work tasks and frequency of the common tasks. To understand how your injury frequency and costs compare to other truckers the comparison must be made to truckers doing the same type or types of work. This presents challenges when a trucking company has multiple operations or divisions.

To provide you with as close of a comparison as possible, we looked at trucking companies we insure and assigned a primary type of trucking based on our

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**TABLE 1**  
**Injury Work Tasks by % of Cost and Frequency**  
**Ranked by % of Costs**

| Activity                       | % of Injuries | % of Incurred Costs |
|--------------------------------|---------------|---------------------|
| Crashes (driving or riding)    | 17%           | 20%                 |
| Handling cargo                 | 14%           | 12%                 |
| Tractor entry and exit         | 11%           | 11%                 |
| Snow and ice fall              | 5%            | 5%                  |
| Parking lot or yard fall       | 5%            | 5%                  |
| Load securement                | 5%            | 5%                  |
| Landing gear                   | 4%            | 4%                  |
| Trailer doors                  | 4%            | 3%                  |
| Maintenance                    | 4%            | 3%                  |
| Driving (in cab ergonomics)    | 3%            | 2%                  |
| Trailer entry or exit          | 2%            | 2%                  |
| Forklift incident              | 2%            | 2%                  |
| 5th wheel                      | 2%            | 2%                  |
| Flatbed falls                  | 1%            | 2%                  |
| Tandems                        | 2%            | 2%                  |
| <b>Main Loss Source Totals</b> | <b>80%</b>    | <b>81%</b>          |
| <b>Grand Total</b>             | <b>100%</b>   | <b>100%</b>         |

information, company web sites and public sources. This information was used to calculate benchmarks for each of the major types of trucking.

Measuring injury rates will show what has happened and may not be a valid measure of risk. Performance measures discussed in the next section can will help you measure risk based on observing behaviors.

The data shown below represents the most recently completed policy year for the truckers with workers compensation coverage. This is the most complete data that would represent all truckers insured by our Commercial Market. The % of truckers by type will change from year to year and injury exposures can vary by year based on weather, business conditions and other factors. Mixed types of truckers will include multiple types of equipment and will frequently have other operations such as

dock and or warehousing. The loss valuation date will vary slightly by company which can impact the incurred loss rate but should have minimal impact on the claims frequency rates.

Tracking injury rates should be part of your internal process for establishing and tracking goals. Injury rates can be measured using miles, stops or loads. When your operations (type of equipment, length of haul, number of stops per load, etc.) have not changed, miles, stops or loads can be used. When operations change, the exposure measurements can be changed to allow you to measure injuries based on your operations. Goals should be set using a rate to adjust for an increase or decrease in business activity. The example below shows how injury rates could be tracked to show progress or changes over time.

**TABLE 3**  
**Injury Rates in Miles**

| Calendar Year | Miles driven | Total Injury Count | Lost Time Injury Count | Injuries per Million | Lost Time Injuries per Million |
|---------------|--------------|--------------------|------------------------|----------------------|--------------------------------|
| 2009          | 10,000,000   | 12                 | 4                      | 1.20                 | 0.40                           |
| 2010          | 9,500,000    | 12                 | 5                      | 1.26                 | 0.53                           |
| 2011          | 11,000,000   | 12                 | 3                      | 1.09                 | 0.27                           |

**TABLE 4**  
**Injury Rates in Loads hauled**

| Calendar Year | Loads hauled | Total Injury Count | Lost Time Injury Count | Injuries per 1,000 Loads | Lost Time Injuries per 1,000 Loads |
|---------------|--------------|--------------------|------------------------|--------------------------|------------------------------------|
| 2009          | 16,667       | 12                 | 4                      | 0.72                     | 0.24                               |
| 2010          | 15,833       | 12                 | 5                      | 0.76                     | 0.32                               |
| 2011          | 18,333       | 12                 | 3                      | 0.65                     | 0.16                               |

**TABLE 2**  
**Injury Benchmark Comparison**

| Type of Trucker                 | % of Truckers accounting for 5% or more of total | Total Claims w/ Cost Per Million Of Payroll | Indemnity Claims Per Million Of Payroll | Total Incurred Loss Per Million Of Payroll |
|---------------------------------|--|---|---|--|
| Full Load Vans                  | 34%  | 1.02  | 0.60                                    | \$18,096                                   |
| Mixed Types                     | 20%  | 1.67  | 0.83                                    | \$6,877                                    |
| LTL                             | 12%  | 2.33  | 0.94                                    | \$15,097                                   |
| Tanker and Dumps                | 11%  | 1.47  | 0.79                                    | \$30,992                                   |
| Moving and storage              | 7%   | 1.25  | 0.60                                    | \$10,538                                   |
| Flatbed                         | 5%   | 1.10  | 0.60                                    | \$23,311                                   |
| All Other Types Combined        | 12%  | 1.76  | 0.79                                    | \$24,050                                   |
| <b>Overall Weighted Average</b> |  | 1.43  | 0.72                                    | \$16,534                                   |

## Reducing Exposure to Injuries

Reducing the exposure to injuries requires attention in many areas. The headings outlined in the Executive Summary provide a framework for developing a strategy to compare your current programs and practices to those found at companies with lower injury rates.

### Select drivers based on their history and ability to perform the job

Crashes have a significant impact on the cost and frequency of injuries. Driving records have been shown to be a strong indicator of which drivers are more likely to be involved in crashes. Having selection criteria that uses past driving record histories, violations from the FMCSA PSP (Pre Screening Program) and work histories (number of companies worked for, references, past experience) help assure that drivers with a disregard for motor vehicle safety and company policies are not placed into positions that require the operation of motor vehicles.

In addition to operation of motor vehicles most driving jobs have physical demands. Some tasks are required by the FMCSA or state DOT such as conducting pre-trip inspections. In addition to the required tasks, drivers must be able to get in and out of the vehicles, open trailer doors, climb into or on to the trailer and perform tasks associated with securing loads or handling cargo. Trucking companies that identify the task, develop and communicate steps to be used to complete the task and verify drivers offered positions can perform the tasks have lower exposure to injuries have lower exposure to injuries.

### Have and communicate expectations on how jobs should be performed

Having and communicating work task expectations is more complex than providing training. The concepts and theories outlined in commercially available training materials must be an integral part of your company expectations. Drivers engage in a variety of tasks that use the same part of the body. To reduce the potential for drivers sustaining injuries from overuse that occurs over a working lifetime, tasks must be performed in a way that reduces the impact on their bodies. Drivers that jump from a vehicle or off the last step of the vehicle are more likely to sustain injuries over time than those that face the vehicle and step down while maintaining 3 points of contact. In addition drivers that do not exit a vehicle put additional stress on the body when reaching behind them as the climb down facing away from the vehicle.

Each work task a driver is expected to perform should be reviewed and the steps of that task outlined and documented. Tasks that have higher risk should be avoided when possible. Not all tasks can be eliminated

and injuries from tasks such as entering and exiting the vehicle are typically a result of how the task is performed. Identifying the task components, documenting how the tasks should be performed and effectively communicating the task expectations helps assure drivers understand the risk and how they are expected to complete the task required of them.

### Monitor performance against the expectations

Once expectations have been developed, documented and effectively communicated actual work practices must be compared to the expectations in a quantifiable way. Monitoring performance with observations or through the use of technology allows you to measure risk. This can be on an individual level or to measure overall compliance with the expectations. Observations on a larger scale can be used to identify compliance with a group of expectations to identify task to focus on during future observations.

Some driving behaviors that can contribute to serious types of crashes can be identified by looking at driver performance data. The data can be gathered by downloading ECM data or using GPS tracking data. Some satellite systems will combine the two data sources. When data is available it can be used to look for the following:

- Compliance with route plans to identify drivers that are off route using additional fuel or taking routes that have higher crash potential.
- Speeding- speeds above posted may be a stronger indicator of crash potential than total speed on a freeway. Drivers traveling at 50 MPH in a 35 MPH zone may have higher crash potential than drivers operating at the top governor speed. Relying on governors may not be effective in reducing speed related crashes.
- % of time in cruise control when combined with brake actuations per 1,000 miles may identify drivers with frequent speed changes that can be an indicator of drivers that do not maintain adequate following distance
- Sudden decelerations or hard braking incidents can be another indicator of drivers which do not have adequate look ahead when driving

When driver performance data is available and can be used to compare drivers operating similar equipment, with similar loads on similar routes, drivers with habits that use extra fuel or make crashes more likely can be identified.

Observations on your property, on streets near your property or during in-vehicle observations can also be used to identify performance that does not meet expectations. If drivers are not performing tasks as expected when in your yard or on your property it is unlikely they will

perform tasks as expected once they leave your property or lot. The tasks to be observed should be based on the main injury producing tasks identified in our study, on past observation results and work task activities identified in a review of your past injuries. Key areas to observe would typically include tasks outlined below and can be summarized in a spreadsheet program to measure the % safe.

Provide feedback on performance

Noticing or measuring driver performance will have little impact on performance unless drivers receive feedback on how their performance compares to the expected performance. Driver scorecards can be used for vehicle operation performance to show a driver how they compare to the median or middle of the pack driver.

Driver feedback on work tasks is typically most effective when the task is being done or as soon after as possible. Conversations and follow up actions should be documented so drivers not performing tasks as expected can be identified. Some performance will be more and should have stronger actions or consequences. The tolerance for performance that does not meet expectations will vary by task. Performance that would indicate stronger responses from management include texting while driving, following too close or failure to use vehicle restraints.

Not observing performance or not addressing behaviors not meeting the documented expectations is a form of feedback. This feedback tells drivers how they are performing a task is acceptable. Managers and supervisors must be engaged in the process of providing feedback to reduce the risk of injuries.

Change behavior that does not meet expectations

Most crashes and injuries in the trucking industry are caused by behaviors rather than a lack of knowledge.

Addressing performance that does not meet expectations with “retraining” is not likely to have significant impact on behaviors or injury rates. Coaching drivers on how to perform tasks helps reduce the risk of injury from accumulated abuse or overuse of parts of their bodies. Where drivers will not perform tasks as expected, a progressive discipline system should be used to reduce the risk of injury for their sake and the companies.

Document policies and actions

Performance measurement and improvement systems function best when the expectations, measurements and coaching discussions are documented. Expectations which are kept brief enough to tell the story and illustrated with pictures showing how task should be performed help assure drivers understand how they are expected to perform their work tasks. Practical or written tests help assure the knowledge was gained and show workers the company believes an understanding of the knowledge is an important job skill. Pre-injury risk measures (% safe behaviors) help identify risk prior to an injury occurring and will change over time and as operations and equipment changes. Documenting your expectations and activities help assure drivers receive a consistent message.

Program Elements

Program policies and practices typically found at companies with lower crash and injury rates include:

Select drivers based on their history and ability to perform the job

- Has MVR driving record criteria for current and prospective drivers that does not allow more than 3 moving violations in the past 3 years.

**TABLE 5**

**Sample Driver Observations**

| Observed work task              | Desired performance  | # of times performed as expected | # of times not performed as expected | % performed as expected |
|---------------------------------|--|----------------------------------|--------------------------------------|-------------------------|
| Tractor entry and or exit       | Driver has 3 points of contact, faces equipment, does not carry things when climbing and has proper foot and hand position on steps and grab bars.       | 8                                | 2                                    | 80%                     |
| Use of seat belts               | Seat belts are worn when vehicle is in motion or while on public roads.  | 12                               | 0                                    | 100%                    |
| Raising/ lowering landing gears | Driver uses wide stance, has firm grip on handle, keeps face away from handle and does not use 2 finger spin technique.                                  | 4                                | 1                                    | 80%                     |
| Post trip inspections           | Driver walked around rig prior to dropping trailer and looked at condition of the tractor and trailer.   | 6                                | 2                                    | 75%                     |
| Opening trailer doors           | Driver taps door to check for fallen cargo, stands to the side when opening the door, walks to the side of the door and secures the door to the trailer. | 3                                | 1                                    | 75%                     |

**TABLE 6****Sample Driver Scorecard**

| Driver Name                 | Sample Driver         |              |                             |                                 |
|-----------------------------|-----------------------|--------------|-----------------------------|---------------------------------|
| Date of Review              | 10-Nov-08             |              |                             |                                 |
|                             | Median                | Your Results | % of Median                 |                                 |
| Vehicle ID #                |                       | 108          |                             |                                 |
| Trip end date               |                       | 9/24/2008    |                             |                                 |
| Trip miles                  | 26516                 | 98183        | 370%                        |                                 |
| Fuel economy                | 7.34                  | 7.11         | 97%                         |                                 |
| Avg. drive load             | 50%                   | 56%          | 112%                        |                                 |
| Avg. vehicle speed          | 37.55                 | 50.7         | 135%                        |                                 |
| Driving %                   | 71.62%                | 74.49%       | 104%                        |                                 |
| Driving economy             | 7.56                  | 7.26         | 96%                         |                                 |
| Veh. Speed limiting %       | 6.03%                 | 14.62%       | 243%                        |                                 |
| Speeding A (66-71 MPH)      | 2650                  | 60673        | 2290%                       |                                 |
| Speeding B (>71 MPH)        | 20                    | 28295        | 141475%                     |                                 |
| Highest Speed               | 75.75                 | 83.0         | 110%                        |                                 |
| Idle %                      | 28.4%                 | 25.5%        | 90%                         |                                 |
| Stop idle %                 | 12.1%                 | 13.4%        | 110%                        |                                 |
| Hard brake count            | 32                    | 95           | 302%                        |                                 |
| Brake count                 | 27626                 | 55576        | 201%                        |                                 |
| Speeding B per 1,000 miles  | 0.75                  | 288.19       | 38208%                      |                                 |
| Hard brakes per 1,000 miles | 1.19                  | 0.97         | 81%                         |                                 |
| Brake count per 1,000 miles | 1042                  | 566          | 54%                         |                                 |
|                             | <b>Miles per year</b> | <b>MPG</b>   | <b>Fuel cost per gallon</b> | <b>Total Fuel cost per year</b> |
| Median                      | 80,000                | 7.34         | \$4.00                      | \$43,626                        |
| You                         | 80,000                | 7.11         | \$4.00                      | \$45,007                        |
|                             |                       |              | <b>Difference</b>           | <b>-\$1,381</b>                 |

- Has MVR criteria that does not allow for serious violations in the past 5 years.
- Has identified essential job functions and includes a driver's ability to do the job as part of the post offer pre-hire qualification process.

Have and communicate expectations on how jobs should be performed

- Company has a drivers handbook or manual that illustrates how driver tasks should be performed and covers all driver tasks shown in the trucking industry loss source section that are performed by their drivers.
- Driver handbook or manuals show company equipment and drivers performing tasks as

expected and illustrates actions to be avoided to reduce the potential for injury.

- Driver handbook or manual training uses a knowledge checker or practical application test to verify drivers have gained needed knowledge with documented testing protocols.
- Driving expectations include speed, following distance, use of seat belts and mirror alignment sections.
- Use care and inspections for of tools, personal protective equipment and work materials are addressed in the expectations.
- Driver expectations include equipment inspections and process for reporting defective equipment.

Monitor performance against the expectations

- Driving performance is measured using in-vehicle technology to verify drivers follow route plans, comply with posted speed limits and do not violate company policies on hours of operation.
- Observations are conducted to verify drivers are performing tasks as expected when working in yards or other areas of the property.
- Observations off site or at property entrances/exits are made to verify driver compliance with seat belt policies.
- Observations are a combination of working directly with drivers and observations conducted at a distance when drivers do not know they are being observed.
- Driver performance is evaluated in multiple areas to identify drivers most in need of attention or closer supervision.

Provide feedback on performance

- Observations are summarized to measure the % of drivers observed performing tasks as expected.
- Goals are established for % of safe (i.e. performing tasks as expected) behavior.
- Drivers receive individual feedback on observations to coach them on performance that does not meet expectations and on performance that meets expectations to reinforce performing tasks as expected.
- Making observations is part of all managers and supervisors jobs to identify performance that does not meet expectations.

Change behavior that does not meet expectations

- A progressive discipline system exists to assure that repeat performance that does not meet expectations is addressed.

- The progressive discipline system involves actions in addition to “retraining” when performance issues have been identified.
- Coaching sheets or other documented materials are used to verify that all managers or supervisors providing feedback are delivering a consistent message on how work tasks should be performed.

Document their policies and actions

- Work task expectations are documented using company equipment to show how work tasks should be performed.
- The observation process has records showing when they were conducted and actions taken to follow up on performance meeting and not meeting expectations.
- Training and policy communication are documented to show names, date and content of the communication.
- Equipment and facility inspections are documented and corrective action is documented when actions are needed to reduce exposure to injuries.

*Our loss control service is advisory only. We assume no responsibility for management or control of customer safety activities nor for implementation of recommended corrective measures. This report is based on information supplied by the customer and/or observations of conditions and practices at the time of the consultation. We have not tried to identify all hazards. We do not warrant that requirements of any federal, state, or local law, regulation or ordinance have or have not been met.*

