

## **Hazmat Shipping: Must-Know Issues for the SH&E Manager**

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### **What's the Big Deal?**

Due to the heightened security concerns and recent hazmat transportation incidents, the shipping paper has come under more scrutiny by the U.S. Department of Transportation (DOT) and state inspectors now more than ever before. Today shippers, as well as carriers are being asked to demonstrate that they have complied with all the regulations for preparing their hazardous materials for shipment. Moreover, of the 304 civil enforcement actions closed from May 2005 to April 2006, 215 were shippers in violation of one or more of the hazmat regulations. The price that they are paying is going up. The Safe, Accountable, Flexible, Efficient Transportation Equity Act of 2005 raised maximum civil penalty amounts to \$50,000/day/incident (\$100,000/day/incident for serious violations). It's not just the company logistics manager that has to worry.

### **The Power of the Paper**

The hazmat regulations do not restrict who can sign the shipping paper. It is not uncommon for the SH&E professional to have responsibilities for managing hazmat transportation. Whether it is a shipment of hazardous waste, the movement of raw materials into the field or another site, or the movement of unwanted surplus chemicals to another person, SH&E managers are signing shipping papers. Even though hazmat compliance may be an ancillary function, the consequences are significant for both the SH&E managers and their organizations.

The DOT requires that each shipment accompanied by a shipping paper must contain a certification on behalf of the shipper. The words are few (34-46 depending on which one you choose), but significant:

I hereby declare that the contents of this consignment are *fully* and *accurately* described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded and are in *all respects* in proper condition for transport according to applicable international and national governmental regulations. [49 CFR 172.204(a)(2), emphasis added]

With each shipping paper and each signature, the SH&E manager asserts that everything to do with that hazmat shipment has been done 100% correctly, according to DOT's rules, period. Even more disconcerting it is unlikely that the SH&E manager has personally done all the functions

himself thereby relying on others to do the job—and do it correctly. The need to know that everything has been done correctly is essential. In fact, the DOT considers the person affixing the certification signature to be a “hazmat employee” and therefore subject to the training requirements in the hazmat rules [49 CFR 172, Subpart H].<sup>1</sup>

The level of function-specific training that a person signing the shipping paper must complete is significant. He must know all the aspects of classifying, packaging, and communicating hazardous materials. After all, if you don’t know what’s required, how do you now someone else has performed their functions correctly? The following will provide SH&E managers with an overview of the hazmat shipping process from classification through loading. Along the way, we’ll identify the common mistakes and oversights made by shippers. We’ll also identify key management strategies that may be easily implemented to help you reduce risks conserve resources, and save time.

## Overview of the Hazmat Rules

Perhaps the first question that must be answered is, “Do the DOT hazmat rules apply?” The DOT requires compliance when the following four criteria are true:

- Transportation of
- Hazardous Materials
- In commerce
- By aircraft, rail car, vessel, or motor vehicle along a public highway

### Hazmats Defined

The DOT defines a hazardous material as, “a substance of material, which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, *and which has been so designated...*” [49 CFR 171.8, emphasis added]

The DOT designates hazardous materials primarily by defining hazardous properties that they regulate. These properties are categorized into hazard classes and divisions (e.g., Class 3 – flammable liquids). However, also included in the DOT definition are miscellaneous materials that may or may not be considered hazardous in the general sense. This includes hazardous wastes and substances defined by the U.S. EPA, marine pollutants, and certain materials simply named by DOT as being hazardous.

The following table summarizes the classes of hazardous materials defined by DOT:

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<sup>1</sup> “Letter to Mr. William K. Taggart, Reference No. 2-0050.” U.S. DOT, Research and Special Programs Administration, May 31, 2002

<b>Class and Division</b>	<b>Name and Description</b>	<b>49 CFR Reference</b>
None	<b><i>Forbidden materials</i></b> Electrical devices likely to create sparks or heat, heavily magnetic materials for air shipment, incompatible materials in the same package, materials that may undergo self-accelerated decomposition, ketone peroxides, etc.	173.21
1.1 through 1.6	<b><i>Explosives (with a mass explosion hazard)</i></b> Mass explosion hazards; projection hazards; predominantly fire hazard; no significant blast hazard; very insensitive explosives; extremely insensitive explosives.	173.50
2.1	<b><i>Flammable gas</i></b> Is a gas at 68°F and burns readily in air.	173.115
2.2	<b><i>Non-flammable compressed gas</i></b> Gas shipped at a pressure $\geq$ 41 psia or as a cryogenic liquid which is neither flammable nor poisonous.	173.115
2.3	<b><i>Poisonous gas</i></b> Is a gas at 68°F and has an LC <sub>50</sub> < 5000 ml/m <sup>3</sup> (i.e., one half of one percent concentration in air will kill half of the animals in a laboratory test).	173.115
3	<b><i>Flammable liquid</i></b> Liquid with a flash point $\leq$ 140°F (100°F for domestic transportation by rail or highway). Flash point is the temperature at which a liquid gives off enough vapor to ignite and “flash” back to the liquid surface.	173.120
3	<b><i>Combustible liquid</i></b> Liquid with a flash point < 200°F.	173.120
4.1	<b><i>Flammable solid</i></b> Wetted explosive; OR strongly exothermic decomposition; OR either ignites through friction (e.g., matches) OR burns very fast when ignited.	173.124
4.2	<b><i>Spontaneously combustible material</i></b> Spontaneously ignites within 5 min. on exposure to air or can either heat to over 200°C or spontaneously ignite within 24 hrs.	173.124
4.3	<b><i>Dangerous when wet material</i></b> Spontaneously ignites or emits flammable or toxic gasses when contacted with water.	173.124
5.1	<b><i>Oxidizer</i></b> Causes or enhances combustion of other materials (e.g., sodium nitrite, oxygen gas, hydrogen peroxide).	173.127
5.2	<b><i>Organic peroxide</i></b> A specific chemical group that is generally reactive.	173.128
6.1	<b><i>Poisonous materials</i></b> Solids or liquids that are poisonous by ingestion, inhalation or skin contact.	173.132
6.2	<b><i>Infectious substance (etiologic agent)</i></b> Disease causing organisms, tissue, or body fluid samples for medical	173.134

<b>Class and Division</b>	<b>Name and Description</b>	<b>49 CFR Reference</b>
	diagnosis, biological products, and medical wastes.	
7	<b><i>Radioactive material</i></b> Specific activity listed for individual radionuclides at 173.435 and 173.436. For unlisted isotopes, use formula at 173.433.	173.403
8	<b><i>Corrosive material</i></b> Dissolves steel or aluminum or destroys skin tissue.	173.136
9	<b><i>Miscellaneous hazardous material</i></b> (If no higher hazard) Anesthetic or noxious or similar hazard to crew of an airplane. Material that is shipped hot. EPA-regulated hazardous waste or hazardous substance, MARPOL marine pollutants, plus other materials specifically listed by the U.S. DOT.	173.140
ORM-D	<b><i>Other regulated materials: ORM-D</i></b> Small quantities of hazardous materials in secure packages classed down because of the limited hazard presented.	173.144

### In Commerce

The DOT takes a fairly broad interpretation of “in commerce” for purposes of the hazmat rules. Essentially, the DOT has indicated that materials are transported in commerce if it is being done to further a commercial enterprise. This can include shipments of:

- Products to distribution centers or directly to customers
- Wastes
- Raw materials or intermediates to/between facilities

### The Offering Process

The hazmat rules are fairly prescriptive. A careful study of the rules shows that there is a specific sequence that you must follow from the initial intent to ship through the loading, transportation, and unloading. Unfortunately, the rules are not written in sequential order. To properly manage the shipping process (from classification to loading), the SH&E manager needs to understand this process—not only to know who is responsible for what, but also to know what each of those persons must depend on to do their functions properly. This process will help the manager find weaknesses and implement corrections, as needed.

To assist students in our training workshops, Lion Technology Inc. has created a mechanism called The Ten Steps™. The following is a brief summary of those steps:

1. Classifying
2. Selecting a proper shipping name
3. Selecting a package
4. Marking and labeling each package
5. Preparing the shipping documents
6. Providing and using placards
7. Transporting (includes loading and unloading)
8. Preparing for and responding to emergencies

9. Administration
10. Keeping up with changes and training

This is simply a guideline or roadmap directing the shipper along the road from initial intent to offer a material for shipment through its entry into transportation and arrival at its destination, as well as identify support and administrative responsibilities. We will highlight some of the most common pitfalls, oversights, or misconceptions along this road that plague shippers – those that the SH&E should anticipate and plan for.

## Classification

There are two fatal mistakes shippers can make regarding hazmat shipments:

1. Under classifying—Failing to declare a material as hazardous, or failing to identify all applicable DOT hazards, and
2. Over classifying—Identifying DOT hazards that do not apply

As indicated above, everything done in the hazmat shipping process is based on the DOT hazards that apply. It is the keystone. A review of DOT's enforcement guidelines indicate the significance that they place on proper classification. The list of frequently cited violations at 49 CFR 107, Appendix A, identifies undeclared shipments as having a baseline penalty of \$15,000 and up per violation. No other listed penalty has a higher base amount (remember the maximum penalty can be as high as \$50,000/day/incident).

To be successful at classifying, the shipper must identify *each* material being offered and identify *all* DOT hazards for each of those materials. You must determine if you are shipping a single material that is a mixture of different constituents or a package that actually has different materials each with their own properties. Once you've identified what you are shipping, then you can determine if it is a DOT hazmat and identify its hazards.

### Testing Vs. Knowledge

It is not necessary to *quantify* or measure every property of a material or identify 100% of the constituent make up in order to classify it under the DOT rules. You must determine whether the properties of the material cause it to meet or not meet hazard class definitions.

Most of the hazard class definitions provide specific thresholds that may be measured. To determine whether a material meets one of these hazard class definitions, all you need to know is whether the material is *above* or *below* the threshold—the *actual number* may not be significant.

In many cases, these determinations can be made based on “human experience,” without actual laboratory analysis. For example:

- If you know that a material has a flashpoint below 60° C (140° F), it is a DOT flammable liquid (Class 3). You don't need to determine the *actual* flash point. Do you know the actual flashpoint of gasoline? Probably not. But do you at least know that it's less than 140° F?
- If you know that a material is used in high concentrations in food, you can probably assume it to have minimal, if any, toxicity.

- A material that destroys skin tissue if in contact with the skin for 3 minutes or less is classified as a Packing Group I corrosive material (Class 8). Do you know how long your caustic cleaning solution actually takes to destroy skin? Maybe not. But do you at least know that it would definitely take longer than 3 minutes of contact to destroy the skin? If so, you know it's not PG I.

Before spending more money on laboratory analysis, the SH&E manager should gather all the existing data on the properties of the materials that will be shipped. This “data” may include information from internal experts that have extensive, trustworthy, knowledge on the material you are looking to ship. This effort may save you not only money, but it will also save you time.

### The MSDS

One of the common sources of knowledge that the shipper might have is the material safety data sheet (MSDS). The SH&E is likely very familiar with these documents as part of their site's workplace safety program. However one of the common pitfalls is that there is too much stock in this one document to provide us with all the answers to our regulatory questions. Unfortunately, while it does have value, there are limitations.

First, it is important to note that the MSDS is primarily a workplace safety document, not a transportation document. What might be “hazardous” under one program may not be under another. For example, flammable liquids are defined under OSHA's general industry standards as those liquids with a flash point < 100°F (37.8°C). The DOT threshold for flammable liquids is ≤ 60°C (~140°F). The SH&E manager must be careful not to automatically transfer a hazard designation from one program to another.

It is also important to remember that the MSDS was prepared by the manufacturer for the properties that the material had as it was produced by them. The SH&E manager must determine if those properties are transferable to the material they are offering for shipment. Common pitfalls to avoid include:

- The shipment of a mixture of constituents— be careful in trying to classify your material based on the properties identified in the MSDSs for the separate constituents.
- The shipment of a material that has changed— this may be common for wastes. For example, the flash point of a spent solvent blend may be different from that of the unused product.

Remember: you cannot be safe and over classify. You must identify the properties of the material you are shipping, product or waste, and determine which DOT hazard criteria are satisfied.

### Shipping Hazardous Wastes

Again, be careful. What is hazardous under one program may not be in another. Case in point – hazardous wastes. The DOT defines hazardous wastes as those which are, “subject to the Hazardous Waste Manifest Requirements of the U.S. Environmental Protection Agency specified in 40 CFR Part 262.” [49 CFR 171.8] There are special communication and classification requirements under the DOT rules when you ship a hazardous waste. However, it must be hazardous waste, as defined by DOT.

This is important to remember when you manage wastes that are hazardous under a state program, but not under the Federal hazardous waste rules. In some of these situations, the waste

may not meet any of DOT's hazardous materials criteria. For example, a common flea killing product has an oral LD50 of 1943 mg/kg. This material would be a hazardous waste in California [22 CCR 66261.24]. It is neither a hazardous waste under Federal rules, nor a hazardous material under DOT rules.

## Packaging

From May 2005 to April 2006 89 of the 215 civil penalties for shippers were for packaging violations. These violations fell, primarily, into two categories:

- Unauthorized packaging
- Improper closure

### Authorized Packaging

By now, most— if not all—SH&E managers that deal with hazmat shipments are familiar with the manufacturer markings for UN-type performance-oriented hazmat packagings.

For combination and solids packagings:

Ⓡ4G/Y25/S/06/USA/VL824

For liquids packagings:

Ⓡ1A1/Y1.4/150/06/USA/VL824/1.0mm/208

Unlike the days of specification packagings, not all “UN” packagings are the same. The good news is that there is greater flexibility in the manufacturing of non-bulk, and some bulk, hazmat packagings. The bad news is that the shipper still has to get the right packaging for their material. This now requires a thorough understanding of both the material that you are shipping as well as the packaging specifications.

Beyond some of the basics, such as whether it is a “UN” type of package and if it is an authorized type of package (i.e., 4G vs. 1A1, etc.), there are other components of the marking that have to be understood to select the correct packaging. These include:

- Packing group—The markings will have either an “X,” “Y,” or “Z.” The packing group of the material or waste you are shipping will determine which markings will be appropriate for you. Packing group I materials can only be shipped in authorized packagings marked with an “X” in the certification marking. Materials with a packing group II can go in packagings marked as “X” or “Y.” Packing group III materials can go in authorized packagings with any of the markings (X, Y, or Z).
- Maximum mass or volume—If you are shipping a solid or a material in combination packaging, the manufacturer certification will indicate the maximum mass of the completed package (i.e., all of the packaging and material) immediately following the packing group performance standard mark. For liquids packaging, the manufacturer may (optional) include the maximum volume for which their certification applies. Plan ahead – know how much you need to ship and be sure that the package has the capacity. If not, then you’ll either need to get more of the same packaging, or acquire different packaging from your suppliers.

- Specific gravity—The standard performance tests are set up for materials with a relative density to that of water. These tests will not adequately assure strong packages for liquids that have a greater density. If the liquids you plan to ship have a specific gravity greater than 1.2, then you will need to assure that the manufacturer has certified the package for liquids of that density. This marking is the value located after the packing group performance standard mark.
- Hydrostatic test pressure—This is a test required for non-bulk single packaging that contains liquids. It is the value represented after the packing group performance standard. The minimum pressure that must be tested will be based on your materials vapor pressure. There are requirements for determining this test pressure at 49 CFR 173.24a(b)(5) and 178.605. This determination will be based on your material’s vapor pressure. Be prepared to calculate the minimum test pressure, or work with your packaging manufacturer.

Refer to Appendix A for a more detailed explanation of the various elements to the packaging manufacturer’s certification markings.

### Are Your Package Fillers Prepared?

While it is critical to verify that you have the right package, it is equally important to be sure that it is used as intended (based on the manufacturer’s certification). The success of the latter is based solely on how prepared your package fillers are to fill and complete the package.

In many situations, what you receive from your supplier, in terms of packaging, is often incomplete. For example, you might have purchased a dozen UN 4G boxes. When you receive them at your facility, they might be unfolded and stacked on a pallet. You will need to fold/assemble them, include the cushioning materials and the inner receptacles, and add the closures (e.g., tape, staples, etc.). If this is not done in the same manner as the manufacturer did during the testing, you will technically have a different package. So how do you know if what you’re doing is correct?

The DOT requires the packaging manufacturer/supplier to provide a written notice [49 CFR 178.2(c)]. This notice must include:

- Any requirements under the packaging specifications that are not met at the time of transfer,
- Assembly and closure instructions,
- Type and dimensions of closures, and
- Closure requirements for inner receptacles

The shipper must be sure to obtain a copy of the instructions as well as any tools and resources needed to meet those instructions. For example, a steel drum manufacturer may provide written instructions on the type of closure (e.g. “Rieke” or “Tri-sure” style bung) and tightening requirements (e.g., “A 2 inch Tri-sure bung with rubber gaskets must be closed to 20 Ft. lbs.). In this scenario, the shipper will need to be sure that they have the correct bungs and that the filler has a means of ensuring that the drum has been tightened to these specifications (e.g., torque wrench).

These instructions should also be an integral part of their hazmat function-specific training. The SH&E manager should review what instructions are necessary and determine an effective means of assuring that the package fillers have access (e.g., maintain in a notebook, etc.).



## Shipping Your Hazardous Wastes

In general, the procedures that you follow for preparing a hazardous material for shipment are the same whether they are unused products or wastes. However, there are a few issues to be aware of regarding packaging options available for hazardous waste shipments.

One issue is the reuse of packaging for hazardous waste shipments. The rules at 49 CFR 173.12(c) identify 5 special rules for reusing packages for hazardous waste:

1. The package is authorized for shipping that waste and conforms to all the other requirements (e.g., marking, labeling, etc.); you cannot simply use any excess or surplus packages to ship your wastes. They must still be authorized for your material and meet the general packaging requirements at 49 CFR 173
2. The transportation is by motor vehicle
3. Don't ship for at least 24 hours after filling the package. This is a streamlined "leak proof" test. Typically, packages reused to ship liquids must undergo the standard leak proof performance test at 49 CFR 178.
4. Common carriers cannot handle the package. They can transport it, but they cannot load it or unload it. That would have to be done by the shipper and consignee.
5. You can do it this way only once. If you wish to reuse the package again, it would have to comply with all of the standard reuse requirements.

One other special consideration DOT has for wastes are the rules for lab packs [49 CFR 173.12]. This is a very convenient way to package many smaller containers of discarded materials, placing them in one larger outer package. While this practice is acceptable to DOT, there are special conditions that must be addressed. These include:

- Only certain UN-type outer packagings can be used (e.g., UN 1A2)
- Inner packages size is limited (i.e., 4 L for glass and 20 L for metal or plastic)
- The gross weight of the completed package must be  $\leq$  205 kg
- All materials must be compatible AND within the same hazard class

The job of lab packing is best left to the experts. This process requires a person to have a detailed understanding of various chemicals and substances. They not only have to be able to determine DOT hazards, but they must also know chemical compatibilities of various chemical categories. Not all materials within a specific DOT hazard class or division are compatible with all other materials within that class or division. For example, strong acids and strong bases are likely to share the DOT "corrosive material" or Class 8 designation. However, from a chemical reactivity standpoint this can be a dangerous scenario (it's essentially getting you salt water, the hard way). Before beginning that spring cleaning, carefully consider all the issues related to preparing and shipping your lab packs.

## **Communication**

The DOT communication rules address three general areas: shipping paperwork, package marking and labeling, and placarding. A review of the enforcement records from May 2005 to April 2006 show that, in general, shippers have a solid understanding of these requirements (84 of

the 215 enforcement actions involved violations of these requirements). The greatest area of weakness is the shipping paperwork (61 of 215).

### Shipping Paperwork

The paperwork violations fall into several basic categories:

- Failure to prepare a shipping paper. The DOT rules are fairly clear on this issue. Unless they tell you not to, you must prepare a shipping paper for every shipment of hazardous materials [49 CFR 172.200]. The SH&E manager should make an inventory of all material shipments and identify which materials are subject to the hazmat rules. If you are not currently preparing shipping papers for these shipments, it will be important to make corrections in your procedures to do so or be prepared to demonstrate why this paperwork is not required.
- Improper/incomplete descriptions. Each hazardous material must have a basic description on the shipping paper (UN/NA number, proper shipping name, hazard class/division number, and packing group). It is important to carefully review the shipping paper requirements, however, because many materials may require additional elements to the description. (i.e., technical names for generic proper shipping names).
- Emergency response information. These requirements are found in a different section of the DOT rules, 49 CFR 172, Subpart G. There are two different requirements: an emergency response phone number and written emergency response information. See the next topic for common pitfalls regarding the emergency response information.
- Record retention. The shipper must keep a copy of the shipping paper for at least 2 years from the date the carrier took possession of the hazardous material. If the facility has a record retention policy/procedure, it will be important to be sure that shipping papers are included and that all those in the organization responsible for preparing shipping papers understand their responsibilities for maintaining these records (or vetting to those responsible for document management).

### Emergency Response Phone Number

When preparing to include the emergency response phone number, the SH&E manager needs to avoid the following pitfalls:

- The number must connect emergency responders to a live person: there should be no call back numbers, pagers, or voice mail boxes.
- The call must connect the emergency responder to a person with detailed knowledge of the specific materials' hazards and emergency response procedures: someone with a copy of the Emergency Response Guidebook will not cut it.
- If you use a contract service number, be sure that you have an agreement with that organization AND be sure that they have the necessary information for each hazardous material that will be covered on the shipping paper.

### Hazardous Wastes

Many of the hazmats that a SH&E may deal with are hazardous wastes. When it comes to the paperwork, it will be important to remember that the DOT is only one of at least three agencies that will have requirements (i.e., DOT, EPA, state environmental agencies). Where the DOT does not require a standard form, the U.S. EPA does—the Uniform Hazardous Waste Manifest. This means a careful review of the procedures at 40 CFR 262 and state hazardous waste rules is vital.

Additional requirements include extended recordkeeping (i.e., at least three years), distribution, and tracking responsibilities.

### Hazmat Dossier

A good management tool for the hazmat documentation to consider is the creation of a dossier. A dossier, prepared for each hazmat can include the background information for preparing the shipping paperwork. It may also assist in many other aspects of the hazmat shipping process. Elements to consider can include:

- Classification: specific hazard class(es), packing group, and supporting data (e.g., flash point, LC<sub>50</sub>)
- Listing of authorized packagings, including instructions for completion and closure
- Complete shipping descriptions
- Emergency response information
- Package marking and labeling instructions

### Marking and Labeling

In the facility vernacular, these terms may be synonymous. However, in the hazmat regulations, the SH&E manager must understand that they mean completely different things. Markings communicate what the material is and some handling information. With the exception of bulk packages, the DOT does not have universal specifications or markings, only requirements for their contents.

Labels communicate hazards and some precautions. The DOT does have specifications – “diamond-shaped” hazard labels.

### Placards

The common question regarding placarding is, “Whose job is it to placard, the shipper or the carrier?” The short answer is, both.

In general, the shipper must *provide* the placards required *for the material being offered*, unless the transport vehicle is already placarded as required for the material [49 CFR 172.506(a)]. Shippers affix placards:

- For rail shipments
- For cargo tank shipments that are filled by the shipper

The motor carrier is responsible for affixing placards based on what’s on his/her vehicle. This includes motor vehicles containing non-bulk packages.

The SH&E manager should brainstorm any reasonable situations where placardable shipments are required and develop procedures detailing who is responsible for which actions.

## **Loading Hazmats**

The DOT assigns responsibilities based on what actions are being performed by a particular person. The person referred to as the “carrier” covers any person who loads, transports, or

unloads a hazardous material. The shipper's rules at 49 CFR 173.30 affirm that any person of the shipper performing carrier functions is subject to the hazmat carrier rules for those actions. The SH&E manager must take inventory of their employees hazmat functions against the shipper AND carrier rules and assure that they have received the appropriate training.

One element of that training might include the separation and segregation requirements under the carrier rules (49 CFR Parts 174-177). These rules specify which materials can be loaded on the same vehicle/vessel as well as which materials might require extra precautions to make sure they do not mix together if released during transportation. This is one area often overlooked by shippers. It is presumed to be the sole responsibility of the driver rather than a shared responsibility of the driver and anyone else doing the loading.

This will require the SH&E manager to coordinate the communication between the driver (what is already on board) and the loaders (what do we want to put onboard).

## Security

The most common violations of the hazmat rules for shippers continue to be related to the relatively new security planning requirements. This accounted for 127 of the 215 civil penalties issued by DOT (May 2005 through April 2006).

A common oversight is that the security planning requirements apply only to carriers. However, the security planning requirements apply to any person *offering for transport* or transporting hazardous materials under one of the following shipments:

- Subject to placarding
- In bulk packaging with a capacity  $\geq 13,248$  L
- Of route-controlled radioactive material
- Of  $\geq 25$  kg 1.1 - 1.3 explosives
- Of  $\geq 1$  L poison inhalation hazards, hazard zone A
- Of agents or toxins regulated by the Centers for Disease Control and Prevention (CDC)

The first two are the most common triggers. SH&E managers must take an inventory of the possible hazardous material shipment scenarios and plan ahead. Security plans only have to cover shipping actions that meet one of the triggers, but the plan must be developed (including the risk assessment) *before* the shipment can take place. The planning triggers apply equally to raw/unused materials as well as hazardous wastes.

The plan must include details regarding:

- Personnel security
- Facility security
- En-route security

A shipper must include all three elements. The plan should be based on the specific risks associated with your hazmat shipments. It will also likely require the shipper to communicate these risks and certain planning efforts so that their security plan is coordinated with yours.

To avoid enforcement action, you must follow these two basic rules:

- If you are required to have a plan, have it!
- Do what you said you would in your plan. Over the past year, the DOT inspectors have been putting shipper's security plans to the test. DOT makes no distinction in enforcement between facilities without plans and those that don't follow their plans.

## Conclusion

The SH&E manager is balancing many responsibilities from workplace safety to environmental regulatory compliance and even business planning. He/she may also have the management responsibility for shipments of hazmats, including compliance. The Ten Steps™ will help provide the framework for mapping out how and when the DOT rules apply to these functions. An understanding of the common violations highlights the high-risk areas within any organization. However, it cannot be the sole measurement. The SH&E manager must have a strong understanding of these rule to assess the actions taken by others and assure that each step is done properly. The development of tools (e.g., hazmat dossier) may assure consistent application. When possible, the use of or integration into existing tools may streamline the process and better assure its implementation and effectiveness.

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# Appendix A

