

# Hazmat Shipping Best Practices

## How to Audit Your Operations



### Executive Summary

As the enforcement authority of the Department of Transportation (DOT) grows, hazardous material (hazmat) shippers face increased scrutiny. A self-audit can ensure your facility will meet regulatory mandates, pass a DOT inspection, and avoid costly violations. Plus, you'll maintain a competitive edge by minimizing shipping delays or rejections. This paper suggests some best practices used to avoid common mistakes and pitfalls that trigger DOT inspections and outline the steps you should take to be ready for a visit by a DOT inspector at any time.



## Documentation Essentials

Your paperwork is an easy target for inspectors and is usually where an inspection begins. By keeping your records in order and making them easily accessible, you'll send a signal that you're on top of your regulatory requirements. Therefore, your self-audit should first include a detailed review of your documents.

### Training Records—An Inspector's Top Priority

One of the first documents an inspector typically reviews is the training record for your hazmat employees. The DOT requires you to have a systematic training program in place to ensure your hazmat employees are familiar with the general provisions of Subchapter C (all the hazardous materials regulations in Title 49 of the CFR) and are able to:

- Recognize and identify hazardous materials;
- Adequately perform their hazmat functions (i.e., packaging, marking, labeling, loading, etc.);
- Respond appropriately to emergencies; and
- Take measures to protect themselves and prevent accidents. [49 CFR 172, Subpart M]

Inspectors will invariably look at training records. Do you have a record of current training for each hazmat employee? In addition to the hazmat employee's name, the records must include:

- The most recent training completion date;
- A copy of or access to the materials used in training;
- The name and address of the training provider; and
- A certification that the hazmat employee has been trained and tested.

The training program must include three elements for all hazmat employees: 1) general awareness/familiarization training, 2) function-specific training, and 3) security awareness training. In addition, some hazmat employees may require 4) safety training if they handle the materials and 5) in-depth security training if your company is required to have a written cargo security plan according to 49 CFR 172.800(b).

A hazmat employee must receive recurrent training at least once every three years. The hazmat employer must keep current record of training inclusive of the past three years for each hazmat employee. [49 CFR 172.704(d)] A best practice is to set up a scheduling system to ensure compliance with these training standards or to use a learning management system (LMS) (e.g., Lion's LMS for online training).

### Shipping Papers—A Top Source for Violations

DOT hazmat shipping papers, including the Environmental Protection Agency's (EPA's) Uniform Hazardous Waste Manifest, are high on the inspector's list for scrutiny. Review your shipping papers during your audit to verify that they meet the requirements at 49 CFR Part 172, Subpart C. To avoid common errors, check that you have:

- Retained copies of DOT shipping papers for at least two years from the date of shipment or for at least three years in the case of Uniform Hazardous Waste Manifests. [49 CFR 172.201(e)]
- Verified that shipping papers used for exports include an international emergency response telephone number (i.e., not an 800 area code). This means the international access code or the "+" (plus) sign, country code, and the city code is needed. [49 CFR 172.604]

#### Who Is a Hazmat Employee?

The DOT defines a hazmat employee as a person whose actions can directly affect hazardous materials transportation safety. Have you identified who must be trained and what training



## Emergency Response Information—Common Omissions

The DOT requires seven elements of emergency response information to accompany most of your shipments. Many shippers use either a copy of the appropriate guide from the Emergency Response Guidebook (ERG) or a Safety Data Sheet (SDS) for this purpose. However, the basic description (and technical name when required on shipping papers), of the hazmat must be indicated on each. This is a common omission and is subject to fines. [49 CFR 172.402]

Inspectors will often check whether your emergency response telephone number system is working by using a non-emergency phone call inquiry. This is a good management practice to do periodically. This will ensure the call is properly monitored by a person who is either knowledgeable of the hazardous materials being shipped and has comprehensive emergency response and incident mitigation information handy or who has immediate access to a person possessing such knowledge and information.

If you use a third-party contractor to provide emergency response services, make sure you have provided the company with current information about each of the materials it monitors for you. In addition, be sure your shipping papers include the name of provider or contact number. [49 CFR 107.604(b)]

## Administrative Records—Keep Current

Registration and fee requirements apply to persons offering certain hazardous materials for transportation. You must submit a registration statement on DOT Form F5800.2 by June 30th for each registration year. [49 CFR 107, Subpart G] In addition to knowing your registration number, ensure you have maintained the following at your principal place of business for at least three years:

1. A copy of the registration statement filed with the Pipeline and Hazardous Materials Safety Administration (PHMSA); and
2. The Certificate of Registration issued to your company by PHMSA.

Each application for a special permit or modification of a special permit and all supporting documents must be submitted for consideration at least 120 days before the requested effective date of use. Although the DOT maintains these permits online, it's a good idea to have up-to-date records on file so you can easily check the alternative requirements or variances allowed through your special permit.

## Classification Records—Be Ready to Prove Your Findings

There may be an occasion when an inspector asks you to defend how you've classified or named a material or how you've determined that something is not a regulated hazardous material. In either case, a good management practice is to keep supporting documentation on hand.

Your dossier may contain:

- Laboratory analyses results;
- Safety Data Sheets (SDSs) or other information from chemical or product manufacturers that identify supporting chemical, physical, or toxicological properties; and
- Internet searches and industry knowledge of chemical composition and properties.



## Cargo Security Plan—Don't Miss Key Elements

If your company ships high-hazard materials or large bulk quantities of certain hazard classes, you are required to develop and implement a site-specific plan to address security risks related to the transportation of hazmat.

The required components of a security plan include elements addressing personnel security, measures to prevent unauthorized access to the hazmat covered by the plan, and en-route security. Review your plan for these items that are most commonly missed. Have you:

1. Identified the job title of the official responsible for plan development and implementation?
2. Specified security duties for each relevant position or department?
3. Addressed notifying the employees when elements of the plan must be implemented?
4. Reviewed the plan annually?
5. Revised/updated the plan if necessary and communicated changes to all relevant parties?

An additional challenge is maintaining a copy of the plan (either a hardcopy or an electronic version) and making it accessible at the shipper's site on a "need-to-know" basis. Will it be immediately available upon request to the DOT or the Department of Homeland Security?

### Who Must Have a Security Plan

According to 49 CFR Part 172, each person who offers for transportation in commerce or transports in commerce one or more of the following hazardous materials must develop and adhere to a transportation security plan:

1. Any quantity of a Division 1.1, 1.2, or 1.3 material;
2. A quantity of a Division 1.4, 1.5, or 1.6 material requiring placarding in accordance with Subpart F of this part;
3. A large bulk quantity of Division 2.1 material;
4. A large bulk quantity of Division 2.2 material with a subsidiary hazard of 5.1;
5. Any quantity of a material poisonous by inhalation, as defined in 49 CFR 171.8;
6. A large bulk quantity of a Class 3 material meeting the criteria for Packing Group I or II;
7. A quantity of desensitized explosives meeting the definition of Division 4.1 or Class 3 material requiring placarding in accordance with Subpart F of this part;
8. A large bulk quantity of a Division 4.2 material meeting the criteria for Packing Group I or II;
9. A quantity of a Division 4.3 material requiring placarding in accordance with Subpart F of this part;
10. A large bulk quantity of a Division 5.1 material in Packing Groups I and II; perchlorates; or ammonium nitrate, ammonium nitrate fertilizers, or ammonium nitrate emulsions, suspensions, or gels;
11. Any quantity of organic peroxide, Type B, liquid or solid, temperature controlled;
12. A large bulk quantity of Division 6.1 material (for a material poisonous by inhalation, see (5));
13. A select agent or toxin regulated by the Centers for Disease Control and Prevention under 42 CFR Part 73 or the United States Department of Agriculture under 9 CFR Part 121;
14. A quantity of uranium hexafluoride requiring placarding under 49 CFR 172.505(b);
15. International Atomic Energy Agency (IAEA) Code of Conduct Category 1 and 2 materials including highway route controlled quantities as defined in 49 CFR 173.403 or known radionuclides in forms listed as RAM-QC by the Nuclear Regulatory Commission; and
16. A large bulk quantity of Class 8 material meeting the criteria for Packing Group I.

NOTE: "Large bulk quantity" refers to a quantity greater than 3,000 kg (6,614 pounds) for solids or 3,000 liters (792 gallons) for liquids and gases in a single packaging, such as a cargo tank motor vehicle, portable tank, tank car, or other bulk container. [49 CFR 172.800(b)]



## Regulations—Required for Training and Reference

The DOT’s regulations specify that you must maintain a description, copy, or the location of the training materials used to satisfy the DOT’s hazmat employee training requirements. For many hazmat employees, the regulations will be a component of the training materials used.

It’s critical for compliance to have the most up-to-date versions of all applicable regulations pertinent to your operations. During your audit, verify that you have current copies of:

- The Department of Transportation’s Title 49 of the *Code of Federal Regulations (CFR)*
- The International Air Transport Association’s *Dangerous Goods Regulations (IATA DGR)*
- The International Maritime Dangerous Goods (IMDG) Code



## Review Packaging Procedures

In addition to specific packaging instructions, the DOT expects you to comply with the general packaging requirements of 49 CFR 173, Subpart B. This is akin to an “umbrella policy” that says your packages must be able to get from here to there in good condition, without failing or leaking, and without incidents that could damage property, hurt people, or harm the environment. To avoid common packaging violations, take time to review the procedures for reuse at 49 CFR 173.28. Also review the rules for empties and residues at 49 CFR 173.29.

## Packaging Compliance Essentials

Be sure to review the packaging options available for your materials in Column 8 of the 49 CFR 172.101 Table.

- If you use an excepted quantity, limited/consumer quantity, or super packaging relief, verify the relief is applicable for your material.
- Verify that the packaging, including X, Y, or Z rating, is authorized for your material.
- If you are using a special permit, ensure that you are adhering to its requirements.

Check whether or not special provisions in Column 7 of the 49 CFR 172.101 Table are applicable to your material, type of packaging, or mode of transportation. Review the special provisions at 49 CFR 172.102.

Ensure the closure instructions and the materials and tools are provided to do the job. Check to see if the manufacturer’s packaging instruction are printed or embossed on the packaging. If not, look at the manufacturer’s code in the UN certification marking and contact them for a copy. Or, consult with the purchaser, who may have a copy of the instructions or contact information. Are the following on hand:

- Approved tape, glue, staples, etc?
- Compatible cushioning material?
- If you’re required to close a package to a certain torque, it must be done by a measured tightness. Do you have a torque wrench on hand and is it calibrated? Are your calibration records up-to-date? Have your personnel been trained to use this tool?

Assess your supply of marks and labels.

- Remove obsolete items such as “air eligibility” and “keep away from food” markings.
- Remove out-of-date marks and labels, such as the old “cargo aircraft only” label, organic peroxide label, and marine pollutant marking. After October 1, 2014, the old Class 9 label will also be obsolete.
- Have a supply of special marks and labels, such as the excepted or limited quantity markings, orientation arrows, and the magnetic material label for air shipments.



## Conduct Ongoing Quality Control Checks

By occasionally performing quality control checks on warehouse packages that are staged for loading, you'll minimize the chance of non-compliance. Remember, fines are assessed for each violation (i.e., the wrong rating for a package, improper closure, a missing marking, etc.) An improperly prepared package can cost your company thousands of dollars in penalties! A best management practice is to verify that you have procedures in place to guarantee consistency in package preparation. You should do this for both domestic and international shipments.

## Verify Loading Procedures

Your job isn't done until your packages or hazardous materials are loaded up and on their way. The final loading process is an integral part of your shipping operation. Each mode of transportation has its own requirements, and we'll focus here on the hot issues for highway and rail transportation. [49 CFR 174 and 177]

1. Prevent movement of trucks or rail cars during loading. The handbrake on a truck must be set and other measures taken to keep the vehicle from moving. This may include the use of chocks or dock locks. On the rail lines, you must use rail guards and warning signs.
2. Use appropriate tools. Are non-damaging tools available? If you're shipping explosives, do you have non-sparking tools? And have your employees been trained in their use?
3. Ensure proper loading of packages and hazmat. Check the separation and segregation tables for highway and rail transportation to ensure compatibility. Are

## Offer and Affix Placards

You must offer placards to the driver of a motor vehicle (if applicable). The driver must affix them to the vehicle prior to leaving your premises. It's a good management practice to have the driver initial the shipping papers to document that you have done so.

You, the offeror, must affix placards to the rail cars containing hazmat. During your audit, do a walk-around to make sure the job has been done properly according to 49 CFR 172.516.

For trucks or rail cars, are the placards:

- Securely attached or placed in a holder?
- Located clear of appurtenances, ladders, pipes, doors, and tarps?
- Placed to minimize exposure to dirt and water from the wheels?
- Located away from any markings (i.e., advertisements) that could diminish the meaning of the placard?
- Displayed horizontally with words reading from left to right?
- Maintained by the driver to preserve their format, legibility, and color?
- Affixed to a background of contrasting color?



## Provide Emergency Response Info

If you have indicated the Emergency Response Guidebook (ERG) guide number on your shipping papers as a method of providing emergency response information for your hazmat shipment, you must ensure that your hazmat truck driver has a copy of the emergency response info on board the vehicle. [See 55 FR 872, January 10, 1990.]

To meet this requirement, verify that you are following one of these options during your self-audit:

- Requiring the driver to sign or initial an acknowledgment on either a separate form or on the DOT shipping paper itself;
- Performing a visual inspection to verify the presence of the guidance material in the truck;
- Specifying the requirement for drivers to carry the ERG book as part of your contractual agreement with your carrier service; or
- Providing the driver with a copy of the ERG book.



## Non-DOT Considerations and Interagency Cooperation

Although your inspectors may be conducting an audit for the DOT, if they see an obvious violation for something regulated under the Occupational Safety & Health Administration or Environmental Protection Agency, they will alert those agencies. During your review, take a final look around your shipping area and make sure the SDSs are in place for your employees. Have you properly maintained your emergency response equipment, such as fire extinguishers or water supply hoses? Are your spill kits stocked and ready to go? Have you provided the proper personal protective equipment for your employees? Have you removed any trip hazards at your loading dock? Is your hazardous waste storage area in good condition?

Develop a critical “inspector’s eye” and scrutinize your property and operations during your self-audit. By demonstrating an overall concern for the safety of your employees and desire to protect the environment, you’ll be sending the right message to any inspector who visits your site.



## Building Confident Compliance Teams

Effective training is the key to a confident and productive work force. To help you and your team **build a strong compliance program** and understand the regulations that affect your business, Lion Technology designs training to empower as well as educate. Since 1977, two out of three Fortune 500 companies in manufacturing, chemical, and transportation—as well as Federal and State government agencies—have trusted Lion for expert training delivered by full-time instructors. At Lion’s **nationwide, interactive workshops**, industry professionals get the knowledge and tools to succeed, and keep their sites in compliance.

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If you’re responsible for compliance with RCRA hazardous waste rules; 49 CFR, IATA, or IMO hazmat shipping standards; US EPA air, water, and chemical regulations or OSHA workplace safety mandates, visit **Lion.com** now to see how effective, engaging training can simplify your responsibilities and make it easier to comply with the complex rules that affect your job.

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