Welcome to the Zep Inc.'s Hazmat Compliance Training session. This presentation is a general overview of the Department of Transportation's Hazardous Materials Regulations. It focuses on how to recognize what is a hazardous material and reviews company procedures in shipping hazardous materials. This presentation is intended for Hazmat Employees employed by Zep. At Zep, these employees typically include warehouse workers and shipping managers.
This presentation is intended to teach each Hazmat Employee how to recognize a hazardous material, how to comply with the applicable regulations and company procedures involving shipments of hazardous materials, how to recognize and respond to potential security threats, and how to respond to emergencies involving hazardous materials. You will be required to take a test at the end to verify that you have taken and understand the contents of this training session. You will be able to use this slide presentation to help you complete the test. There is no time limit on the test, so you can take as long as you need. The graded test and your certificate will be mailed back to you or your supervisor. These records must be retained and made available upon request by a DOT enforcement officer or a Federal Aviation Administration (FAA) official. If you score a 60% or lower on your test, you must retake it.
The DOT Hazardous Materials Regulations apply to shippers, carriers, and receivers of hazardous materials. They also apply to companies that manufacture packages intended to hold hazardous materials. The HMR require that certain types of packages be used to ship hazardous materials. The HMR also require that shippers properly mark, label, and close packages of hazardous materials, and that shippers properly fill out shipping papers for hazmat shipments. The HMR apply to Zep because we receive, ship, and re-ship hazardous materials.
Who Must Comply with the DOT Hazardous Materials Regulations?
(49 CFR 171.2)

- Shippers (e.g., Zep offers hazardous materials for transport)
- Motor carriers transporting hazmats (e.g., UPS, DHL)
- Manufacturers of containers designed to hold hazardous materials

Zep sends hazardous materials from our facility across the country. Therefore, Zep is a “shipper” of hazardous materials and must comply with the HMR. Shippers are also called “offerors,” and consigning a package of hazardous materials to a transporter is called “offering” in the DOT regulations.

Other entities required to comply with the Hazardous Materials Regulations include motor carriers that transport hazardous materials and manufacturers of containers designed to hold hazardous materials.
Now that we’ve confirmed that Zep is subject to the Hazardous Materials Regulations and Hazmat Employees like you are required to be trained, let’s review the training requirements.

All Zep Hazmat Employees must receive training on the following topics:
- General awareness
- Function specific
- Security awareness
- Emergency response
Training on the DOT Hazardous Materials Regulations must be given to all Hazmat Employees affecting the safety of hazardous materials in transport within 90 days of assuming the job responsibility. In the meantime, they may work under the supervision of a trained individual. Training must include general awareness, function-specific, safety/emergency response, and security. Employees must be knowledgeable about changes in the regulations, and employees must receive refresher training at least every 3 years. A test must be administered to ensure that the employee understands the training.

You may use all of your notes and presentation slides to help you complete the test, and there is no time limit. If you score lower than 60 percent, you must retake the test.
All Hazmat Employees are required to be trained in accordance with the DOT HMR. People performing any of these job duties must be identified as Hazmat Employees and trained accordingly. In general, employees at Zep who handle or pick and pack chemical products, sign or complete shipping papers, offer hazard placards, or verify the appropriate marks and labels for chemical product shipments must receive full compliance training.

Shipping managers also must be trained and knowledgeable about all of these job functions.

This presentation fulfills the DOT HMR requirements for training Hazmat Employees.
General awareness training covers the contents and requirements of the Hazardous Materials Regulations and how to recognize hazardous materials. This presentation offers a background of the HMR and focuses on recognizing and classifying materials as hazardous. After classifying what materials are hazardous, the presentation will include the appropriate methods to communicate the applicable hazards.

Function-specific training certifies that Hazmat Employees can perform their job duties affecting the safe transport of hazardous materials in compliance with the applicable regulations. Individual job duties include how to mark, label, and placard hazardous materials. Zep’s hazardous materials are often already packaged and are simply being re-shipped. However, some are re-packaged; therefore, Hazmat Employees must be trained to choose authorized specification packages and to load and unload hazardous materials in accordance with the regulations.
Security awareness training ensures that employees know how to recognize potential security or terrorist threats and can follow company procedures to handle such threats.

Emergency response training reviews company procedures for responding to spills, fires, or other incidents involving hazardous materials, including whom to contact in the event of an emergency and where to locate basic emergency response information.
Security awareness training is a fairly new topic in DOT hazardous materials training, instituted after September 11, 2001. Shipments of hazardous materials may be stolen and used to threaten public safety. Companies need to make sure that they don’t hire people who could be security threats and must protect their shipments as much as they can. Security awareness training and security plans have been made a part of the requirements of the HMR to ensure that each shipper recognizes and minimizes security threats.

Shippers of highly hazardous materials and of shipments of any hazardous materials in an amount that requires a placard must perform an analysis to evaluate the risks associated with such shipment. Vulnerabilities must be addressed. All other Hazmat Employees working with or affecting the safety of hazardous materials need to be trained to recognize and respond to possible security threats to ensure safety during the vulnerable transportation process.
Detailed training records must be kept for three years or until your next required training session. Keep a copy of the corrected test also. The documents should be retained in a readily accessible location in case of an inspection. You or your supervisor will receive the graded test in the mail and a certificate of attendance. Make sure that you sign the roster that your supervisor provides for this training session. Ensure that you fill in your name before submitting your test since you will NOT get credit for this class unless you fill out the test.

Your certificate includes the name/address of the trainer, your name, and the training date. When you get your certificate, make sure your name is spelled correctly and let your supervisor know if there is an error.
Civil penalties may be levied when violations are unknowingly committed. These carry monetary fines ranging from $275 to $32,500 per day per penalty. If the employee goes against company policy, he or she may be personally responsible for the civil penalties levied (up to $100,000). Zep has received multiple inspections at facilities across the United States and received multiple penalties, especially in regards to packaging releases and unintended air shipments. If your facility has not received an inspection, it may only be a matter of time.

Criminal penalties are administered when a person knowingly or willingly violates the regulations. These may carry jail time in addition to fines.

Remember that Zep employees risk immediate termination of employment for violation of the Hazardous Materials Regulations or Zep policy. Ask for help if you are unsure of how to perform any part of a hazardous materials shipment.
Shippers of any of these hazardous materials (when shipped at one time), are required to register annually with DOT and pay a fee. The fee is so DOT can keep track of shippers that offer highly hazardous materials for transport, and it also helps fund grants for states and Indian tribes to provide emergency response planning and training.

Zep is subject to the annual hazmat registration fee because we frequently ship an amount of non-bulk containers (having a capacity of 119 gallons or less) that require the outside of the motor vehicle to be placarded.

The registration fee is also applicable to shippers of certain radioactives, explosives, and toxic inhalation hazards. Zep does not ship these materials.
The annual hazmat registration fee is paid for by Zep Inc.

Each facility that ships hazardous materials must retain an updated copy of the certificate of registration. The certificate is kept with the facility’s other transportation records, such as training certifications, so that it is easily accessible in the event of an inspection.
Zep offers many hazardous materials for transport, and these shipments are subject to the DOT’s Hazardous Materials Regulations. As a shipper, Zep bears the brunt of the responsibilities in preparing a package and properly communicating its hazards. Any Zep employees involved in the shipments of Zep’s hazardous materials require hazmat certification training.

Remember that all chemical products must be shipped by ground per company policy. No air shipments are allowed.

Training records and a copy of the annual hazmat registration must be retained in an easily accessible location in case of an inspection.

Penalties may be administered when Zep is not in compliance with these regulations.
If an inspector comes to your facility, you should immediately contact your shipping manager to accompany the inspector. Wait with the inspector until the shipping manager arrives.
If the inspector wants to interview you while the shipping manager is not present, what should you do?

- Answer all the inspector’s questions, even if you aren’t sure of the answer
- Answer questions truthfully, but if you are unsure of something, say so

If the inspector interviews you, answer truthfully on topics that you are comfortable with, but if you are unsure of something, don’t attempt to answer the question.
Each facility should have two employees who are knowledgeable and capable of handling an inspection. Inspectors typically want to review and examine training records, the annual hazmat registration certificate, and copies of shipping papers. When a security plan is required, the inspector will also want to verify that it exists.

Keep all of these records up to date and in an easily accessible location.
This section of the training will teach you how to recognize hazardous materials.
Applicability of the HMR to Zep

- Zep hazardous materials are often called “chemical products”
  - Zep Dyna 170
  - Zepresto
  - Zep Alcohol Spray Sanitizer
  - Zep Orange Gel Degreaser (aerosol)
  - Zep Poworsolv 5000
- Hard goods (e.g., brooms, mops) are non-hazardous

Zep distributes a variety of different products that meet the definition of a hazardous material and are, therefore, subject to the HMR. Zep often refers to these materials as “chemical products.” They include, but are not limited to, Zep Dyna 170, Zepresto, Zep Alcohol Spray Sanitizer, Zep Orange Gel Degreaser (aerosol), and Zep Poworsolv 5000.

In many cases, these hazardous materials have already been packaged, marked, and labeled during manufacture in accordance with the DOT HMR. Whenever Zep re-ships hazardous materials that have already been packaged, the packages must be reviewed by a trained Hazmat Employee to ensure that they are in compliance with the DOT HMR and that the appropriate documentation accompanies the shipment. Hazmat Employees are also responsible for giving the correct placard to the transporter or carrier to be placed on the outside of the motor vehicle, depending on the type and the amount of hazardous materials being shipped at one time.

Hard goods such as brooms and mops are not subject to the Hazardous Materials Regulations and may be handled and shipped by any Zep employee.
Zep employees must follow mandatory company shipping procedures. All chemical products shipped by Zep are deemed potentially hazardous and, therefore, are prohibited for transport by air carriers. Employees are not allowed to set up independent shipments via the Internet to schedule pick-ups of chemical products by carriers such as UPS expedited, FedEx air, or overnight delivery services, DHL express, or any other air carrier.

Zep has unintentionally offered hazardous materials for air shipment and been caught by the FAA. Therefore, this mandatory company shipping procedure must be followed.
Zep shipping procedures:

- Air shipments of Zep chemical products are prohibited.
- Employees are not allowed to set up independent shipment for chemical products using the Internet.
- No shipping documents may be generated outside of Zep’s software application referred to as TZG.

Zep chemical goods are prohibited from being shipped by air because they are potentially hazardous. Employees must not attempt to bypass Zep’s software application known as the “TZG system” to generate shipping documents, nor may they set up independent carriers for shipments.

A Zep employee previously set up an air shipment of a hazardous material without recognizing that the shipment was subject to special regulation. As mentioned previously, the FAA apprehended the shipment and an investigation is pending. Therefore, absolutely no chemical products may be shipped by air.
If an employee fails to adhere to Zep’s mandatory shipping procedures, that employee may be fired immediately and also may be held responsible for any fines or penalties levied by the Federal Aviation Administration as a result of any regulatory violations. These fines may range from $275 to $500,000 per day per penalty. The FAA often conducts random inspections and responds to incidents involving non-compliance.
Zep has established company procedures regarding sales reps or other customers picking up chemical goods. Because of liability issues, company policy forbids the transport of hazardous materials in personal vehicles for delivery. Only carriers who are trained and qualified to transport hazardous materials may transport Zep chemical products. Samples may be allowed. Sales reps must attend training on materials of trade (MOT) for guidance on how much is allowed in their vehicle.

If a sales rep insists on delivering chemicals using his or her own personal vehicle, consult your shipping manager for assistance in enforcing the company’s policy.
Shippers are responsible for a number of elements under DOT’s Hazardous Materials Regulations. Zep is responsible for many of these functions, although we often share them with the facilities that manufacture Zep’s goods.

These responsibilities include (but are not limited to) the following:

- Classifying and assigning the most appropriate shipping name
- Choosing an authorized package that is compatible with the material being put inside
- Preparing the package and closing it in accordance with the manufacturer’s instructions
- Marking the package with the name of the material and its identification number.

There are different marking requirements for different sizes of packagings.

Classifying and assigning a proper shipping name to a Zep product is done by the compliance group at Zep. The manufacturing facility chooses and prepares the authorized packagings and marks and labels them. Zep is responsible only for choosing new packages, and marking and labeling them when we pick and pack chemical products.
Shipper’s Responsibilities

- Label smaller packages with the appropriate diamond-shaped hazard class labels
- Placard the outside of motor vehicles with the appropriate hazard class placard
- Complete or sign a bill of lading (shipping paper)

Shippers are also responsible for:
- Labeling smaller packages (packages with less than 119 gallons’ capacity) with the appropriate hazard class label
- Placarding the outside of the motor vehicles with the appropriate hazard class placard
- Filling out and/or signing the bill of lading (shipping paper)

Zep is responsible for ensuring that packages are properly labeled even when the manufacturing facility has applied the label. Placards must be offered to the driver each time a placardable amount of Zep materials is shipped. It is not the driver’s responsibility to have a placard for all your materials. Finally, it is Zep’s responsibility to generate the bill of lading (shipping paper) and ensure that a Zep Hazmat Employee reviews, completes, and signs it.
The majority of Zep’s outbound shipments are re-shipments of products received from manufacturing facilities. These chemical products should arrive from the manufacturing facility to Zep in the proper packages, and bear the correct hazard marks, labels, and placards. Zep is responsible for ensuring that the packages are still in good condition and bear the correct hazard warnings. We must generate new shipping papers (bills of lading) and offer placards as needed when re-shipping packages from manufacturing facility.
When Zep does not use the original packaging from the manufacturing facility, the pick-and-pack procedure must be followed. Before you pick a chemical product and package it in a different container, you must be adequately trained. Once you have received training, you must ensure that the materials are properly named, classified, described, marked, labeled, placarded, packaged, and documented. This training will allow you to pick and pack chemical products. You may have a binder in your packaging work area for you to find the correct marks, labels, and packages that you must use for certain chemical products. This binder is supplied by the compliance group at Zep.
The most important part of this training is recognizing what a hazardous material is. In general, if your chemical product is any of the following, it’s a hazardous material:

• If it meets the definition of any of the 9 hazard classes, it is regulated.
• If it is listed on the Hazmat Table and it meets the definition to the assigned hazard class, it is regulated. The Hazmat Table lists many specific chemical names, chemical family names, uses for chemicals, and generic hazard class names. The Hazardous Materials Table is located at 49 CFR 172.101.
• If it is a hazardous substance and meets the reportable quantity listed per package, it is regulated. The Hazardous Substance Table is in Appendix A to 49 CFR 172.101.
• If it is a listed marine pollutant, bulk shipments are regulated. Non-bulk shipments are regulated only for vessel transport. The List of Marine Pollutants is in Appendix B to 49 CFR 172.101.
• If it meets the RCRA definition of a hazardous waste, then it is automatically regulated as hazardous for transport. Zep does not typically ship hazardous waste unless a chemical product’s package breaks. Unless there is an incident with a material, all chemical products are meant for sale and not disposal.

This hazard classification process is done by the Compliance Group at Zep using data from Zep’s material safety data sheets. If you suspect an error in hazard classification, contact your shipping manager. An error includes classifying something as hazardous when it really isn’t. We may be fined tens of thousands of dollars if we improperly declare a shipment as hazardous or non-hazardous.
Hazardous materials meet the criteria of one or more hazard classes. DOT has nine hazard classes, some of which are further subdivided. The underlined examples are chemical products that Zep ships.

- Explosives have six divisions, with 1.1 being the most explosive. Examples of explosives include ammunition, TNT, dynamite, torpedoes, and fireworks.
- Gases have 3 divisions: 2.1 includes flammable gases, such as most aerosols or propane; 2.2 includes non-flammable gases, such as carbon dioxide, air or nitrogen; and 2.3 includes toxic gases such as chlorine or carbon monoxide.
- Flammable liquids (Class 3) are liquids such as alcohols, solvent cleaners, and paints that have a flash point of 140°F or lower. Non-bulk packages of less than 119 gallons each containing combustible liquids (100°F or higher) are completely non-regulated.
- Flammable solids (Class 4) include fertilizers, lithium, and powdered aluminum (which reacts with water).

Zep does not have explosives or flammable solids (meeting class 1 or class 4 definitions). However Zep ships chemical products that are in aerosol cans meeting the class 2 gas definition and ships many different flammable cleaning liquids meeting the class 3 definition. For example, Zep manufactures Zep Orange Gel Degreaser, which is an aerosol, and Zep Powersolv 5000, which is a solvent.
- Oxidizers (Division 5.1) are materials such as chlorine and hydrogen peroxide that combine with oxygen and can enhance combustion.
- Organic peroxides (Division 5.2) are often unstable or reactive materials. An example material is benzoyl peroxide, which is found in very low concentrations in acne medication.
- Division 6.1 toxic materials include those that are toxic by ingestion, contact, or inhalation. They include materials such as hydrofluoric acid (in Zep Alume), pesticides, arsenic, or cyanides.
- Division 6.2 infectious substances and medical waste include diagnostic specimens or blood samples; cultures of microorganisms such as HIV, ebola, or rabies; vaccines; some genetically modified microorganisms; and medical wastes such as syringes and needles.

The types of products that Zep manufactures meeting one of these hazard class definitions are oxidizing cleaners meeting the class 5.1 definition and poisonous or toxic pesticides.
### UN Hazard Classes

- **7 Radioactive materials**
  - e.g., plutonium, uranium, articles such as switches or fire alarms
- **8 Corrosive materials**
  - e.g., hydrochloric, hydrofluoric, sulfuric or nitric acids; or potassium hydroxide, batteries filled with acid or alkali; corrosive cleaners
- **9 Miscellaneous**
  - e.g., PCBs, friable asbestos, hot asphalt, environmentally hazardous substances, hazardous wastes
- **ORM-D (consumer commodities)**
  - e.g., nail polish remover, aerosol hair spray, cans of spray paint, spray cleaners

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- Class 7 radioactive materials include plutonium, uranium, or articles such as switches or fire alarms that contain small amounts of radioactive material.
- Class 8 corrosive materials are either very acidic or basic, such as hydrofluoric acid (in Zep Alume) or potassium hydroxide. The classification of a corrosive is not based on pH; it is based on how quickly the material eats through skin or metal.
- Class 9 includes miscellaneous dangerous materials that do not meet the criteria of other hazard classes but still present a risk during transport. Examples include PCBs, asbestos, and elevated-temperature materials such as hot asphalt.
- Consumer commodities are re-classified materials that meet the criteria of one of the first eight hazard classes but are packaged in limited quantities and in a manner suitable or intended for retail sale.

Zep ships many cleaners as well as larger drums of acids such as sulfuric acid that meet the definition of a Class 8 corrosive. When these corrosive cleaners are shipped in smaller quantities (usually a liter or less) and overpacked in a cardboard box, they can be re-classified as consumer commodities. They must be packaged with all of the appropriate consumer safety marks or labels to be considered a consumer goods.
Zep's software application called “the TZG system” should automatically generate the correct proper shipping name for any regulated hazardous material. This information is entered in the system by the Compliance Group.

Remember that you must not override the system by choosing an air carrier for a shipment of chemical products.
As a Hazmat Employee, you must be able to recognize which Zep chemical products meet DOT’s definition of a hazardous material. In most cases, you can look for the diamond-shaped hazard class labels and other hazard marks on the package to help you determine whether a shipment is hazardous. If the outside of the package has any of the following marks or labels, then it has been classified as a hazardous material: proper shipping name, UN number, “Consumer Commodity,” “ORM-D,” UN number within a diamond shape, the marine pollutant mark, or a diamond-shaped hazard class label. If a product has been removed from the box and you can no longer reference the marks or labels from the original packaging, make sure that you correctly identify the material before re-shipment.

If you suspect that the hazard marks or labels are incorrect or have been ripped or torn during transport, the shipping documents generated by TZG appear incorrect, or if the TZG system allows air shipment of a chemical product, contact your shipping manager or other Environmental Compliance Officer (ECO).
If the outside of the package has any marks or labels similar to the ones shown here, then it has been classified as a hazardous material.
If you suspect that the hazard marks or labels are incorrect or have been ripped or torn during transport, the shipping documents generated by TZG appear incorrect, or if the TZG system allows air shipment of a chemical product, contact your shipping manager or other Environmental Compliance Officer (ECO).
Consider which of these materials are hazardous according to DOT regulations:

- Aerosol cleaners
- Highly acidic or basic cleaners
- Office waste/trash
- Cleaner with flammable perfume scent
- 55-gallon drum of sulfuric acid
- Hazardous waste
- 55-gallon drum of solvent cleaner
- Hard goods such as brooms or mops
The following Zep chemical products are hazardous according to DOT regulations and must not be shipped by air.

- Aerosol cleaners are hazardous because they meet the definition of a compressed gas and often contain a flammable propellant such as propane or butane.
- Highly acidic or basic cleaners are hazardous because they are corrosive to skin.
- A cleaner with a flammable perfume scent often contains alcohol, which makes the solution flammable unless it is highly diluted.
- A 55-gallon drum of sulfuric acid is hazardous because it is corrosive to skin and metal.
- Hazardous waste is always considered hazardous and regulated for transportation.
- A 55-gallon drum of solvent cleaner is highly flammable and is hazardous.
Consider the following case: You are asked to ship a bottle of Zep FS Formula 4489 Foaming Acid. It's not already in a box, so you don't already have the required shipping marks and labels. Consider the wording on the safety label on this bottle. What hazards does it likely present in transportation? Do you think it meets the definition of a hazardous material? If so, which hazard class or classes do you think it meets?
The safety label contains some key words that indicate that Zep FS Formula 4489 is a hazardous material. The words “DANGER!” and “causes burns” indicate that it is corrosive to skin. In addition to those words, phosphoric acid is listed on the Hazardous Materials Table as a corrosive liquid. Therefore, this chemical product is probably considered hazardous for transport.

For a case like this, you will have to consult the binder that the Compliance Group has provided to help you identify, mark, label, and package the chemical product. If you are unsure whether this is a hazardous material, or you do not know how to classify, mark, label, or package it, consult your shipping manager or facility Environmental Compliance Officer.
Classification Review

• Zep’s chemical products are considered hazardous when they either:
  – meet the definition of one or more of the nine hazard classes
  – contain ingredients that are listed on the Hazardous Materials Table
• Be sure you know how to recognize which Zep chemical products are hazardous materials

Zep’s chemical products are considered hazardous when they meet the definition of one or more of the nine DOT hazard classes or they contain ingredients that are listed in the Hazardous Materials Table.

Your responsibility is to recognize which Zep chemical products meet the definition of a hazardous material and are therefore subject to the regulations.

For the most part, the task of classifying Zep’s materials as hazardous has already been done by the Compliance Group and has been input into the TZG and SKU systems so that the products are coded with the correct hazard classification.
You must refer to the Hazardous Materials Table at 49 CFR 172.101 in order to ensure that the most appropriate proper shipping name is used. The table can be used to cross-reference the marks required on the package and the information on the bill of lading.

All of the information input into the TZG system is based on the columns of the Hazardous Materials Table. This section of the presentation will show you how to use the table to find the name of a hazardous material, hazard class, identification number, packing group, special provisions, labels, and packagings for a material.
The Hazardous Materials Table is 10 columns wide, but it is important for you to concentrate only on columns 1 through 8. Columns 9 and 10 deal with transport by air and sea, respectively, and this training does not focus on those two modes of transport.

- Column 1 of the table contains symbols. If a “G” is in Column 1, then up to two technical names of the substances causing the hazards must be included in parentheses after the proper shipping name. The “G” is often listed for n.o.s.—“not otherwise specified”—entries such as corrosive or flammable liquids, n.o.s. If a “D” is in Column 1, the material is permitted to be shipped only domestically under that shipping description. These are the two most common symbols found for Zep products.

- Column 2 contains the proper shipping name in regular print. The information in italics is not part of the proper shipping name, but it provides additional information about the classification.

- On most packages of hazardous material, the proper shipping name from Column 2 and the ID number from Column 4 will need to be marked.

- Information generated by the TZG system for the bill of lading comes from Columns 2, 3, 4, and 5 (in that order).

- The diamond-shaped hazard class label referenced in Column 6 is to be applied on all non-bulk packages unless the package is eligible for limited quantity or consumer commodity exceptions.

- Special provisions are indicated in Column 7. The prefix to each provision denotes either the type of package or the mode of transport applicable for the shipment of the material. If there is no prefix listed, then the special provision applies to all modes of transport and all packages, and MUST be consulted before transporting.

The Hazardous Materials Table

<table>
<thead>
<tr>
<th>Symbol (1)</th>
<th>Hazardous Materials Descriptions and Proper Shipping Names (2)</th>
<th>Hazard Class or Division (3)</th>
<th>ID No. (4)</th>
<th>PG (5)</th>
<th>Label Code(s) (6)</th>
<th>Special Provisions (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>Aerosols, flammable, each ≤ 1 L capacity</td>
<td>2.1</td>
<td>UN1950</td>
<td>2.1</td>
<td>N82</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Consumer commodity</td>
<td>ORM-D</td>
<td></td>
<td></td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Corrosive liquids, n.o.s.</td>
<td>8</td>
<td>UN1780</td>
<td>I</td>
<td>A6, A7, B10, T14, TP2, TP27</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>II</td>
<td>B2, IB2, T11, TP2, TP27</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>III</td>
<td>IB3, T7, TP1, TP28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Flammable liquids, n.o.s.</td>
<td>3</td>
<td>UN1903</td>
<td>I</td>
<td>T11, TP1, TP27</td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td>II</td>
<td>IB2, T7, TP1, TP8, TP28</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>III</td>
<td>B1, B52, IB3, T4, TP1, TP29</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Goulfinic acid with ≤ 51% acid</td>
<td>0</td>
<td>UN2790</td>
<td>II</td>
<td>A0, A7, D2, D15, I02, N0, N04, T8, TP2, TP12</td>
<td></td>
</tr>
</tbody>
</table>
Columns 8A, 8B, and 8C refer to the applicable sections in 49 CFR 173 for authorized packaging. Column 8A should always be consulted first because it contains exceptions granting regulatory relief. If your package does not meet the quantity limits or consumer packaging that the paragraphs referenced in Column 8A require, then Column 8B should be consulted. Column 8B provides the regulatory reference for the appropriate non-bulk packagings authorized. Non-bulk packagings are less than 119 gallons' capacity each. Column 8C provides the regulatory reference for authorized bulk packagings. Bulk packagings are capable of containing 119 gallons or more and include IBCs (intermediate bulk containers), totes, roll-offs, portable tanks, and other tanks.

Note that the difference between bulk and non-bulk depends on the package's capacity, not how much is actually in the package. So if you put only 110 gallons into a package with 120 gallons' capacity, you must follow the requirements for marking, labeling, and placarding a bulk package.
The most specific shipping name must be chosen for all hazardous materials. Many Zep chemical products are listed by their specific chemical name on the Hazardous Materials Table (e.g., sulfuric acid). When Zep chemical products are mixtures of different hazardous ingredients, such as Zep Powersolv 5000, the most appropriate shipping name is often the hazard class name, such as “flammable liquids, n.o.s.” N.O.S. means “not otherwise specified.”

It is expected that the task of choosing the most appropriate shipping name will have already been completed by the Compliance Group.
Column 3 of the Hazardous Materials Table gives the primary hazard class or division for a material. Combustible liquids (which by definition have a higher flashpoint than a flammable liquid) may list Class 3 in Column 3.
Column 4 of the Hazardous Materials Table gives the United Nations (UN) or North American (NA) identification number for the material. Typically, Zep materials are coded with UN identification numbers, which means that they may be transported internationally and domestically. The prefix NA means that the material is allowed to be transported only within North America (including Canada).
A material's packing group reflects its degree of danger and correlates to the strength of packaging that must be used to ship the material. Packing groups are established for most hazard classes. Packing groups for flammable liquids, such as solvent cleaners, must be established so that the proper packaging is used. Most Zep products are in Packing Group II, but some may be in PG III depending on the flash point or corrosivity.

Column 5 of the Hazardous Materials Table indicates one of three things: a fixed packing group; a choice of packing groups I, II or III; or no packing group. Materials such as sulfuric acid have a fixed packing group assigned. General hazard class shipping names usually have all three packing groups listed. The MSDS or other testing data must be consulted to determine the applicable packing group for a mixture. Gases (including aerosol cans), radioactives, and consumer commodities have no packing group assigned.

It is extremely important to understand the purpose of a packing group. Once a packing group has been assigned to a product, then the appropriate level of packaging is designated according to the degree of danger that the product presents. Therefore, it is critical that you know the correct packing group so that the appropriate packaging is used. Hazmat Employees at Zep who are responsible for picking and packing hazardous materials need to be aware that special packaging may be required depending on the packing group (degree of danger) of a material.
Column 6 of the Hazardous Materials Table indicates the appropriate hazard class labels for the package. The first label listed is the primary hazard and any other numbers listed are secondary hazards. The package must be large enough to accommodate all of the labels referenced in Column 6. Additional handling labels may be required in accordance with 49 CFR 172.402.
Special provisions are listed in Column 7 of the Hazardous Materials Table. The prefixes in front of the numbers refer to specific packages or modes of transport. For example, N=non-bulk packagings; A=air shipments; W=water shipments; B=bulk packagings; IB=intermediate bulk containers; R=rail transport; and T=portable tanks. Special provisions without a prefix—that is, that are only digits—apply to all modes of transport and all types of packaging.

Special provisions are listed in 49 CFR 172.102. The number-only special provisions (with no prefix) must always be looked up because they apply to all shipments of the material. Special provisions with the prefix “A” may be disregarded because Zep chemical products must never be shipped by air.
Columns 8A, 8B, and 8C refer to the specific packaging requirements for your material. The 2- or 3-digit number in the column refers to the section in 49 CFR 173 that you must consult. If no number is listed, then those packagings are not allowed. For example, if no number is listed in Column 8A then limited quantity exceptions are not permitted.

Most Zep materials are granted limited quantity exceptions in Column 8A and in general are for quantities less than 1 liter per inner packaging and 30 kg for the outer package. Many Zep materials are shipped in accordance with the packaging reference in Column 8B because non-bulk packages (less than 119 gallons but greater than 1 liter) are often used. Some Zep materials are shipped in bulk packagings (greater than 450 liters or 119 gallons each) such as totes.

If an Zep product is packaged in a manner suitable for retail sale and it meets the quantity limitations set forth in Column 8A, then it can be reclassified as a consumer commodity. If it doesn’t meet the criteria in Column 8A, then it must be shipped in UN-specification packaging as prescribed in the reference from Column 8B or in a DOT-specification bulk package that is referenced in Column 8C.
Some aerosol or liquid cleaning sprays are packaged in the correct form and meet the definition of a limited quantity or consumer commodity. For shipments of these products by ground, the boxes typically do not need the hazard class label and the motor vehicle does not require a placard as long as the package is marked with a rectangular shape that says “CONSUMER COMMODITY—ORM-D.” No shipping documentation is required for consumer commodities; however, it is required for limited quantity shipments.

To qualify for these relaxed requirements, the aerosols or bottles typically cannot contain more than 1 liter, and the boxes containing these products cannot weigh more than 30 kilograms (66 pounds). The re-classification to a consumer commodity usually cuts down on shipping costs.
Column 9
Quantity Limitations

- Maximum net quantity per package permitted
- Col. 9A = passenger-carrying rail car and aircraft
- Col. 9B = cargo aircraft only limits

*Shipments of chemical products by air are PROHIBITED by company policy

Columns 9A and 9B of the Hazardous Materials Table specify quantity limits for shipments by passenger-carrying aircraft or rail, and for cargo-only aircraft.

Zep company policy prohibits shipments of chemical products by air.
The numbers or letters in Columns 10A and 10B refer to locations on board a ship, barge, or other seagoing vessel where the hazardous material may be stowed. Additional codes indicate specific stowage and segregation requirements.

Shipments that have international stops or destinations are also subject to the International Maritime Organization’s International Maritime Dangerous Goods Code, or IMDG Code. However, shipments made across U.S. waters (with no international destinations) are subject only to the DOT vessel regulations.
The Hazardous Materials Table contains the proper shipping name, UN number, hazard class, and packing group (if applicable). Some of this information is required to be marked on a package and all of that information is required on the bill of lading. The appropriate labels are to be chosen by referring to Column 7 of the table. Although you may not be using the table directly, it is important for you to recognize where the marking, labeling, placarding, packaging, and shipping paper entries come from.
For all shipments of hazardous materials, general and specific packaging requirements must be followed. Only authorized packagings are allowed. Furthermore, all directions issued by the manufacturer must be followed to ensure that the package does not fail during normal conditions of transport.
General packaging requirements specify that under normal transport conditions (that is, temperatures of -40°F to 130°F), your package must not leak or be compromised in any way. There should be absolutely no identifiable releases of a hazardous material such as an odor, liquid spots on a box, etc., no evidence of a reduction in package effectiveness such as a crumpled box or dented drum, and no mixing of gases or vapors or intermingling of materials. These could cause extremely hazardous conditions during transport.

Normal transport conditions for a package include vibration, acceleration, some bumping, potentially extreme temperature differences, and possibly some pressure differences if there is a significant change in altitude.
The packaging chosen must be compatible with the contents. For example, steel drums cannot be used for acids because the acid will eat the steel. Hazardous materials must be compatible with any residue of another hazmat that may have been in the package previously. Always make sure you follow the packaging manufacturer’s instructions on how to securely close the package, and never overfill it, as liquids can expand and cause the package to burst.

Overfilling a package is a common error and some people are confused by filling limits. To make it simple, under most circumstances, simply follow the package manufacturer’s guidelines. For example, a 55-gallon drum should be filled no more than 55 gallons. If you have an extreme scenario such as transport in the middle of the summer, you could choose to ship less than the amount normally permitted per package with the assumption that the liquid will expand. So if the package gets left outside in the sun or in the back of an enclosed trailer, the top of the drum won’t bulge or burst.

Usually U.N. specification packages must be used. These packages are very strong when prepared according to the manufacturer’s instructions. However, if you don’t follow the instructions, then the U.N. certification is not valid. For example, a U.N. specification fiberboard box closed with cellophane (“Scotch”) tape will not be secured the same as using the proper packing tape specified by the packaging manufacturer. Therefore, it is imperative that you closely follow the packaging manufacturer’s directions.
Always double-check to make sure that your package has no severe rust, no creases or dents, and no bulging heads or other structural defects because such packages could fail during transport.

The majority of containers being shipped by Zep have already been in transportation once, from the manufacturing facility to Zep. Therefore, it is extremely important that warehouse workers take notice of the package’s condition. If the package has been damaged during the first course of transportation, then the product MUST be repackaged before Zep ships it again.
As discussed previously, you can refer to columns 8A, 8B, or 8C of the Hazardous Materials Table to obtain the regulatory reference for choosing an authorized package for a material. Remember that Column 8A has regulatory relief information and may except the material from the requirement to use U.N. specification packagings. Column 8B references U.N. specification non-bulk packagings that are authorized, and Column 8C references bulk packagings that are authorized.

In all cases, it is Zep’s responsibility to ensure that we choose only the packages authorized from these sections that are compatible with the material being shipped.
Here is an example of the non-bulk packaging regulation for flammable solvent cleaner, PG II (referenced from Column 8B of the Hazardous Materials Table). The codes indicate the UN specification (e.g. 1A1) required on the packagings chosen for solvent cleaner (flammable liquids, n.o.s.).

It is important to know that this same section is referenced for corrosive liquids, and metal drums are your first option. However, corrosives and metals are incompatible. This is why you must always consider whether a package is compatible with the product you'll be shipping in it.
When UN packagings are required, they must have the UN specification mark on the side of the package. This code stands for the performance level of the package based on package tests, ensuring that it is capable of containing the hazardous material you want to put inside.

Depending on the packing group assigned to your material, a different U.N. specification packaging may be required.

The U.N. specification mark indicates that it has successfully passed a group of tests including the drop test where it is dropped from different heights on all corners and ends, the leak test to ensure that it won’t leak, a stacking test, and a vibration test. The package has been subjected to these tests to simulate normal conditions of transport. Depending on how well it performs, the performance level is assigned and marked on the package.
When choosing a non-bulk package for your material, check to see that there is a UN-specification mark on it. The letters “u n” within a circle indicates that the package has gone through the United Nations recommended tests. The 1A1 in this example means that it is an open-head steel drum. Each of the three digits in the package identification code stand for the type of package (e.g. drum), the material of construction (e.g. steel), and whether it has an open (removable) head or a closed (non-removable) head.

Consumer commodity packagings and packagings for limited quantities do not need to be UN specification because the shipments are not considered highly hazardous. Therefore, packagings for these shipments do not need to bear the special UN symbol.
The next code—X, Y, or Z—is very important because it refers to the packing group of the hazardous material that the package can safely hold. X-rated packagings can be used to hold any hazardous material, while a Z-rated package can be used only for PG III materials, but not for PG I or II materials, which are more dangerous. The packing group of the material is listed on the shipping paper if you need to cross-reference it to determine the appropriate packaging.

Zep usually needs only Y-rated packagings because the most dangerous of our chemical products meet the PG II criteria. Check for the X, Y, or Z rating on the drum or box during the pick-and-pack procedure to ensure that the package chosen will safely hold the materials put inside.
In order to properly prepare a package containing hazardous materials, you must comply with general and specific packaging requirements. General requirements include making sure that the package is in good condition and is fit for transportation. Specific packaging requirements need to be followed so that the authorized UN specification (or non-specification) packaging is used and is compatible with its lading.

Remember that during the pick-and-pack procedure you must choose a package that meets the appropriate performance level (X, Y, or Z) required for the applicable packing groups. Finally, the packaging manufacturer’s instructions must be followed or the package might not function as intended and might be compromised during transport.
DOT uses a system of marks, diamond-shaped hazard class labels, bills of lading for shipping documentation, and diamond-shaped hazard class placards to communicate the hazards of a chemical product shipment. Remember from earlier in the presentation, all of this hazard communication information is derived from how we classified a hazardous material and the information listed for it in the Hazardous Materials Table.
As a Hazmat Employee, it is your responsibility to ensure that packages are correctly marked, labeled, and documented before shipment. Packages prepared by the manufacturing facility that are being re-shipped usually already have the correct marks and labels on them, but you do need to verify that. Packages that are picked and packed into new boxes need to be evaluated for the required marks and labels applicable to each of the hazardous materials contained inside. Consult the marking and labeling binder to ensure that the proper marks and labels are included for each hazardous material.

It is the responsibility of the shipping manager or other warehouse worker to ensure that the TZG system generates a correct bill of lading and that the appropriate placards are offered to the driver if placards are required. Remember that it may be your signature on a bill of lading and you are certifying that everything has been done in compliance with the Hazardous Materials Regulations, so it is important to review the documents.
Warehouse workers must check the condition of the DOT-required marks and labels that were applied by the manufacturing facility to ensure that they have not been partially or completely ripped or torn off. If the marks or labels are not in perfectly visible and legible condition, then they should be removed completely and the packages should be remarked and/or relabeled before shipment.
Shipments of hazardous materials in non-bulk packagings (less than 119 gallons) are required to be marked with the proper shipping name, UN or NA identification number, and the consignee or consignor’s name and address. The consignee is the person (or facility) receiving the shipment. The consignor is the shipper; that is, Zep.

The UN-specification manufacturer’s mark also must be clearly marked on the package. A Y-rated package is required for most Zep products, although some materials (PG III) may need only a Z-rated package.

Shipments of smaller quantities of materials (1 liter or less) that are subject to the limited quantity or consumer commodity exceptions do not require these same marks nor do they require UN specification packagings.
Unless excepted from the regulations, non-bulk packages less than 119 gallons must be marked with the proper shipping name, UN or NA number, and the UN specification marking.

If the proper shipping name (as listed on the Hazardous Materials Table) has a “G” in Column 1, then up to two technical names are required to be marked on the package. These chemical names are listed in parentheses after the shipping name and are often required for “n.o.s.” shipping names.
Bulk packages with a capacity of 1,000 gallons or less such as totes or IBCs must display the ID number on 2 opposite sides. This requirement is true whether the container has only the residue of a hazardous material or whether it is completely full. In addition, the outside of the motor vehicle must be marked on all four sides if the bulk package within cannot be seen. The ID number must be marked through the center of the required placard, on a plain white placard, or on an orange panel next to the required placard. The only time the ID number must be marked on the outside of a motor vehicle that contains only non-bulk packages is when the packages contain the same hazardous material with the same ID number, the gross weight is 8,820 pounds or more, and no other hazardous materials are on-board.
Non-bulk packagings are those designed to hold 119 gallons or less of liquids or 882 pounds or less of solids. Examples of non-bulk packagings include boxes, bags, and 55-gallon drums.

Bulk packagings can hold more than 119 gallons of liquids or 882 pounds of solids. Examples of bulk packagings include roll-off containers and tanks.
When a bulk or non-bulk package contains any residue (vapor, liquid, or solid) of a hazardous material, it is still fully regulated under the Hazardous Materials Regulations and must remain marked and labeled. Bulk packages must remain placarded. If a package has been cleaned to the extent that no hazardous solid, liquid, or gas residue remains, then all marks and labels must be removed or obliterated. Just as it is illegal to ship a regulated hazardous material in an unmarked or incorrectly marked package, you may not ship non-hazardous materials in a package marked to indicate that the contents are hazardous.
Zep ships many consumer commodities such as flammable aerosol cleaning sprays and corrosive cleaners. The re-classification of a product as a consumer commodity is referenced from Column 8A of the Hazardous Materials Table. Packages containing consumer commodities are excepted from almost all of the Hazardous Materials Regulations. However, they must be suitably and durably marked with the words CONSUMER COMMODITY and ORM-D in a rectangular shape.
The markings required for a package containing consumer commodities include CONSUMER COMMODITY; ORM-D within a rectangular shape, and the name and address of the consignee or consignor. Generally, orientation or “this end up” arrows must be marked on two opposite vertical sides, although some smaller quantity shipments are exempt.
Labels are prescribed in Column 6 of the HazMat Table. In general, labels are applied to non-bulk packages and placards are applied to bulk packagings. If multiple labels are listed, the package must be large enough to accommodate all of them.

Portable tanks and totes may bear two labels instead of being placarded. For most other non-bulk packagings, the diamond-shaped hazard class label needs to appear on only one side.
Primary and subsidiary labels both have the hazard class number in the bottom corner. There is no requirement for the subsidiary label to appear to the left, right, above, or below the primary hazard class label. The regulations specify only that they be placed near each other (within 6 inches) and that the package be large enough to accommodate all hazard class labels.
The labels listed here represent toxic, corrosives, poison inhalation hazards, flammable liquids, organic peroxides, miscellaneous hazardous material, oxidizers, dangerous when wet, flammable solids, and spontaneously combustible materials. You may recognize some of these labels on hazardous packages you might have at home, or you may have seen these placards on trucks as you were driving on the highways.

Question—Which of the following labels/placards have you seen either on the outside of 55-gallon drums or on the outside of motor vehicles containing Zep’s chemical products?
Answer—Most of Zep’s chemical products are flammable, toxic, corrosive, or oxidizing liquids.
Zep’s cleaners that contain alcohol or solvents in them are classified as flammable liquids.
Zep cleaners that contain acidic or alkaline ingredients are often corrosive.
Zep cleaners with hydrogen peroxide are often oxidizers.
Zep’s products that are toxic include windshield washer with methanol and the highly toxic Zep Alume with hydrofluoric acid.
Remember that if any of these cleaners are shipped as consumer commodities, these labels or placards are not required.
The regulations prohibit that a package containing a hazardous material be labeled with any misleading information. Non-hazardous materials must not bear a hazard class label.

The penalty for labeling a non-hazardous material with a hazard class label is comparable to a penalty for not labeling a hazardous material, so make sure that when you label a package as hazardous, you mean it!
When different Zep chemical products that have different hazard classifications (for example, different proper shipping names, UN numbers, or hazard classes) are packaged together, the outside of the box must communicate all the hazards. The package must be authorized to hold materials of all the hazard classes contained inside and must bear the marks and labels required for those materials. The products also must be compatible with one another and must not be capable of reacting dangerously with each other.

If the various products have the same proper shipping name and UN number (for example, two or more consumer commodities), then the package need only bear the single required mark. That is, you don’t need to put a dozen ORM-D marks on the package; one will do.
Marking and Labeling Review

• All packages of chemical products must be properly marked and labeled
• Marks include PSN, UN #, name and addresses, and orientation arrows
• Diamond-shaped hazard class labels are intended for non-bulk packages (less than 119 gallons) or on two opposite sides of totes

Bulk and non-bulk packages containing chemical products must be properly marked and labeled. Non-bulk packages (other than consumer commodities or limited quantities) require the proper shipping name (sometimes including a technical name or names), UN or NA identification number, and the name and address of the consignee or the consignor. Orientation arrows are required on two opposite sides of a combination package holding hazardous liquids. Consumer commodities require a special rectangular CONSUMER COMMODITY—ORM-D mark and do not require labels. All other non-bulk packagings require the appropriate hazard class label to represent the primary and subsidiary hazards (if applicable). Marks and labels are required on only one side of the package unless otherwise noted, such as labels for totes or arrows for hazardous liquids in combination packages.
Shipping papers are required for most shipments of hazardous materials, except for consumer commodities. Shipping papers are sometimes called bills of lading. Shipping papers are required to be retained for two years.

The TZG system is set up to automatically print the required hazard information for chemical products. However, these shipping papers must be certified to ensure that all the information listed is correct, so they must be reviewed by a trained and knowledgeable Hazmat Employee.
The TZG system electronically generates bills of lading based on the SKU codes of Zep’s hazardous materials. The SKU codes have been programmed with the correct hazard classification information assigned by the Compliance Group. Only Hazmat Employees are allowed to sign bills of lading for chemical products. If you see any errors on the bill of lading, consult your shipping manager or your Environmental Compliance Officer.
The basic description is the most important information on a shipping paper. The information comes from columns 2 through 5 of the Hazardous Materials Table. A secondary sequence is also allowed: ID number, proper shipping name, class number, packing group (if applicable). In the future, this secondary sequence may be the preferred or only sequence allowed. Currently, both sequences are allowed and are the only ways permitted to list this information on a shipping paper.

Therefore a typical Zep chemical product could be listed two ways:

Sulfuric acid, 8, UN 2796, II or
UN 2796, Sulfuric acid, 8, II
This is an example of a basic description on a bill of lading using the most commonly used sequence domestically. The sequence with the UN number listed first is used more for international transportation of hazardous materials (called “dangerous goods” internationally) so that regardless of language, the UN number is immediately identified and can be translated into the name of the material.

<table>
<thead>
<tr>
<th></th>
<th>US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Sulfuric acid, 8, UN 2796, II</td>
</tr>
<tr>
<td>b.</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td></td>
</tr>
</tbody>
</table>
Which is the only correct shipping description for flammable solvent?

| Flammable liquids, n.o.s. (methyl ethyl ketone, acetone) | 3 | UN 1993 | PG II | 1 drum | 55 gallons |
| Flammable liquids, n.o.s. (methyl ethyl ketone, acetone) | UN 1993 | 3 | PG II | 1 drum | 55 gallons |
| Flammable liquids, n.o.s. (methyl ethyl ketone, acetone) | 3 | PG II | NA 1993 | 1 drum | 55 gallons |

Question: Which of these shipping entries is correct for a shipment of Zep’s flammable metal parts cleaner?

a) Proper shipping name, hazard class, UN number, PG, type, and quantity of packaging

b) Proper shipping name, UN number, hazard class, PG, type, and quantity of packaging

c) Proper shipping name, hazard class, PG, NA number, type, and quantity of packaging
The first entry references the correct sequence

<table>
<thead>
<tr>
<th>Flammable liquids, n.o.s. (methyl ethyl ketone, acetone)</th>
<th>3</th>
<th>UN 1993</th>
<th>PG II</th>
<th>1 drum</th>
<th>55 gallons</th>
</tr>
</thead>
<tbody>
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<td>Flammable liquids, n.o.s. (methyl ethyl ketone, acetone)</td>
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<td>3</td>
<td>PG II</td>
<td>1 drum</td>
<td>55 gallons</td>
</tr>
<tr>
<td>Flammable liquids, n.o.s. (methyl ethyl ketone, acetone)</td>
<td>3</td>
<td>PG II</td>
<td>NA 1993</td>
<td>1 drum</td>
<td>55 gallons</td>
</tr>
</tbody>
</table>

Answer: Only the first entry is correct.
The second and third entries are incorrect because the sequence is incorrect. The third entry is also incorrect because it lists an NA prefix instead of a UN number.
A 24-hour emergency response telephone number is required on shipping papers for Zep’s chemical products shipments. Zep contracts Chem-trec to provide this 24-hour, 7-day a week service. Chem-trec has access to all of Zep’s material safety data sheets and can provide emergency response information to anyone who calls regarding an incident. Zep also contracts with Info-Trac to respond to incidents that require first aid. These toll-free numbers should be automatically printed on each shipping paper. Double-check that the numbers are there before signing a shipping paper.
Emergency response information or a reference to such information must be listed on the shipping paper or sent with a document accompanying the shipping paper. In the event of an emergency, the driver or possibly the emergency responder will need to refer to this information. This requirement is most commonly met by sending an MSDS with the shipment, a photocopy of the applicable orange North American Emergency Response Guidebook (ERG) page, or simply listing the ERG reference for the material on the bill of lading. We will discuss how to use the Emergency Response Guidebook at the end of this presentation.
This shipper's certification verifies that the person signing a shipping paper for a hazardous material has ensured that the materials have been properly classified, described, packaged, marked, labeled, placarded, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

In order to legally sign this certification, the person must have received hazardous materials training within the past three years. This training certifies you to sign shipping papers; non-Hazmat Employees are not permitted to sign shipping papers or bills of lading for chemical products.
In general, the information required on a shipping paper is: the basic description (proper shipping name, hazard class, ID number, and PG); the total quantity and description of the type and quantity of packaging; any additional entries such as a technical name, RQ; the signature after the shipper’s certification; an MSDS or ERG number reference to serve as emergency response information; and a 24-hour emergency response telephone number.
You must follow loading and unloading requirements to ensure a secure shipment. Pre-transport inspections should be conducted to ensure that the driver is authorized to handle your hazardous materials and that the motor vehicle is in good condition.
The person loading hazardous materials onto a motor vehicle is responsible for following the correct techniques to ensure that the vehicle is properly braced and blocked during loading. Smoking should be prohibited in the loading and unloading areas. The driver’s handbrake should be set to ensure that the truck will not roll. Tools should be used carefully so that containers are not damaged during loading or unloading.
Zep Hazmat Employees must ensure that any packages they are offering at one time are compatible with each other aboard the same motor vehicle. Refer to the segregation table at 49 CFR 177.848(e) to ensure that the hazardous materials will not react dangerously with each other. If an “X” appears where two primary or subsidiary hazard classes intersect, then the materials are incompatible with each other and must be shipped on two separate motor vehicles. An “O” means that the materials may be transported aboard the same motor vehicle if they are separated so that, if a package leaks, commingling of hazardous materials would not occur. A blank space where two hazard classes intersect means that no restrictions apply to the shipment.

Zep commonly offers corrosive and flammable liquids for transport at one time. These materials have no segregation restrictions noted in the table. However, oxidizers have segregation requirements with both flammable liquids and corrosives. Therefore when oxidizers are shipped with these materials, they must be separated so that commingling of vapors or liquids would not occur.
When loading or unloading hazardous materials such as phosphoric acid to or from a tank or other bulk container, a qualified attendant must be present. The attendant must be aware of the nature of the material, knows emergency procedures, and has authority and ability to respond appropriately to spills. The attendant must be awake and has an unobstructed view, 25 feet or less from tank or hose.
When loading or unloading hazardous materials such as phosphoric acid to or from a tank or other bulk container, these precautions must be followed:

- Ensure that all manholes and outlet valves are secured
- Be careful of temperature and pressure extremes
- Stop engine
- Open containers outside of transport unit
Zep requires pre-transport inspections before allowing a contracted carrier to leave with a load of hazardous materials:

• Check the driver’s license (or CDL) for identification and to ensure that the driver holds a valid and current hazmat endorsement. The hazmat endorsement should be on the back of the license.
• Check that the truck is in good condition and there are no rotted floorboards, foul odors, nails sticking up, or any other hazards that might cause a problem with the hazardous materials on board.
• Follow through with checklists and report any problems to your shipping manager immediately.

It’s a good idea to use checklists to make sure nothing is missed and to document the inspection. File these checklists with other DOT-required paperwork, including training records and bills of lading.
Warehouse workers or shipping managers are responsible for ensuring that loads of Zep’s chemical products are properly braced and blocked before shipment. A Zep Hazmat Employee should inspect the truck to ensure that there are no hazardous conditions. The inspection should be documented. The driver’s CDL should be checked to ensure that it has not expired, it matches the ID of the driver, and it contains a hazmat endorsement.
It is the shipper’s responsibility to offer or place the proper placard on the vehicle or package for their shipment only. You do not need to take into account the driver’s previous or future pick-ups of hazardous materials. Other than Class 9, all bulk packages require a hazard class placard.
There are two placarding tables to use to determine which placards apply to shipments of non-bulk packages (less than 119 gallons each). In general, shipments of 1,001 pounds or more of hazardous materials require a placard. In most cases, a shipment of even two or three drums triggers the placarding requirement.
Placard Table 1 lists the hazard classes of materials that must be placarded when shipped in any quantity. Zep does not ship these types of hazardous materials.
All hazard classes not appearing on Table 1 are listed on Placard Table 2. Hazardous materials shipped by Zep are listed on Table 2. In short, any Zep shipments of hazardous materials with an aggregate gross weight of 1,001 pounds or more must be placarded. Usually this occurs when two or three 55-gallon drums are offered at one time. A placard can be offered when there is less than 1,001 pounds shipped at one time, but it is not required.

It doesn’t matter if the driver or a Zep employee posts the placard on the outside of the motor vehicle, but if a placard is required, then Zep must ensure that the motor vehicle is correctly placarded before it leaves the facility’s parking lot.
In general, the placard used for a shipment corresponds to the primary hazard class of the material. However, when Zep ships multiple hazardous Materials requiring a placard, you have the option of using the DANGEROUS placard instead of the individual hazard class placards. The individual placards must, however, be used when shipping 1,000 kilograms (2,205 pounds) or more aggregate gross weight of one hazard class of material. From an emergency response perspective, it is preferable to placard for each hazard class of material rather than using a DANGEROUS placard as a substitute.
Placards are not required for shipments of limited quantities, consumer commodities, or non-bulk shipments having an aggregate gross weight of 1,001 lb or less.
The placards listed here represent toxics, corrosives, poison inhalation hazards, flammable liquids, organic peroxides, miscellaneous hazardous material, oxidizers, dangerous when wet, flammable solids, and spontaneously combustible materials. You may recognize some of these placards on trucks you have seen on the highways or on trucks used to transport Zep materials.

Question—Which of the following placards are required on a truck with an aggregate gross weight of 8,000 lb of sulfuric acid and 2,000 lb of flammable solvent?
A Class 8 and Class 3 placard are required (or a DANGEROUS placard and a Class 8).

Answer: Both a Class 8 and Class 3 placard are required (or a DANGEROUS placard and a Class 8). From an emergency response perspective, it is preferable to placard for the individual hazard classes.
Placarding Review

- All quantities of Zep’s hazardous materials may be placarded; however, it is not always required.
- Bulk packages always require a placard.
- Non-bulk packages require a placard when shipping 1,001 lb or more aggregate gross weight.
- Consumer commodities don’t require a placard no matter how much you ship.

All quantities of Zep’s hazardous materials may be placarded; however, a placard is not always required. Bulk packages must always be placarded on two or four sides. Bulk packages contained within a motor vehicle must be placarded on all four sides.

Non-bulk packages require a placard when shipping 1,001 pounds or more aggregate gross weight at one time. Usually the individual (primary) hazard classes are placarded, unless a DANGEROUS placard is allowed.

Consumer commodities don’t require a placard no matter how much you ship at one time.
Only people who have attended either a 24-hour or 40-hour OSHA Hazwoper course may respond to emergencies involving hazardous materials. If you have this training, you may respond only if you have the appropriate equipment to protect yourself.

Regardless of your training level, your first response should always be to contact your facility's Environmental Compliance Officer (ECO) to determine how to respond or clean up. Refer to Section 1.14 of Zep's Spill Response Program in the Environmental Policies and Procedures Manual for more information.
This is the final section of this training module: safety and security.
In addition to reporting an incident to your ECO and consulting Section 1.1.4 of Zep’s Spill Response Program in the Environmental Policies and Procedures Manual, the following common-sense actions should be taken. If you detect a chemical odor or see a spill, stay alive and conscious. Report the incident and never attempt to clean up or rescue anyone by yourself. If possible, secure the area to the best of your abilities to keep others from wandering in. When feasible, use absorbent booms in drainage areas to prevent spills from going into public waterways. Give first responders good directions to the location of the incident. Assist in the clean-up or rescue efforts only if you have had the proper emergency response training and you have the appropriate personal protective equipment available.
Personal protective equipment (or PPE) is required whenever a supervisor or other manager indicates that a certain task necessitates its use. PPE includes many different types of gloves, steel-toe boots, splash goggles, hard hats, long pants, etc. The use of PPE is always as a last option in that Zep tries to minimize hazards before PPE is required. However, if PPE is required in any areas of the facility, or required to perform a certain job duty, it is the employee’s duty to wear it properly. Failure to use required PPE can result in termination of employment at Zep.
The 2008 Emergency Response Guidebook is a helpful tool used by trained responders to hazardous materials incidents. The ERG is usually stored in the driver’s glove compartment and is intended to be used in the event of an incident involving hazardous materials.

Shippers can reference the ERG with information from the shipping paper.
The ERG

- Initial hazmat emergency directions
- Color-coded for speedy reference
  - By chemical name (blue pages)
  - By ID number (yellow pages)
  - By response (orange pages)
  - For toxic inhalation hazards (highlighted entries)

The ERG has four differently colored sections that allow for easy identification of the hazmat and the appropriate emergency response information. If the ID number of a material is known, use the yellow pages to look up the material. These pages are in numerical ID order. If the name of the hazmat is known, look it up in alphabetical order in the blue pages. Regardless of which section you use, it will give you a number that references the orange pages. These give you the general or basic emergency response information. Evacuation and isolation distances are located in the green pages for those materials that are highlighted in the blue or yellow pages.
Here is an example of the emergency response guidebook page pertinent to incidents involving low to moderately hazardous materials, such as consumer commodities. It includes general considerations to be taken in case of a fire or explosion, exposure hazards, public safety hazards, and specifics about what protective clothing should be used and how far to evacuate.
Drivers should respond to emergencies involving spills, fires, or incidents of hazardous materials by calling the 1-800 number on the shipping paper. The number must connect the driver with a person who is knowledgeable about emergency response procedures for the specific hazardous material involved. The 1-800 emergency number must be attended 24 hours a day, 7 days a week while the material is in transportation.

Zep subscribes to Chem-trec to provide this 24-hour emergency response service. Zep’s compliance group maintains a database of MSDSs so that Chem-trec has access to all of the chemical and safety information concerning Zep’s shipments of hazardous materials. Info-trac is contracted to respond to first-aid emergencies.
In addition to the emergency response telephone number on the shipping paper, emergency response information must be included. This can be provided in the form of an ERG reference indicated on the shipping paper for a certain material, a copy of the MSDS of the material stapled to the shipping paper, or a copy of the ERG guidebook page referenced for the material.

The emergency response phone number and information are not required for shipments of consumer commodities.
You should always be aware of any potential security threats such as an unusual interest in the facility or shipments; suspicious behavior; surveillance activity; threatening messages; and new or unfamiliar vendors, contractors, or other unauthorized individuals on the facility’s property.

It is your responsibility to report all security threats to your supervisor or security guard as required per the company policy and security plan.
Security at Zep involves hazardous and non-hazardous materials and affects your own personal safety. Follow company-specific procedures in dealing with and responding to all types of security threats.

Be especially aware of unauthorized people in the dock areas. Pre-loaded trailers of hazardous materials are also vulnerable to security breaches and the practice should be avoided or eliminated.
Facilities and carriers must write security plans if they offer or carry highly hazardous materials. Any employees who have responsibilities under the plan must be trained on the aspects of the plan that affect them. Facilities that must write a plan include those shipping three 55-gallon drums of hazardous materials at one time. Zep often ships more than three 55-gallon drums at one time of corrosives, toxics, flammable liquids, and/or oxidizers and therefore has a security plan written to address these highly hazardous shipments. All the carriers handling these highly hazardous shipments must also have a security plan in place so that they can be prepared for the security vulnerabilities that they could encounter en-route.

Zep often ships or receives bulk containers such as totes. The shipment of these totes is also subject to security plan requirements.
Zep's hazmat security plans address the risks posed at each facility by the highly hazardous materials being shipped, personnel security (including background checks on employees), facility security to ensure that placardable amounts of hazardous materials are securely guarded (including perimeter fencing, locks, and cameras), and en-route security to address possible terrorist or theft attempts on the cargo or the driver.
In-depth security training and testing are required for employees who have responsibilities under the written security plan. A test must be given following an in-depth training session, and training records must be kept to verify that the employee understands his or her responsibilities under the plan.

Note: This presentation does not cover in-depth security plan training.
In-depth security training is required for all Hazmat and Non-Hazmat Employees who have responsibilities under Zep’s security plan. Your training must include Zep’s company security objectives, specific security procedures, your responsibilities as detailed in the plan, the organizational security structure, and the actions you must take to respond in the event of a security breach. In-depth security training needs to be performed at least once every three years or whenever the plan is updated.
Always be vigilant of all potential security and safety threats. Respond to these incidents by following company procedures.

Never respond to an incident or work in an area without ensuring that you have the required personal protective equipment (PPE). PPE is not optional and if it is required to be used, the requirement is mandatory.
Zep has a number of support services available for help involving shipments of hazardous materials. Your shipping manager or facility ECO may be contacted. It is important for you to know that these support services exist so that you use them before committing an error or violation.

Remember: No chemical products may be shipped by air. If you have any questions about ground shipments of chemical products consult your shipping manager or other support services.
Thank you for taking the time to complete this training

- Make sure that you have signed the training roster
- You must take a test to make your training complete
- Please follow the instructions on the next slide to take the test
- You may use all of the references in this presentation to complete your test

This is the end of the presentation. Ensure that you have: signed the roster and completed your test and submitted it electronically. Print a copy of your test and give it to your shipping manager. If you receive your training records in the mail, you must give a copy to your shipping manager. Otherwise your shipping manager is designated as the person who will receive a copy of your graded test and a certificate of your attendance.
To obtain the test, click on the back button and link to the test from the hazmat employee main page of your training.

To obtain the test, click on the back button and link to the test from the main page of the training instructions. You must take the test to get credit for this training. Use these notes as a reference material to complete your test.