1.0 HAZARDOUS MATERIALS TABLE

STUDENT WORKBOOK
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Module 1: Hazardous Materials Table

Introduction

Hazardous Materials Table
The Hazardous Materials Regulations (HMR) are issued by the U.S. Department of Transportation and govern the transportation of hazardous materials in interstate, intrastate and foreign commerce. The process of complying or determining compliance with the HMR, always centers on the Hazardous Materials Table (HMT). This training module and complimentary workbook will help guide the learner through the information outlined in the Hazardous Materials Table and how to use it.

Objectives
1. Identify information about a particular hazardous material, such as the hazard class or division, ID number, packing group, label codes, and other provisions from the HMT.
2. Apply your understanding of the HMT to identify the proper shipping name for a hazardous material and the basic description for a shipment of that hazardous material.
3. Define a hazardous substance and indicate the reportable quantity of that hazardous substance from the information provided in Tables 1 and 2 to Appendix A of the HMT.
4. Identify marine pollutants and severe marine pollutants using Appendix B of the HMT.

Purpose and Scope
The HMT lists alphabetically, by proper shipping name, those materials that the U.S. Department of Transportation has designated as hazardous materials for the purpose of transportation.

The Table provides information used in shipping papers, package marking, and labeling, and prescribes quantity limits on aircraft and railcars, stowage of hazardous materials aboard vessels, and transport vehicle placarding applicable to the shipment and transportation of those hazardous materials.

This module assumes that the manufacturer or shipper has already identified the hazardous material.

HMT Applicability
The Hazardous Materials Regulation (HMR) and the HMT applies to at least three separate groups of people that include:

- Each person who offers a hazardous material for transportation
- Each carrier by air, highway, rail, or water who transports a hazardous material
- A person who performs a function related to the provision or proper use of hazmat packaging

HMT Location
The HMT is located in 49 CFR, Section 172.101. It contains more than 3,000 proper shipping names of substances most commonly shipped or carried as hazardous materials.
The HMT specifies or references requirements pertaining to labeling, packaging, quantity limits aboard aircraft, and stowage requirements for vessels based on proper shipping name, hazard class, identification number, and packing group.

**Hazardous Material Table: Columns 1-5**

**Hazardous Material Table (HMT)**
The first five columns of the Hazardous Materials Table (HMT) contain the information required for the basic description on the shipping paper document or the hazardous waste manifest.

The Table covers the transportation of hazardous materials in all modes: air, water, rail, and highway. It provides the proper shipping name of the material or directs the user to the preferred proper shipping name.

**Column 1: HMT Symbols**
Column 1 is labeled "Symbols" and will contain one or more of six symbols. These symbols designate groups of hazardous materials with specific transportation requirements. If none of the symbols apply, the column will be blank.
Symbols in the Hazardous Materials Table

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>Fixes the proper shipping name, hazard class and packing group for that entry, listed in Columns 2, 3 and 5 respectively. The term “fixes” means that you may not change the proper shipping name, hazard class or packing group, even if the materials do not meet that hazard class definition. When the plus sign is assigned to a proper shipping name in Column 1 of the HMT, it means that the material is known to pose a risk to humans. The Associate Administrator for Hazardous Materials Safety may authorize an appropriate alternate proper shipping name and hazard class.</td>
</tr>
<tr>
<td>A</td>
<td>Means that the specific material is only regulated if offered or transported by aircraft, unless the material is a hazardous substance or a hazardous waste. Hazardous substances in reportable quantities and hazardous wastes are regulated in all modes of transportation. An entry preceded by the letter &quot;A&quot; may be used to describe a material for other modes of transportation provided all applicable requirements for the entry are met.</td>
</tr>
<tr>
<td>D</td>
<td>Identifies entries on the HMT that are only recognized for domestic transportation. The same hazardous material may have another entry on the HMT that is recognized for international transportation. The international entry may or may not have the same proper shipping name, hazard class or packaging instructions as the domestic entry.</td>
</tr>
<tr>
<td>G</td>
<td>Identifies “n.o.s.” (not otherwise specified) and generic proper shipping names for which one or more technical names of the hazardous material must be entered in parentheses, in association with the basic description.</td>
</tr>
<tr>
<td>I</td>
<td>Identifies entries on the HMT which are recognized for international transportation. These entries may be used for both international and domestic transportation. The same hazardous material may have another entry on the HMT that is only suitable for domestic transportation.</td>
</tr>
<tr>
<td>W</td>
<td>Identifies a specific material that is regulated only if offered or transported by vessel, unless the material is a hazardous substance or a hazardous waste. Hazardous substances in reportable quantities, and hazardous wastes, are regulated in all modes of transportation. An entry preceded by the letter &quot;W&quot; may be used to describe a material for other modes of transportation provided all applicable requirements for the entry are met.</td>
</tr>
<tr>
<td>Multiple Symbols</td>
<td>Notice that “Cotton waste, oily” has an &quot;AW&quot; in Column 1 of the HMT. &quot;AW&quot; means the entry applies to air and water transportation only, unless the material meets the definition of a hazardous substance or hazardous waste.</td>
</tr>
</tbody>
</table>

Column 2: Hazardous Materials Descriptions and Proper Shipping Names
Column 2 is labeled “Hazardous materials descriptions and proper shipping names” and lists the proper shipping name of each hazardous material in the table, along with any accompanying descriptive information.
Font Style
Proper shipping names are shown in Roman type. Words in *italics* may be used for additional description, but are not required.

Singular or Plural
Proper shipping names may be used in the singular or plural form, and in either capital or lowercase letters. The example on page 5 displays the plural form (Aerosols) in both upper and lower case letters, but Aerosol in the singular form, aerosol in lowercase letters, or AEROSOL in CAPS are all acceptable.

Use of the Word “or”
The word "or" in *italic* indicates that the terms in the sequence may be used as the proper shipping name, as appropriate. This example includes the word "or" in italic and provides the additional proper shipping name “Paint related material,” for the entry “Paint.”

Interchangeable Words
The word “poison” or “poisonous” may be used interchangeably with the word “toxic” when only domestic transportation is involved. Using the example of “Medicine, liquid, toxic, n.o.s.,” the word toxic could be interchanged with the word poisonous only for a domestic shipment.
Except for hazardous wastes, when qualifying words are used as part of the proper shipping name, their sequence in the package markings and shipping paper description is optional.

The entry in the Table reflects the preferred sequence. Qualifying words shown in italic are not part of the proper shipping name. In the example displayed, the entry “Paint related material, flammable, corrosive (including paint thinning or reducing compound),” contains the qualifying words shown in italic. These are not required to be shown and are not part of the proper shipping name. (See the section titled Use of the Word “or” above.)

When one entry references another entry by use of the word "see," and both names are in Roman type, then either name may be used as the proper shipping name.

In the example “Ethyl alcohol,” you are directed to look at the entry for Ethanol. You should note that for the entry of Ethyl alcohol, none of the other columns contain entries. All of the HMT data are included with the Ethanol entry, but Ethyl alcohol is still an acceptable proper shipping name.

**Column 2: Exceptions**

While Column 2 lists the proper shipping name of each hazardous material in the HMT, there are some entries that receive special consideration with regard to the proper shipping names allowed and required to be used on package marking and shipping paper descriptions.

When a proper shipping name includes a concentration range, the actual concentration (if it is within the range stated) may be used in place of the concentration range.

For example, an aqueous solution of hydrogen peroxide containing 30 percent peroxide may be described as Hydrogen peroxide, aqueous solution with not less than 20 percent but not more than 40 percent hydrogen peroxide, or Hydrogen peroxide, aqueous solution with 30 percent hydrogen peroxide.

**Prefix “Mono”**

The use of the prefix "mono" is optional in any shipping name, when appropriate.

As an example, Iodine monochloride may be used interchangeably with Iodine chloride; and Glycerol alpha-monochlorohydrin may be used interchangeably with Glycerol alpha-chlorohydrin, since the term "mono" is considered a prefix to the term "chlorohydrin" and may be deleted.
Liquid or Solid

The word “liquid” or “solid” may be added to a proper shipping name when a hazardous material specifically listed by name may, due to differing physical states, be a liquid or a solid. An example might be a material normally found in a dry, solid state, but when mixed with a liquid, such as water, would be present in a liquid state.

The example shown here are two entries for Crotonic acid, one in a liquid state, and the other in a solid state.

Waste

If the word “waste” is not included in the hazardous material description in Column 2 of the Table, the proper shipping name for a hazardous waste shall include the word “Waste” preceding the proper shipping name of the material.

Mixture or Solution

A mixture or solution not identified specifically by name, comprised of a hazardous material identified in the Table by a technical name and a non-hazardous material, shall be described using the proper shipping name of the hazardous material and the qualifying word “mixture” or “solution”, unless an exception is met per the regulation.

Taking Acetone, a hazardous material, as an example, the addition of a non-hazardous product, such as water, to Acetone does not change its hazard class or division or the chemical properties. As a result, the proper shipping name would become Acetone mixture or Acetone solution.
Interchangeable Abbreviations

A number of abbreviations are interchangeable. For example, n.o.s. (not otherwise specified), n.o.i. (not otherwise indexed), and n.o.i.b.n. (not otherwise indexed by name) all have the same meaning.

These abbreviations may be capitalized or written in lowercase letters. Each of these three phrases is interchangeable with the others and is acceptable for use on package markings and shipping paper descriptions. The HMT most frequently uses the abbreviation of n.o.s. to cover materials not otherwise specified or indexed.

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Hazardous materials descriptions and proper shipping names</th>
<th>Hazard class or Division</th>
<th>Identification Numbers</th>
<th>PG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft survival kits, see Life saving appliances etc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G Alcohol solution, n.o.s. in alcohol</td>
<td>Alcoholic beverages</td>
<td>3</td>
<td>UN3274</td>
<td>II</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>UN3085</td>
<td>II</td>
</tr>
</tbody>
</table>

Column 3: Hazard Class or Division

Column 3 is labeled hazard class or division and contains a designation of the hazard class or division corresponding to each proper shipping name, or the word "Forbidden."

The table contained in section 173.2 lists the class numbers, division numbers, class or division names, and those sections of the subchapter that contain definitions for classifying hazardous materials, including forbidden materials. For more detailed information, refer to the table below in the section titled “Hazard Class Precedence.”

The normal entries include those that contain a Class Number from 1 through 9 or a Division Number 1.1 through 6.2.
Hazard Class Precedence

A hazardous material can meet the definition of multiple hazard classes. The hazard precedence table and criteria in section 173.2(a) are used to identify the primary and subsidiary hazards. A material can have any number of subsidiary hazard classes.

<table>
<thead>
<tr>
<th>Class No.</th>
<th>Division No. (if any)</th>
<th>Name of class or division</th>
<th>49 CFR reference for definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Forbidden materials</td>
<td>173.21</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>Forbidden explosives</td>
<td>173.54</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.1 Explosives (with a mass explosion hazard)</td>
<td>173.50</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.2 Explosives (with a projection hazard)</td>
<td>173.50</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.3 Explosives (with predominately a fire hazard)</td>
<td>173.50</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.4 Explosives (with no significant blast hazard)</td>
<td>173.50</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.5 Very insensitive explosives; blasting agents</td>
<td>173.50</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.6 Extremely insensitive detonating substances</td>
<td>173.50</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2.1 Flammable gas</td>
<td>173.115</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2.2 Non-flammable compressed gas</td>
<td>173.115</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2.3 Poisonous gas</td>
<td>173.116</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Flammable and combustible liquid</td>
<td>173.120</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4.1 Flammable solid</td>
<td>173.124</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4.2 Spontaneously combustible material</td>
<td>173.124</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4.3 Dangerous when wet material</td>
<td>173.124</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5.1 Oxidizer</td>
<td>173.127</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5.2 Organic peroxide</td>
<td>173.128</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6.1 Poisonous materials</td>
<td>173.132</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6.2 Infectious substance (Etiologic agent)</td>
<td>173.134</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Radioactive material</td>
<td>173.403</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Corrosive material</td>
<td>173.136</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Miscellaneous hazardous material</td>
<td>173.140</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>Other regulated material: ORM-D</td>
<td>173.144</td>
<td></td>
</tr>
</tbody>
</table>

Forbidden

A material for which the entry in this column is “Forbidden” may not be offered for transportation or transported. This prohibition does not apply if the material is diluted, stabilized or incorporated in a device, and it is classified in accordance with the definitions of hazardous materials contained in Part 173 of the HMR.

ORM-D

A material for which the entry in this column is "ORM-D," means a material, such as a consumer commodity, which, although otherwise subject to the regulations of Part 173, presents a limited hazard during transportation due to its form, quantity, and packaging. "ORM-D" cannot be used after December 31, 2020. See section 173.144.
Combustible Liquid

“Class 3” in Column 3 of HMT can always be replaced with the phrase “Combustible Liquid” for domestic transportation of combustible liquids. Such materials may be initially classified as combustible liquid in section 173.120 or reclassified in accordance with exceptions in section 173.150(e) or (f).

Column 4: Identification Numbers

Column 4 is labeled “Identification Numbers” and lists the 4-digit identification number assigned to each proper shipping name. These 4-digit numbers provide quick identification of all hazardous materials.

It is critical to emergency responders that the numbers are accurate and that they are correctly written and legibly displayed. Those preceded by the letters "NA" are only associated with proper shipping names for domestic transportation or for transportation to, from, or through Canada.

Notice the "D" and "I" symbols in Column 1 of these entries for sulfur. The entry used for international shipping uses a UN number, and Division 4.1. The entry for domestic shipping uses an NA number and Class 9. Different rules apply to international and domestic shipments of sulfur, although both are permitted, when the correct provisions of the HMR are met.

Identification numbers preceded by the letters "UN," for United Nations, identify materials for domestic and/or international shipments, while identification numbers preceded by the letters "NA," for North America, may be used for certain materials when transported within the United States only and sometimes for transportation to, from, or through Canada.

Column 5: Packing Group

Column 5 is labeled Packing Group and specifies one or more packing groups assigned to a material corresponding to the proper shipping name and hazard class for that hazardous material. The HMT specifies one or more packing groups assigned to most hazardous materials. If a material is assigned to more than one packing group, the shipper must
determine the correct packing group for that hazardous material. The packing group of the hazardous material will have an effect on a material’s packaging requirements.

**Packing Group Exceptions**
The packing group number must be indicated in Roman numerals on shipping papers, when applicable, and may be preceded by the letters "PG." There are no packing groups designated for materials in these groups: Class 2, Class 7, Division 6.2, and ORM-D materials.

**Packing Group Dangers**
Packing groups are designated in Column 5 of the section 172.101 Table and indicate the degree of danger presented by the material. Packing groups are not assigned to all classes of materials. The shipper is responsible for determining the appropriate packing group:

- Packing Group I = Great Danger (PG I)
- Packing Group II = Medium Danger (PG II)
- Packing Group III = Minor Danger (PG III)

If more than one packing group is indicated for an entry, the packing group for the hazardous material must be determined using the criteria found in Subpart D of Part 173.

**Basic Description**
The basic description for a hazardous material must include these items of information, taken from the HMT. Additional directions pertaining to the basic description and how the information is recorded will be explained in another section of the student guide. The basic description is important in many function-specific tasks, including but not limited to, the preparation of shipping papers.

The four items that make up the basic description include:

- Identification number
- Proper shipping name
- Hazard class or division number
- Packing group

The identification number is taken from Column 4 of the Table.

The proper shipping name entry is taken from the material name prescribed in Column 2 of the Table. The technical name may be entered in parentheses between the proper shipping name and the hazard class or following the basic description for those materials with a 'G' in Column 1.

The hazard class or division number entry for each material is taken from the information in Column 3 of the Table. Except for combustible liquids, the subsidiary hazard class or subsidiary division number must be entered in parentheses immediately following the primary hazard class or division number. Subsidiary hazard classes or divisions are found in Column 6 of HMT.

The packing group is displayed in Roman numerals, as designated for the hazardous material in Column 5 of the Table. The packing group may be preceded by the letters “PG.”
**Changes to the Basic Description**

To make changes to the basic description or associated entries, including re-evaluation of forbidden material, written approval must be received from the Associated Administrator.

**Note:** This does not apply to changes authorized in the exceptions.
Activity: Matching

Information for the Basic Description comes directly from the HMT. Below are two images, Picture 1 is an example of a Basic Description, and Picture 2 is an excerpt from the HMT.

The following information is found in each picture below. Label the following items found in each picture. Use the red boxes to record your answers.

A. Identification number
B. Proper shipping name
C. Hazard class or division
D. Packing Group (PG)

Picture 1:

<table>
<thead>
<tr>
<th>No. of Unit</th>
<th>Description</th>
<th>Hazard Class, Div., PG</th>
<th>Total Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Box</td>
<td>Carriage Bolts</td>
<td>8, PGIII</td>
<td>1000 lbs</td>
</tr>
<tr>
<td>4 Drums</td>
<td>UN1805, Phosphoric acid solution</td>
<td>8, PGIII</td>
<td>4 gal</td>
</tr>
<tr>
<td>1 Drum</td>
<td>UN1993, Flammable liquids, n.o.s. (contains methanol)</td>
<td>3, PGIII</td>
<td>18 gal</td>
</tr>
</tbody>
</table>

Picture 2:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Hazardous materials descriptions and proper shipping names</th>
<th>Hazard class or Division</th>
<th>Identification Numbers</th>
<th>PG</th>
<th>Label Codes</th>
<th>Special provisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphine</td>
<td>-----------------------------------------------</td>
<td>2.3</td>
<td>UN2199</td>
<td>2.3, 2.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phosphoric acid solution</td>
<td>-------------------------------</td>
<td>8</td>
<td>UN1805</td>
<td>III</td>
<td>A7, IB3, N34, T4, TP1</td>
<td></td>
</tr>
<tr>
<td>Phosphoric acid, solid</td>
<td>-----------------------------------</td>
<td>8</td>
<td>UN3553</td>
<td>III</td>
<td>IB8, IP3, T1, TP33</td>
<td></td>
</tr>
<tr>
<td>Phosphoric acid triethylenimine, see Tris-(1-aziridinyl)phosphine oxide, solution.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hazardous Materials Table: Columns 6-10

Columns 6-10
The last five columns of the HMT contain specialized information necessary for packaging, marking, labeling, placarding, and other shipping mode-specific requirements.

While none of the information found in these last five columns is directly placed on the shipping papers, the information contained in these columns is important for determining the required hazard warning labels, applicable special provisions, packaging requirements and restrictions, and limitations on the mode of transportation available to ship a particular hazardous material.

Column 6: Label Codes
Label codes specify the hazard warning labels that must be applied to each package filled with a material conforming to the associated hazard class and proper shipping name, unless the package is otherwise excepted from labeling.

If two or more label codes are listed, the first represents the primary hazard and the other(s) represent the subsidiary hazard(s). No label is required for a material classified as a combustible liquid or for a Class 3 material that is reclassified as a combustible liquid.

The codes contained in Column 6 are defined according to the Label Substitution Table found in section 172.101(g). Additional labeling requirements are found in section 172.402.

Column 7: Special Provisions
Column 7 is labeled Special provisions and specifies codes for special provisions applicable to hazardous materials. These special provisions are in addition to the standard requirements.

When Column 7 refers to a special provision for a hazardous material, the meaning and requirements of that special provision are as set forth in the section 172.102 Table.
**Special Provisions Codes**

Special provisions are coded with numbers and/or letters and numbers. Numeric-only codes are multi-modal in application and may apply to both bulk and non-bulk packaging. Numeric codes may provide additional information about using the proper shipping name.

Alpha/numeric codes are specific to a particular transportation mode or a particular type of packaging. In the example highlighted here, the code IB2 concerns special provisions involving intermediate bulk containers.

The T4 code concerns special provisions involving intermodal portable tanks, and the TP1 code concerns special provisions involving portable tanks. Review section 172.102(a) and (b) to learn more about these special provisions. For definitions and descriptions of packaging types see section 171.8.

**Column 8: Packaging (173.***)**

The numbers in columns 8A, 8B, and 8C complete cites from the HMR beginning with (173. ***). Columns 8A, 8B, and 8C specify the applicable sections for exceptions, non-bulk packaging, and bulk packaging.

Column 8 of the HMT specifies the applicable sections containing the packaging requirements. Notice that Column 8 is divided into three parts - Columns 8A, 8B, and 8C. The table (at right) provides additional information on each part.

In the example shown here for Carbon dioxide, solid, the entry in Column 8A indicates that exceptions to the packaging requirement for this material can be found in section 173.217. The entry for Column 8B indicates that packaging requirements for non-bulk shipments also are found in section 173.217, while the entry for Column 8C indicates that packaging requirements for bulk shipments are found in section 173.240.
**Reference Location**

The number "202" in column 8B indicates that the non-bulk packaging requirements for gasoline are found in section 173.202; and finally, the number "242" in Column 8C indicates that the bulk packaging requirements for gasoline are found in section 173.242.

When the packaging reference is not applicable to the solid or liquid state of the material being transported, use the Solid/Liquid Table in section 172.101(i)(4) to determine the correct packaging.

**Column 9: Quantity Limitations**

Column 9 is labeled Quantity Limitations and is divided into two parts:

- Column 9A specifies the maximum quantities that may be offered for transportation in one package for a passenger-carrying aircraft or passenger-carrying rail car.

- Column 9B specifies the maximum quantities that may be offered for transportation in one package for cargo aircraft only, subject to the limitations stated here.
**Column 10: Vessel Stowage**

Column 10 is labeled Vessel stowage and is divided into two parts. Column 10A specifies the authorized stowage locations for hazardous materials, on-board cargo, and passenger vessels.

Column 10B specifies codes for stowage requirements for specific hazardous materials. In the example shown here for Carbon dioxide, solid, or Dry ice, the entry in Column 10A indicates stowage category "C," which means that the material must be stowed "on deck only" on a cargo vessel and on a passenger vessel. The entry in Column 10B indicates that stowage provision "40" applies for this material, Carbon dioxide, solid, or Dry ice, which prescribes that this material be stowed "clear of living quarters."

![Column 10 diagram](image)

**Categories of Hazardous Substances**

Hazardous materials often fit more than one category, such as: hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the HMT, and other materials as defined in Part 173.

For example, Acetone, a Class 3 flammable liquid material is listed in Table 1 to Appendix A, and may meet the definition of a hazardous substance. Review section 171.8 for more information on the definition of a hazardous substance. The criteria for hazardous substances are shown in the table featured in the following section. See table titled "Table 1 to Appendix A – Hazardous Substances Other Than Radionuclides – Continued" below.
Reportable Quantities for Hazardous Substances

Table 1 to Appendix A of section 172.101 lists all hazardous substances, other than radionuclides, along with the reportable quantities in both pounds and kilograms.

Table 2 to Appendix A of section 172.101 lists those Radionuclides that are hazardous substances and their respective reportable quantities in units of curies and terabecquerels.

Determine if a Material is a Hazardous Substance

To determine if a material is a hazardous substance, you must use Tables 1 and 2 to Appendix A of the HMT.

- Appendix A is at the end of the HMT – To determine whether a particular package of hazardous material is regulated as a hazardous substance, you must first determine the specific name of the material.
- Is the material listed as a hazardous substance in either Table 1 or Table 2 to Appendix A?
- What is the RQ for the material, as listed in Table 1 or 2 of Appendix A?
- For mixtures or solutions, see definition of “hazardous substance” in section 171.8 to determine concentration.
- Does the amount of the hazardous substance contained in one package meet or exceed the RQ for that substance?
- Finally, to determine the proper shipping name of the hazardous substance, you must use the HMT to determine if it is a proper shipping name.

What if a hazardous substance is NOT a proper shipping name?

If a hazardous substance is not listed as a proper shipping name in the HMT, use “Environmentally hazardous substance, n.o.s., liquid,” or “Environmentally hazardous substance, n.o.s., solid,” as appropriate.
Activity: Think It Through

To determine if a material is regulated you will need to navigate the HMT. Here is an example of how you would apply the principles covered in this module.

Step 1: Identify if “Ethylene dichloride,” as packaged, is a hazardous substance for the purpose of transportation.

Step 2: Identify the quantity of the hazardous substance for transportation. For this example, let’s assume we have 5,500 pounds of "Ethylene dichloride" in a cargo tank, which is one package. The material is not in a mixture or solution.

Step 3: Locate the name "Ethylene dichloride" in the left-hand column of Table I - Appendix A. Follow across the page to the far right column, titled Reportable Quantity. Reportable quantities are shown in pounds and kilograms. The RQ for Ethylene dichloride is 100 pounds or 45.4 kilograms per package.

Step 4: Once you determine it is listed in Table 1 to Appendix A, you also need to determine if the amount of material equals or exceeds the RQ for “Ethylene dichloride.”

Answer: In this instance, the amount of 5,500 pounds exceeds the RQ limit of more than 100 pounds in one package; therefore, “Ethylene dichloride” is a hazardous substance regulated for transportation.
**Marine Pollutants**

The marine pollutant requirements, specified under the HMR, apply to all marine pollutants transported by vessel; but do not apply to non-bulk shipments transported by air, rail, or highway.

Marine pollutants are identified in Appendix B of the HMT. Each shipper must determine if the material is a marine pollutant. Let’s try an example. See if Copper cyanide is a marine pollutant by checking to see if it is listed in Appendix B to section 172.101, List of Marine Pollutants.

As you can see it is listed in Appendix B. Now check to see if Copper cyanide is a proper shipping name found in the HMT. It is in the HMT, thus Copper cyanide is a marine pollutant, and Copper cyanide is the proper shipping name to be used. For more information on the definition of a marine pollutant, please refer to section 171.8; or for marine pollutant exceptions, refer to section 171.4.

**Severe Marine Pollutants**

The table located at Appendix B to 172.101, "List of Marine Pollutants," contains two columns. Column 1 is labeled "S.M.P." for Severe Marine Pollutants, and Column 2 is labeled "Marine Pollutant." If the material is listed in Column 2 of Appendix B, it is a marine pollutant. If the letters "PP" appear in Column 1, the material listed in Column 2 is a Severe Marine Pollutant (S.M.P.), otherwise it is not.
Summary

You have completed all of the material for Module 1. You should be able to:

- Identify information about a particular hazardous material, such as the hazard class or division, ID number, packaging group, label codes, and special provisions from the Hazardous Materials Table (HMT).
- Apply your understanding of the HMT to identify the proper shipping name for a hazardous material and the basic description for a shipment of that hazardous material.
- Define a hazardous substance and indicate the reportable quantity of that hazardous material from the information provided in Tables 1 and 2 to Appendix A of the HMT.
- Identify marine pollutants and severe marine pollutants using Appendix B of the HMT.

References