Module 2

Categorization and Identification of Infectious Substances
Overview

- Dangerous goods classes
- Substance categories for division 6.2
- UN Numbers
- Proper Shipping Names
- Exercise: Categorization and identification of infectious substances
What are the three (four) dangerous goods classes which are relevant to shippers of infectious substances?
Dangerous goods classes

⚠️ **Class 2: Gases**

Division 2.2: Non-flammable, non-toxic gases
Refrigerated liquid nitrogen (refrigeration)

⚠️ **Class 3: Flammable liquids**

Ethanol (preservation)

⚠️ **Class 6: Toxic and infectious substances**

Division 6.1: Toxic substances
Division 6.2: Infectious substances

⚠️ **Class 9: Miscellaneous dangerous substances and articles, including environmentally hazardous substances**

Dry ice (refrigeration)
Genetically modified microorganisms and organisms (not classified under 6.2)
What are the three substance categories for division 6.2?
Substance categories (division 6.2)

⚠️ Category A (infectious substances)

- Ebola virus
- *Bacillus anthracis* (culture only)
  (see list provided in exercise)

⚠️ Category B (biological substances)

- *Bacillus anthracis* (patient specimen)
- Highly pathogenic avian influenza virus (patient specimen)

⚠️ Exempt human/animal specimens

- Medical assessment has determined a minimal likelihood that pathogens are present
- Pregnancy test
- Drug screening
Category A infectious substances

This table is available in the document:

Guidance on regulations for the Transport of Infectious Substances 2015-2016

# Category A infectious substances

This table is available in the document:

Guidance on regulations for the
Transport of Infectious Substances
2015-2016

(\text{http://www.who.int/ihr/publications/who_hse_ihr_2015.2/en/})

<table>
<thead>
<tr>
<th>UN Number and Proper Shipping Name</th>
<th>Microorganism (technical name)</th>
</tr>
</thead>
</table>
| **UN 2814**                      | *Mycobacterium tuberculosis* (cultures only)¹  
Infectious substance, affecting humans |  
Nipah virus  
Omsk haemorrhagic fever virus  
Poliiovirus (cultures only)  
Rabies virus (cultures only)  
*Rickettsia prowazekii* (cultures only)  
*Rickettsia rickettsii* (cultures only)  
Rift Valley fever virus (cultures only)  
Russian spring-summer encephalitis virus (cultures only)  
Sabia virus  
*Shigella dysenteriae type 1* (cultures only)  
Tick-borne encephalitis virus (cultures only)  
Variola virus  
Venezuelan equine encephalitis virus (cultures only)  
West Nile virus (cultures only)  
Yellow fever virus (cultures only)  
*Yersinia pestis* (cultures only) |
| **UN 2900**                      | African swine fever virus (cultures only)  
Avian paramyxovirus Type 1 – Velogenic Newcastle disease virus (cultures only)  
Classical swine fever virus (cultures only)  
Foot and mouth disease virus (cultures only)  
Lumpy skin disease virus (cultures only)  
*Mycoplasma mycoides* – contagious bovine pleuropneumonia (cultures only)  
Peste des petits ruminants (cultures only)  
Rinderpest virus (cultures only)  
Sheep-pox virus (cultures only)  
Goatpox virus (cultures only)  
Swine vesicular disease virus (cultures only)  
Vesicular stomatitis virus (cultures only) |

¹ For surface transport (ADR) nevertheless, when cultures are intended for diagnostic or clinical purposes, they may be classified as infectious substances of Category B
## Exemptions

<table>
<thead>
<tr>
<th>Exemptions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Substances that do not contain infectious substances or that are unlikely to cause disease in humans or animals</td>
<td></td>
</tr>
<tr>
<td>2. Substances containing microorganisms that are not pathogenic to humans or animals</td>
<td></td>
</tr>
<tr>
<td>3. Substances in which any pathogens present have been neutralized or inactivated such that they no longer pose a health risk</td>
<td></td>
</tr>
<tr>
<td>4. Environmental samples (including food and water samples) that are not considered to pose a significant risk of infection</td>
<td></td>
</tr>
<tr>
<td>5. Dried blood spots and faecal occult blood screening samples</td>
<td>There are NO packaging requirements for these full 'Exemptions'</td>
</tr>
<tr>
<td>6. Blood and/or blood components which have been collected for the purposes of transfusion or for the preparation of blood products to be used for transfusion or transplantation and any tissues or organs intended for use in transplantation</td>
<td></td>
</tr>
<tr>
<td>7. Decontaminated medical or clinical waste</td>
<td></td>
</tr>
<tr>
<td>8. A professional judgement has determined that there is only a minimal likelihood that pathogens are present</td>
<td>Triple package</td>
</tr>
</tbody>
</table>
What are the UN Numbers and Proper Shipping Names for Category A infectious substances?
Category A – infectious substances

**UN Numbers**

- **UN 2814**
  - Infectious substance, affecting humans
- **UN 2900**
  - Infectious substance, affecting animals only

Category A zoonotic substances (the ones which affect animals and humans) are included in UN 2814.
What are the UN Numbers and Proper Shipping Names for Category B biological substances?
Category B – biological substances

UN Number

UN 3373

Biological substance, Category B

Proper Shipping Name
Does the exempt category have a UN Number and a Proper Shipping Name?
Exempt substances

Exempt substances do not have a UN Number

Proper Shipping Names

Exempt Human Specimen

Exempt Animal Specimen
### Dangerous goods table (new table, version 2015)

#### LIST OF DANGEROUS GOODS RELATED TO THE TRANSPORT OF INFECTIOUS SUBSTANCES

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>UN No.</th>
<th>Class or division</th>
<th>Subsidiary Risk</th>
<th>Hazard Labels</th>
<th>State variations</th>
<th>Operator variations</th>
<th>Special provisions</th>
<th>UN packing group</th>
<th>Max. net qty per package</th>
<th>Packing instruction</th>
<th>Max. net qty per package</th>
<th>Packing instruction</th>
<th>Max. net qty per package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aviation regulated liquid, n.o.s.</td>
<td>3334</td>
<td>9</td>
<td>Miscellaneous</td>
<td>A27</td>
<td>Y964</td>
<td>30 kg G</td>
<td>906</td>
<td>100 l</td>
<td>906</td>
<td>220 l</td>
<td>see 650</td>
<td>see 650</td>
<td></td>
</tr>
<tr>
<td>Biological substance, Category B</td>
<td>3373</td>
<td>6.2</td>
<td>Miscellaneous</td>
<td>GB5</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>see 650</td>
<td>see 650</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Bio) medical waste</td>
<td>3291</td>
<td>6.2</td>
<td>Infectious subst.</td>
<td>A117</td>
<td>II</td>
<td>–</td>
<td>–</td>
<td>622</td>
<td>No limit</td>
<td>622</td>
<td>No limit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon dioxide, solid Dry ice</td>
<td>1845</td>
<td>9</td>
<td>Miscellaneous</td>
<td>A48 A151</td>
<td>–</td>
<td>–</td>
<td>954</td>
<td>200 kg</td>
<td>954</td>
<td>200 kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical waste, unspecified, n.o.s.</td>
<td>3291</td>
<td>6.2</td>
<td>Infectious subst.</td>
<td>A117</td>
<td>II</td>
<td>–</td>
<td>–</td>
<td>622</td>
<td>No limit</td>
<td>622</td>
<td>No limit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethanol</td>
<td>1170</td>
<td>3</td>
<td>Flammable liquid</td>
<td>A3 A58</td>
<td>II</td>
<td>Y341</td>
<td>1 litre</td>
<td>353</td>
<td>5 litres</td>
<td>364</td>
<td>60 litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethanol solution</td>
<td>1170</td>
<td>3</td>
<td>Flammable liquid</td>
<td>A180</td>
<td>III</td>
<td>Y344</td>
<td>10 litres</td>
<td>355</td>
<td>60 litres</td>
<td>366</td>
<td>220 litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>1170</td>
<td>3</td>
<td>Flammable liquid</td>
<td>A180</td>
<td>III</td>
<td>Y344</td>
<td>10 litres</td>
<td>355</td>
<td>60 litres</td>
<td>366</td>
<td>220 litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethyl alcohol solution</td>
<td>1170</td>
<td>3</td>
<td>Flammable liquid</td>
<td>A180</td>
<td>III</td>
<td>Y344</td>
<td>10 litres</td>
<td>355</td>
<td>60 litres</td>
<td>366</td>
<td>220 litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formaldehyde solution, with not less than 25% formaldehyde</td>
<td>2209</td>
<td>8</td>
<td>Corrosive</td>
<td>US4</td>
<td>III</td>
<td>Y841</td>
<td>1 litre</td>
<td>852</td>
<td>1 litre</td>
<td>856</td>
<td>60 litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formaldehyde solution</td>
<td>1198</td>
<td>3</td>
<td>Flammable liquid &amp; Corrosive</td>
<td>A180</td>
<td>III</td>
<td>Y342</td>
<td>1 litre</td>
<td>354</td>
<td>5 litres</td>
<td>365</td>
<td>60 litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genetically modified micro-organisms</td>
<td>3245</td>
<td>9</td>
<td>Miscellaneous</td>
<td>A47</td>
<td>–</td>
<td>–</td>
<td>959</td>
<td>No limit</td>
<td>959</td>
<td>No limit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genetically modified organisms</td>
<td>3245</td>
<td>9</td>
<td>Miscellaneous</td>
<td>A47</td>
<td>–</td>
<td>–</td>
<td>959</td>
<td>No limit</td>
<td>959</td>
<td>No limit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infectious substance, affecting animals only</td>
<td>2900</td>
<td>6.2</td>
<td>Infectious subst.</td>
<td>AU3, CA5, VU2</td>
<td>A81 A140</td>
<td>–</td>
<td>–</td>
<td>620</td>
<td>50 ml or 50 g</td>
<td>620</td>
<td>4 litres or 4 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infectious substance, affecting humans</td>
<td>2814</td>
<td>6.2</td>
<td>Infectious subst.</td>
<td>AU3, CA5, VU2</td>
<td>A81 A140</td>
<td>–</td>
<td>–</td>
<td>620</td>
<td>50 ml or 50 g</td>
<td>620</td>
<td>4 litres or 4 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical waste, n.o.s.</td>
<td>3291</td>
<td>6.2</td>
<td>Infectious subst.</td>
<td>A117</td>
<td>II</td>
<td>–</td>
<td>–</td>
<td>622</td>
<td>No limit</td>
<td>622</td>
<td>No limit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methanol</td>
<td>1230</td>
<td>3</td>
<td>Flammable liquid</td>
<td>A104 A113</td>
<td>II</td>
<td>Y342</td>
<td>1 litre</td>
<td>352</td>
<td>1 litre</td>
<td>364</td>
<td>60 litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrogen, refrigerated liquid</td>
<td>1977</td>
<td>2.2</td>
<td>Non-flammable gas</td>
<td>A152</td>
<td>–</td>
<td>–</td>
<td>202</td>
<td>50 kg</td>
<td>202</td>
<td>500 kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulated medical waste, n.o.s.</td>
<td>3291</td>
<td>6.2</td>
<td>Infectious subst.</td>
<td>A117</td>
<td>II</td>
<td>–</td>
<td>–</td>
<td>622</td>
<td>No limit</td>
<td>622</td>
<td>No limit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exercise

Categorization and identification of infectious substances
### Exercise: Categorization and identification

Please complete the table below by classifying and listing the shipping name and number for each situation.

<table>
<thead>
<tr>
<th>Situation</th>
<th>Categorization</th>
<th>Proper Shipping Name</th>
<th>UN Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient presents with suspected case of Hepatitis B virus and blood samples are sent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sending a culture of <em>Mycobacterium tuberculosis</em> to a reference laboratory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ebola virus has been found in bats and samples which have not been cultured are being shipped</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A medical professional declares that samples collected for a human drug test have only minimal likelihood of containing pathogens</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exercise:

**Categorization and identification**

Please complete the table below by classifying and listing the shipping name and number for each situation.

<table>
<thead>
<tr>
<th>Situation</th>
<th>Categorization</th>
<th>Proper Shipping Name</th>
<th>UN Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient presents with suspected case of Hepatitis B virus and blood samples are sent</td>
<td><strong>Category B</strong></td>
<td>Biological substance, Category B</td>
<td>UN 3373</td>
</tr>
<tr>
<td>Sending a culture of <em>Mycobacterium tuberculosis</em> to a reference laboratory</td>
<td><strong>Category A</strong></td>
<td>Infectious substance, affecting humans</td>
<td>UN 2814</td>
</tr>
<tr>
<td>Ebola virus has been found in bats and samples which have not been cultured are being shipped</td>
<td><strong>Category A</strong></td>
<td>Infectious substance, affecting humans</td>
<td>UN 2814</td>
</tr>
<tr>
<td>A medical professional declares that samples collected for a human drug test have only minimal likelihood of containing pathogens</td>
<td><strong>Exempt</strong></td>
<td>Exempt human specimen</td>
<td>-----</td>
</tr>
</tbody>
</table>
Questions and comments