Transport of Dangerous Goods in Serbia by Rail
National legislation on Transport of Dangerous Goods (TDG)

- Law on the transport of dangerous goods (88/2010, Nov 2010) and adopted rulebooks
- Authority for the transport of dangerous goods (Feb 2013)
- New Law on the transport of dangerous goods (104/16, 83/2018, 95/2018 – other law and 10/2019 – other law)
- Department For Air Traffic And Transport Of Dangerous Goods
- Regulation on transportable pressure equipment (30/2017, 2010/35/EU – TPED)
Law regulates:

- The conditions for performing domestic and international TDG in road, railway and inland waterway on the territory of the Republic of Serbia;
- Requirements in regards to the packaging, transportable pressure equipment and/or tanks, or means of transport aimed for TDG;
- The conditions for appointing bodies which examine and control the vessels for TDG;
- Jurisdictions of state bodies and organizations in the process;
- Conditions and requirements, which the participants in the process of TDG ought to fulfil,
- Supervision, as well as any other matters in regards to the TDG.
International agreements

❖ **ADR** (European Agreement concerning the International Carriage of Dangerous Goods by Road);

❖ **RID** (Convention concerning International Carriage by Rail (COTIF) – Convention concerning International Carriage by Rail (COTIF) Appendix C – Regulations concerning the International Carriage of Dangerous Goods by Rail (RID));

❖ **ADN** (European Agreement Concerning International Transport of Dangerous Goods by Inland Waterways (ADN));

❖ **ICAO Technical Instructions** (Annex 18 to the Chicago Convention on International Civil Aviation);

OTIF Bern

RID 2019

UN (UNECE) Geneve

ADR 2019

ADN 2019

RID Committee of Experts

Working Party on the TDG (WP.15)

Ministry of construction, transport and infrastructure
Department for transport of dangerous goods

- appoint bodies for performing the conformity assessment procedure for packaging or transportable pressure equipment or tank for the transport of dangerous goods and perform supervision over their work;
- appoint bodies for performing conformity assessment procedures for railway tanks (other than TPE) and perform supervision over their work;
- operations which refer to issuance of a license to a company or another legal entity for training of candidates for the position of safety adviser in transport of dangerous goods
- designated examination body in process of obtaining the certificate for safety adviser in transport of dangerous goods RID
- collect and analyze annual reports of the safety adviser for the transport of dangerous goods and propose amendments of the regulations;
- notify the appointed bodies for conformity assessment to the ministry competent for keeping registers of the appointed bodies for conformity assessment; etc.
- translating and publishing RID

Directorate for Railways

- issue the permit for exploitation of railway wagons in accordance with the law regulating the safety and interoperability of the railway
- appoints entity in charge of maintenance (ECM)
Dangerous Goods

❖ may jeopardize people’s health;
❖ cause contamination of the environment or impose material damage;
❖ have dangerous properties for people’s health and environment;
❖ specified by laws, other regulations and international contracts;
❖ on the basis of their nature or properties and condition, and related to transport, may be dangerous for safety or have proven toxic, corrosive, flammable, explosive or radioactive effects;

Dangerous goods also include raw materials of which dangerous goods are produced as well as waste if possess the properties of dangerous goods.
**Classification**

**Class 1:**
Explosive substances
and articles (e.g. ammunition, bombs, industrial explosives, fireworks)
**Classification**

**Class 2: Gases**
(e.g. Butadienes, propan)
Class 3: Flammable liquids
(e.g. diesel fuel, gasoline)
**Classification**

**Class 4.1:** Flammable solids, self-reactive substances, polymerizing substances and solid desensitized explosives (e.g. Sulphur, molten; matches, safety)
**Classification**

**Class 4.2:** Substances liable to spontaneous combustion (e.g. phosphorus, white or yellow, under water or in solution phosphorus)
Class 4.3: Substances which, in contact with water, emit flammable gases (e.g. calcium carbide)
Class 5.1: Oxidizing substances (e.g. chromium trioxide, anhydrous-5.1+6.1+8)

(on all four sides)
Class 5.2: Organic peroxides
Classification

**Class 6.1:** Toxic substances
(e.g. toluene di-iso cyanate)
Classification

Class 6.2: Infectious substances
(e.g. clinical waste)
Classification

**Class 7: Radioactive material**
(e.g. Nuclear waste)

Example:
Transport of nuclear fuel waste from Vinča to Rusia in 2010.
Classification

**Class 8:** Corrosive substances
(e.g. sodium hydroxide solution)
**Classification**

**Class 9**: Miscellaneous dangerous substances and articles (e.g. Sodium hydroxide solution, Lithium batteries)
Participants in TDG by rail

- Safety obligations of the participants
- Main participants: **Consignor, Carrier, Consinee**
- Other participants: Loader, Packer, Filler, Tank–container/portable tank operator, Tank–wagon operator, Railway infrastructure manager, Unloader and Entity in charge of maintenance (ECM)
<table>
<thead>
<tr>
<th>UN No</th>
<th>Name and description</th>
<th>Class</th>
<th>Classification code</th>
<th>Packing group</th>
<th>Labels</th>
<th>Special provisions</th>
<th>Limited and excepted quantities</th>
<th>Packaging</th>
<th>Portable tanks and bulk containers</th>
<th>RID Tanks</th>
<th>Transport category</th>
<th>Special provisions for carriage</th>
<th>Code express (express parcels)</th>
<th>Hazard identification No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1003</td>
<td>AIR, REFRIGERATED LIQUID</td>
<td>2</td>
<td>30</td>
<td>2.2</td>
<td>2.1,1.3</td>
<td>5.2,2</td>
<td>3.3 4.0.5.5.2, 3.4, 4.1.4</td>
<td>P203</td>
<td>MP22</td>
<td>T75</td>
<td>TP5</td>
<td>T50(M)</td>
<td>W5, CW9, CW11, CW36</td>
<td>CE2, 225</td>
</tr>
<tr>
<td>1005</td>
<td>AMMONIA, ANHYDROUS</td>
<td>2</td>
<td>2TC</td>
<td>2.3+8</td>
<td>(+13)</td>
<td>23, 379</td>
<td>0 E0</td>
<td>P200</td>
<td>MP9</td>
<td>T50(M)</td>
<td>PxBH(M)</td>
<td></td>
<td>CW9, CW10, CW36</td>
<td>CE3, 20</td>
</tr>
<tr>
<td>1006</td>
<td>ARGON, COMPRESSED</td>
<td>2</td>
<td>1A</td>
<td>2.2 (+13)</td>
<td></td>
<td>378 653 660 662</td>
<td>120 ml</td>
<td>E1, P200</td>
<td>MP9</td>
<td>T50(M)</td>
<td>CxBN(M)</td>
<td>TA4 TT9</td>
<td>CW9, CW10, CW36</td>
<td>CE3, 20</td>
</tr>
<tr>
<td>1008</td>
<td>BORON TRIFLUORIDE</td>
<td>2</td>
<td>2TC</td>
<td>2.3+8 (+13)</td>
<td></td>
<td>373</td>
<td>0 E0</td>
<td>P200</td>
<td>MP9</td>
<td>T50(M)</td>
<td>PxBH(M)</td>
<td>TU38 TE22 TE25 TA4 TT9 TT6 TM6</td>
<td>CW9, CW10, CW36</td>
<td>CE3, 20</td>
</tr>
</tbody>
</table>
Shunting labels  
(column (5) of Table A)

No. 13

Shunt with care

red triangle with an exclamation mark in black on white background

No. 15

Loose shunting or hump shunting forbidden. Shall be accompanied by a motive power unit. Shall not bump, or be bumped by, other wagons.

three triangles, red, with black exclamation mark
Orange–coloured plate marking

hazard identification number
(column (20) of Table A)

268

UN number
(column (1) of Table A)

1005
Class 1: permit for transport issued by the Ministry of Interior;

Class 7: permit for transport issued by Serbian Radiation and Nuclear Safety and Security Directorate;

Permit for transport of waste Ministry of the Environment
Instruction in writing shall be in driver’s cab.

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**Instruction in writing shall be in driver’s cab**

Ministry of construction, transport and infrastructure.
Amount of dangerous goods transported by rail in tonnes

Ministry of construction, transport and infrastructure
Distribution of the amount of dangerous goods transported by rail in 2019.

- Import: 582692
- Export: 408744
- Transit: 277704
- Domestic: 952175
1. Adverse event with most severe consequences EMERGENCY EVENT IN THE TRANSPORT OF DANGEROUS GOODS – DIMITROVGRAD (railroad tank carrying ammonia)
Risk Assessment drafting Coordinator:
Ministry of Construction, Transport and Infrastructure

Subgroup coordinator:
State secretary Imre Kern, Ministry of Construction, Transport and Infrastructure

Working subgroup members:
• Bojan Miljković, Vlado Bogićević (Ministry of Construction, Transport and Infrastructure)
• Gordana Anđelić (Serbian Railways Infrastructure)
• Željko Mitrović (Serbian Railways Infrastructure)
• Branimir Podovac (Center for investigation of accidents in rail, water and air transport of the Republic of Serbia)
• Goran Bakić (ROADS OF SERBIA)
• Nina Mijatović (MoI-SEM-Department of Risk Management)
Adverse event with most severe consequences – EMERGENCY EVENT IN THE TRANSPORT OF DANGEROUS GOODS (railroad tank)

Leakage of (2–3 tons of) poisonous corrosive gas
UN 1005, AMMONIA, ANHYDROUS

(the real problem also is the handover of a composition at a station in the territory of a country when a locomotive leaves the territory)
<table>
<thead>
<tr>
<th>Event location</th>
<th>Railway station Dimitrovgrad, III receiving and dispatching track</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spatial dimension</td>
<td>Affected area</td>
</tr>
<tr>
<td>The area affected by the gas is about 600 meters in diameter with the center at the railway station. The total affected area covers more than one square kilometer, in a zone populated by more than two fifths of the inhabitants of Dimitrovgrad, namely about 2,700 people.</td>
<td></td>
</tr>
<tr>
<td>Intensity</td>
<td>Intensity of the event?</td>
</tr>
<tr>
<td>Intensive “gas hissing” due to the crack in the tank vehicle body. The event is accompanied by a rapid spread of smoke cloud.</td>
<td></td>
</tr>
<tr>
<td>Name of gas:</td>
<td>UN 1005, AMMONIA, anhydrous</td>
</tr>
<tr>
<td>Hazard:</td>
<td>Flammable gas</td>
</tr>
<tr>
<td></td>
<td>Contains cooled liquid gas, may cause frostbite or injuries</td>
</tr>
<tr>
<td></td>
<td>Causes severe skin burns and eye damage</td>
</tr>
<tr>
<td></td>
<td>Toxic if inhaled</td>
</tr>
<tr>
<td></td>
<td>H400 Very toxic to aquatic life</td>
</tr>
<tr>
<td></td>
<td>EUH071 Corrosive to the respiratory tract</td>
</tr>
</tbody>
</table>
Map of Dimitrovgrad with marked radius of 600m with the center at the railway station.
Example of intervention due to leakage on the valve
Example of intervention due to leakage on the valve
The above shows that there is a Very High level of risk from emergency event in transport of hazardous material on the railway station in Dimitrovgrad.
2018. Disaster Risk Assessment of the Republic of Serbia

2020. National plan of protection and rescue of the Republic of Serbia
Jasenovik: January 19, 2019
Jasenovik, January 19, 2019

Ministry of construction, transport and infrastructure
Evacuated 400 inhabitants of Jasenovik village
Beograd, Jajinci, June 28, 2017, inaccessible terrain
Resnik, February 29, 2020
- 7 wagons UN 1202 and UN 1203
Resnik, February 29, 2020
– 7 wagons UN 1202 and UN 1203
Resnik, February 29, 2020
– 7 wagons UN 1202 and UN 1203
Dangerous goods monitoring department in Serbian Railway Infrastructure

<table>
<thead>
<tr>
<th>Dispatch order number</th>
<th>Railway operator</th>
<th>Time</th>
<th>Date</th>
<th>Starting station</th>
<th>Destination station</th>
<th>Operational service</th>
<th>Quantity</th>
<th>Hazard identification numbers</th>
<th>UN number</th>
<th>Consignor</th>
<th>Consignee</th>
<th>Individual wagon numbers loaded with dangerous goods</th>
<th>Relation</th>
<th>Dispatch order number</th>
<th>Time for delivery of the shipment to the consignee</th>
</tr>
</thead>
</table>

Ministry of construction, transport and infrastructure
Draft Law on Liability for Environmental Damage

Problems:
1. a disproportionate relationship between insurance premiums and the amount of damage
2. unequal position of domestic and foreign carriers
3. the inability to guarantee the repair of damage by the capital of the company
4. the lack of interest of insurance and reinsurance companies in solving the problem

Possible solution:
1. Establishment of a fund nationally or internationally

Ministry of construction, transport and infrastructure
Problem of participants in the transport of dangerous goods in Hungary
Orange–coloured plate marking

RID 5.3.2

Orange color
Orange band
RID 5.3.5

Ministry of construction, transport and infrastructure
Penalties are levied on all participants in the chain even though the wagon returns empty.
Problems:
- Condition of the tanks (marking of tanks, checking of tanks during loading / unloading, checking of technical correctness ...)
- Conditions of rail infrastructure
- Training of workers in contact with the transport of dangerous goods by rail
- A small number of inspectors

It’s necessary
- Periodicly training and assessment of employees
- Consult domestic conformity assessment bodies for tanks
- Check the essential elements of the tank when entering or leaving
- Each transport participant must carry out controls

It is advisable to:
- For each shipment to take pictures of the tanks so it can be seen that the tanks are properly marked and that the valves are provided
THANK YOU FOR YOUR ATTENTION!

Ministry of construction, transport and infrastructure
Department for transport of dangerous goods

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