International Comparison of Dangerous Goods Transport and Training Schemes

Verena Gusik*
Christina Westphal
Dilay Celebi
Matthias Klumpp

17th International Working Seminar on Production Economics

Innsbruck, February 20-24, 2012
1. Introduction
2. ADR overview
3. Existing training schemes
4. Future training schemes for ADR implementation
5. Conclusion
1. Introduction

- Trend of increasing transport traffic due to globalization effects leads to a higher number of dangerous goods transports

- Topic dangerous goods is increasingly spotlighted due to its effect on environmental risks, accidents and for safety reasons

- 2007: 352 million tons dangerous goods were transported in Germany via truck, railway and ships

- Management or employees of a company are not aware of dangerous goods being stored in their factory

- Dangerous goods can endanger the health of people and the environment in general → potentially high costs
1. Introduction

‘Learning before doing’ is an essential must in the content of safety-relevant basics

Paper objectives

- Critical analysis of ADR implementation concepts in European countries
- SWOT analysis: strengths and weaknesses of the ADR implementation
- Concept / recommended procedure of how to train involved people in the framework of dangerous goods
- Concepts could build the basis for countries, which have implemented the ADR regulations / who are on the way to do
2. ADR

- The United Nations developed comprehensive classification criteria and communication tools for dangerous goods transport
- ADR guideline was adopted on 30th of September 1957 in Geneva and entered into force on 29th of January 1968
- European agreement concerning the international carriage of dangerous goods by road
- ADR agreement is updated every two years
2. ADR

- Evolution of EU27 road freight transport 2004 to 2009 – based on tkm
2. ADR

- Nine parties that signed ADR in 1957 set the cornerstone and exemplified the implementation for all following parties
- Poland ratified the ADR agreement in 1975
  - Problems in the transport sector, especially problems regarding the transport of dangerous goods
  - Large-scaled control between July and December 2002:
    - 100 accidents with dangerous goods (36 of these accidents caused a leak of dangerous material)
    - about 3000 vehicles did not provide fire drencher equipment
    - Every fifth vehicle transporting dangerous goods was not even displayed as a dangerous goods transport vehicle
    - Shipping documents were missing on every tenth vehicle
    - In 41 cases of 100 accidents, the drivers were influenced by alcohol

➤ Provision valid from January 2003 → risk prevention officer
### 2. ADR

- **Successful ADR guideline implementation methods can differ**
  - Cooperation between two companies → one of them already adopted the ADR guideline successfully
    - Support in implementing the guidelines
    - Know-how transfer
    - Domestic contacts, new customers, warehouse- and distribution network

- **Problems and challenges with ADR implementation**
  - SME do not have the financial means to exchange the truck fleet and buy new modern vehicles → unfair competition
  - Insufficient trainings for driver
  - Missing control standards/ organizations
2. ADR

### SWOT- Analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• uniform regulations and instructions</td>
<td>• better European cooperation and collaboration</td>
</tr>
<tr>
<td>• lower barriers</td>
<td>• faster processes and handling of dangerous goods transports</td>
</tr>
<tr>
<td>• clarified safety and transport standards</td>
<td>• safer transports</td>
</tr>
<tr>
<td>• reduction of DG transport accidents (e.g. Poland)</td>
<td>• more (fair) competition</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weaknesses</strong></td>
<td><strong>Threats</strong></td>
</tr>
<tr>
<td>• country-specific problems cannot always be considered</td>
<td>• challenges especially for SMEs to implement the ADR requirements</td>
</tr>
<tr>
<td>• long ADR-adoption process</td>
<td>• costs of change management</td>
</tr>
<tr>
<td>• constitution of weak governments (corruption)</td>
<td>• implementation of control mechanisms</td>
</tr>
</tbody>
</table>

Feb-12  
Gusik et al.: Comparison of Dangerous Goods Transport and Training Schemes
3. Existing training schemes

- Training of any persons having to deal with dangerous goods is very essential for a safe processing.
- Different ways and opportunities of training involved persons concerning dangerous goods and their treatment:
  - General awareness of dangerous goods/training for familiarization
  - Function-specific trainings
  - Safety training
- For drivers transporting dangerous goods, the ADR certificate, which proves participation in a driver training for the transport of dangerous goods, is indispensable.
3. Existing training schemes

Composition of dangerous goods regulations (road)
Dangerous goods transport law (Gefahrgutbeförderungsgesetz)

GbV
(order for risk prevention officers)
PO Gb
(examination regulations for risk prevention officers)

GGAV
(hazardous material exemption provision)

GGVSE
(dangerous goods regulation road and rail)

GGKontrollV

GGKostV

Framing order plus 3 attachments

ADR
Attachment A

RID
Attachment B

RSE
(guideline road/rail)

TRS
(technical rules road)

TRV
(technical rules packaging)

TRIBC
(technical rules IBC)

TRT
(technical rules tanks)

TRTF
(technical rules tank vehicles)

TRTC
(technical rules tank containers)
3. Existing training schemes

- Owing to circumstances, companies have to define a risk prevention officer (risk prevention officer provision)
  - Manufacturer, trader, forwarder, filler, importer or carrier of dangerous goods

- Current training opportunities
  - ICC, TÜV Rheinland (e.g. risk prevention officers, ADR certificate, special information days concerning dangerous goods)
  - Online trainings, software-based computer trainings and trainings based on DVDs (e.g. WEKA Gefahrguttransport)
  - Döhle Poland: training sessions and materials for people involved in the hazardous materials treatment, approved by the Polish Maritime Admin.
  - BSD Training Ltd. (Ireland), Scottish Qualifications Authority (SQA): ADR certificate driver trainings
  - Country-specific regulations (e.g. tunnel arrangements in Switzerland)
4. Future training schemes

Initial situation:

- Knowledge transfer in the field of dangerous goods complex
- Long time period between the training units problem
  - legal changes, ADR updates
- Costs often a decisive factor for trainings

- Different country-specific ways of implementing training methods → not one right knowledge transfer concept!

- Example: Turkey, Hungary, Poland
Opportunities for know-how transfer:

- Building cooperations between companies: companies of countries having already implemented ADR support those companies of countries, where this is not the case yet (e.g. Lehnkering with a Hungarian company)
- Private organizations like ICC or German TÜV organizations: enhancement of training offer in different countries
  - In case of organizations not being wide-spread in other countries: establish an office or send training personnel to other private or public organizations for transferring the required know-how
- Subsidiaries in different countries
- Additional training sessions in shorter time intervals
- Online trainings and e-mail newsletter
5. Conclusion

- Higher importance of European Standards
  → meaning of ADR guideline’s ratification and compliance to it and will also be an important topic in European countries in the future

- Implementation of ADR conditions more or less difficult in different countries - depending on political, legal, infrastructural and economic situation as well as the willingness and ability of each single country/company towards it
  → easier for western European countries than for eastern European ones

- Investments and change costs are often a problem for SMEs

- Problem for fast and effective implementation of ADR:
  → missing qualified personnel and control organizations

- A more uniform and standardized training concept needs to be developed to overcome the described lack of knowledge
International Comparison of Dangerous Goods Transport and Training Schemes

Thanks for your attention!

Contact author: Matthias Klumpp
+49 (0) 201 81004-554
matthias.klumpp@fom-ild.de
www.fom-ild.de

17th International Working Seminar on Production Economics

Innsbruck, February 20-24, 2012