ICT in Transport Logistics Workshop

The handling of dangerous goods in Switzerland

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2. Safety
3. Role of FEDRO
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### 1. Quantification

**Transported goods in general**

<table>
<thead>
<tr>
<th>Transport quantities / Transport output p.a.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road*</td>
</tr>
<tr>
<td>288.4 million tons</td>
</tr>
<tr>
<td>14.2 billion tkm</td>
</tr>
<tr>
<td>Rail</td>
</tr>
<tr>
<td>62.6 million tons</td>
</tr>
<tr>
<td>9.5 billion tkm</td>
</tr>
</tbody>
</table>

*Quantities/outputs recorded for domestic and foreign heavy goods vehicles (> 3.5 t)
### 1. Quantification

**Dangerous goods transported in particular**

<table>
<thead>
<tr>
<th>Transport quantity/ Transport output p.a.:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Road</strong>*</td>
<td><strong>Rail</strong></td>
</tr>
<tr>
<td>19.6 million tons</td>
<td>8.9 million tons</td>
</tr>
<tr>
<td>(= 6.8% of all goods carried by road)</td>
<td>(= 14.2% of all goods carried by rail)</td>
</tr>
<tr>
<td>1.136 billion tkm</td>
<td>No data</td>
</tr>
<tr>
<td>(= 8% of road transport output)</td>
<td></td>
</tr>
</tbody>
</table>

*Quantities/outputs recorded for domestic and foreign heavy goods vehicles (> 3.5 t)
1. Quantification

**Types of dangerous goods carried by road**

<table>
<thead>
<tr>
<th>Transport quantity/ Transport output p.a.:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral oil products (petrol, diesel, heating oil)</td>
<td>Other dangerous goods (agro-chemicals, acids, bases, etc)</td>
</tr>
<tr>
<td>12.9 million tons (= 66% of all dangerous goods carried by road!)</td>
<td>6.7 million tons (= 34% of all dangerous goods carried by road)</td>
</tr>
<tr>
<td>602 million tkm (= 53% of road transport output for dangerous goods)</td>
<td>534 million tkm (= 47% of road transport output for dangerous goods)</td>
</tr>
</tbody>
</table>
1. Quantification

Summary

- **Comparison of road/ rail:** Dangerous goods account for 14.2% of all goods carried by rail but for only **2.5%** of the total amount of goods carried by road and rail. Dangerous goods account for 6.8% of all goods carried by road but for only **5.5%** of the total amount of goods carried by road and rail.

- The **quantities** of dangerous goods carried by road and the transport outputs are considerable.

- The carriage of dangerous goods by rail constitutes a **significant part** of the Swiss transportation industry.
2. Safety

Public perception and acceptance of risk

- **Risk perception:**
  Dangerous goods are associated with spectacular accidents such as the Zurich-Affoltern disaster in 1994*.

- **Acceptance of risk:**
  There is a marked aversion to risk, as the possibility of very serious damage can never be excluded

*Derailment of 5 petrol tank wagons which caught fire leaving 3 people seriously injured and resulting in the evacuation of 140 people and property damage amounting to CHF 40 million.*
2. Safety

Accident statistics

- In Switzerland, every year there are around:
  - **120 accidents** involving dangerous goods being carried by road (out of a total of 78,000 accidents)
  - **4 accidents** resulting in leaks, i.e. the escape of dangerous goods

- This means that "real" accidents, i.e. accidents involving the escape of dangerous goods, are extremely rare.
2. Safety

Improvement of safety as a socio-political and legal task

- Despite the fact that the release of dangerous goods on the road is a statistically rare event, the general public has a high (irrational) level of aversion to risks of this kind.
- As far as the socio-political task is concerned, even though the statistical risk is low, it is sufficient if the public perceives the risk to be very high.
- The socio-political task is implemented through various pieces of legislation (e.g. Order concerning the carriage of dangerous goods by road, the Order concerning accidents, etc).
2. Safety

Overview of measures to improve safety

- **Appointment of dangerous goods officers** in companies that transport dangerous goods.
- **Training certificates** for carriers of dangerous goods (e.g. drivers).
- **Construction regulations** for vehicles and containers used to transport dangerous goods (tanks, IBCs, etc).
- **Periodical checks** by the authorities (FIGD*; SVA) on vehicles and containers used to transport dangerous goods.
- **Transport regulations** (restrictions on quantities, packing regulations, etc)
- **Additional restrictions and prohibitions** for the carriage of dangerous goods on certain stretches of road (e.g. tunnels, roads close to rivers and lakes).
- **Roadside checks** on the carriage of dangerous goods

* Federal Inspectorate for Dangerous Goods
2. Safety

Restrictions on the carriage of dangerous goods in tunnels

Additional restrictions (quantities, time slots) have been imposed in 15 tunnels:
2. Safety

Ban on carriage of dangerous goods on stretches of road near protected lakes and rivers

Extract listing bans on carriage of dangerous goods on certain stretches of road near lakes and rivers

<table>
<thead>
<tr>
<th>Country</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE</td>
<td>Belp, Gürbebrücke-Verzweigung Auhaus/Giessenhof</td>
<td>Länge 1,3 km</td>
</tr>
<tr>
<td>BE</td>
<td>KS 1315, Gimmi-Aarberg</td>
<td>Länge 3 km inkl. Verzweigung Richtung Kappelen (Länge rd. 1 km)</td>
</tr>
<tr>
<td>BE</td>
<td>Seedorf, Gemeindestrasse Rachalen-Verzweigung Holteren/Ruchwil</td>
<td>Länge 300 m</td>
</tr>
<tr>
<td>BE</td>
<td>Neuenegg, Sürì – Matzenried</td>
<td>Länge 1,5 km</td>
</tr>
<tr>
<td>BS</td>
<td>Basel und Ricken, „Riehenstrasse“-“Aussere Baselstrasse“ (Strecke zwischen „Fasanenstrasse/Allmendstrasse“ und „Rauracherstrasse“, Länge rd. 1 km)</td>
<td></td>
</tr>
<tr>
<td>BS</td>
<td>Riehen, “Aussere Baselstrasse“ (Strecke zwischen “Rauracherstrasse“ und „Bäumilhofstrasse“, Länge rd. 200 m)</td>
<td></td>
</tr>
<tr>
<td>BS</td>
<td>Riehen, “Rauracherstrasse“ (Strecke zwischen “Aussere Baselstrasse“ und „Bäumilhofstrasse“, Länge rd. 200 m)</td>
<td></td>
</tr>
<tr>
<td>BS</td>
<td>Riehen, “Weilstrasse“ (Strecke zwischen “Lörracherstrasse“ und Zollamt “Weilstrasse“, Länge rd. 800 m)</td>
<td></td>
</tr>
<tr>
<td>BL</td>
<td>Mulfingen, “Rheinfelderstrasse“ (Strecke zwischen Einmündung “Anhafte“ und Anschluss Hagnau, Länge 2,4 km)</td>
<td></td>
</tr>
<tr>
<td>BL</td>
<td>Sissach, “Griemattweg“ (Strecke zwischen “Steblingerweg“ und “Icktenweg“, Länge 800 m)</td>
<td></td>
</tr>
<tr>
<td>BL</td>
<td>Itingen, “Sonnenbergweg/Werimattweg“ (Strecke zwischen Anschluss T2 und Gemeindegrenze Sissach, Länge 750 m)</td>
<td></td>
</tr>
<tr>
<td>AG</td>
<td>Baden/Dattwil, “Taternstrasse“ (Länge rd. 250 m)</td>
<td></td>
</tr>
</tbody>
</table>
B) Safety

Checks on carriage of dangerous goods by road

- **Year 2006:**
  - 1407 checks of vehicles carrying dangerous goods
    - (CH 980 / EU 407 / other 20)
  - Offences 555 [≠ vehicles]
    - (CH 450 / EU 96 / other 9)

- Most common **offences:**
  - Fire extinguishers 75 (CH 58 / EU 14 / other 3)
  - Markings 65 (CH 53 / EU 11 / other 1)
  - Load safety 61 (CH 50 / EU 10 / other 1)
  - Equipment 50 (CH 41 / EU 8 / other 1)
2. Safety

Summary

- The carriage of dangerous goods by road is comprehensively regulated.
- The carriage of dangerous goods by road is an important aspect of Swiss road safety policy.
- Apart from road safety, there are other significant aspects (such as environmental protection, accidents, etc.)
3. Role of FEDRO

Overview of functions/ tasks

- Regulations
- Ensuring support for enforcement
- Granting exceptional authorisations
- Collecting data concerning checks of dangerous goods
- Reporting
- Responsibility for the network
- Enforcement function on the national road network
3. Role of FEDRO

Regulations

- **Issuing regulations for dangerous goods** under the aegis of/in cooperation with FEDRO (national; international)*

- Ensuring **sustainability** in the regulations through:
  - appropriate consideration given to economy, ecology and safety
  - cooperation with other stakeholders (e.g. preparatory meetings with the participation of FEDRO/FOT)

*International:
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road (ratified by a total of 44 States, including CH)

*National* (including particularly):
SDR = Order concerning the Carriage of Dangerous Goods by Road
GGBV = Order concerning Dangerous Goods Officers
3. Role of FEDRO

Support for enforcement

- **Responsibility for enforcement** with regard to the carriage of dangerous goods by road:
  - **Federal Inspectorate for Dangerous Goods (FIDG)**
  - (approval of packaging, pressurised vessels, tanks and their equipment)
  - **Cantons**
  - (other enforcement tasks)

- **FEDRO** provides **support for enforcement** by means of:
  - written clarifications of the legislation (cf. Order concerning dangerous goods officers)
  - processing of inquiries by the authorities (FIDG, cantons)
  - presentations to specialist and training seminars
  - publications on home page ([www.astra.admin.ch](http://www.astra.admin.ch))
3. Role of FEDRO

**Granting of exceptional authorisations**

- All areas of the law relating to the carriage of dangerous goods by road
- "Special cases" and "hardship cases"
- Applications (not *ex officio* )
- Approximately 20 exceptional authorisations are granted per annum
- Main areas of application:
  - Training licences for drivers
  - Recurrent tests with regard to tanks
3. Role of FEDRO

Collection of data concerning checks of dangerous goods

- **FEDRO database** in cooperation with the cantons and the customs department (since 1.1.2008)

- **Database content includes:**
  - Scale of the carriage of dangerous goods (t or tkm)
  - Number of checks carried out
  - Number of vehicles checked
  - Number of offences established
  - Measures instructed
3. Role of FEDRO

Reporting

Since 1.1.2008 (mandatory):

- Cantons report the data concerning checks on dangerous goods to FEDRO every year
- FEDRO reports on the checks to the European Commission every year
3. Role of FEDRO

**Network responsibility**

Under the legislation concerning the carriage of dangerous goods, FEDRO has network responsibility for ensuring the availability of **connecting and through roads** and the associated **supply of dangerous goods** (see National Tunnel Regulations in Annex 2 SDR*).

*Order concerning the carriage of dangerous goods by road*
3. Role of FEDRO

Enforcement function on the national road network

FEDRO enjoys powers of enforcement on the national roads, particularly with regard to **road signs for dangerous goods** (see. Art. 104, Art. 19 and Sig. 2.10.1, 2.11 Annex 2 Road Signs Order)

- **2.10.1** Verbot für Fahrzeuge mit gefährlicher Ladung (Art. 19)
  - Prohibited for vehicles with dangerous loads (Art.19)

- **2.11** Verbot für Fahrzeuge mit wassergefährdender Ladung (Art. 19)
  - Prohibited for vehicles with loads that could endanger lakes and rivers (Art.19)
3. Role of FEDRO

Summary

FEDRO:

• ensures an **overview** (responsibility for road network; road signs on the national road network)

• works for **legislative sustainability** (through cooperation with national and international bodies and stakeholder working groups, including the aspects of economy, ecology and safety)

• also **takes into consideration individual cases** (granting of exceptional authorisations and responds to inquiries from the authorities and the public)

• establishes the **real situations and circumstances specific to dangerous goods** (operates a database; exchanges information with the authorities and industry)
4. Implementation of ADR 2007

ADR Tunnel Classification

- ADR 2007 regulations
- FEDRO project
- Procedure/methodology
- Inclusion of the cantons
4. Implementation of ADR 2007

ADR 2007 Regulations (1)

ADR 2007

- **Aim:** To standardise regulations concerning restrictions on the carriage of dangerous goods through tunnels → Standard classification

<table>
<thead>
<tr>
<th>Category</th>
<th>Restriction on the carriage of dangerous goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No restrictions on dangerous goods</td>
</tr>
<tr>
<td>B</td>
<td>Prohibition of goods with very high risk of explosion</td>
</tr>
<tr>
<td>C</td>
<td>Prohibition as in B + high risk of explosion + release of toxic substances</td>
</tr>
<tr>
<td>D</td>
<td>Prohibition as in C + high risk of fire</td>
</tr>
<tr>
<td>E</td>
<td>Restrictions for all dangerous goods</td>
</tr>
</tbody>
</table>

- **Cause:** Tunnel fires at Mont Blanc, Tauern, Gotthard
- **Time limit:** Implementation by 1 January 2010
4. Implementation of ADR 2007

ADR 2007 Regulations (II)

Fundamental legislation applying in Switzerland

- **ADR**: European agreement concerning the carriage of dangerous goods by road
- **SDR**: Order concerning the carriage of dangerous goods by road
- **Order concerning Accidents**: Protection of the population and the environment from the effects of serious accidents

Responsibility for Implementation

- **FEDRO**: Tunnels on the National Roads
- **Cantons**: Tunnels on the subsidiary road network
4. Implementation of ADR 2007

FEDRO Project-ADR 2007 Tunnels (I)

Aim

• Implementation of the requirements of ADR 2007: **Classification of tunnels for which restrictions already exist under the SDR** by 1 January 2010
  ( → 8 tunnels on the national roads and 7 tunnels on the cantonal roads)

• Development of a procedure for standardised future implementation in Switzerland
  ▪ Methodology
  ▪ Guidelines for practical application
4. Implementation of ADR 2007

FEDRO project-ADR 2007 Tunnels (II)

Anforderungen ADR 2007

- ADR 2007, Abschnitt 1.9.5
- Kategorisierung SDR-Tunnel
- Revision SDR

Verfahren Anpassung SDR

- Vernehmlassung Kantone
- Ämterkonsultationsverfahren
- Antrag / Entscheid UVEK

Anpassung Signalisation (Tunnel + "Umfahrung")

Inkrafttreten SDR

Anpassung Signalisationsverordnung

Projekt ASTRA Tunnel ADR 2007

Ziele Projekt

- Einheitliche Methodik zur Risiken
- Begrifflichmethodik -> SFV
- Richtlinie
- Verfahren
- Umsetzung Tunnel Nationalstrassen

Entwicklung Verfahren und Methodik

Netzweite
Umsetzung
Nationalstrassen
+ Umsetzung in Kantonen (bei Bedarf)

Input für allfällige Anpassung
nächste Revision SDR