

Logistical aspects of the identification of dangerous goods (and waste) at Seveso warehouses

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Budapest
10.04. 2013.



2014.01.22.



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Sqas warehouses



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Storage hazardous class and ADR or
GHS/CLP
Transport regulations
Conclusion





European chemical Industry and Transport Operations



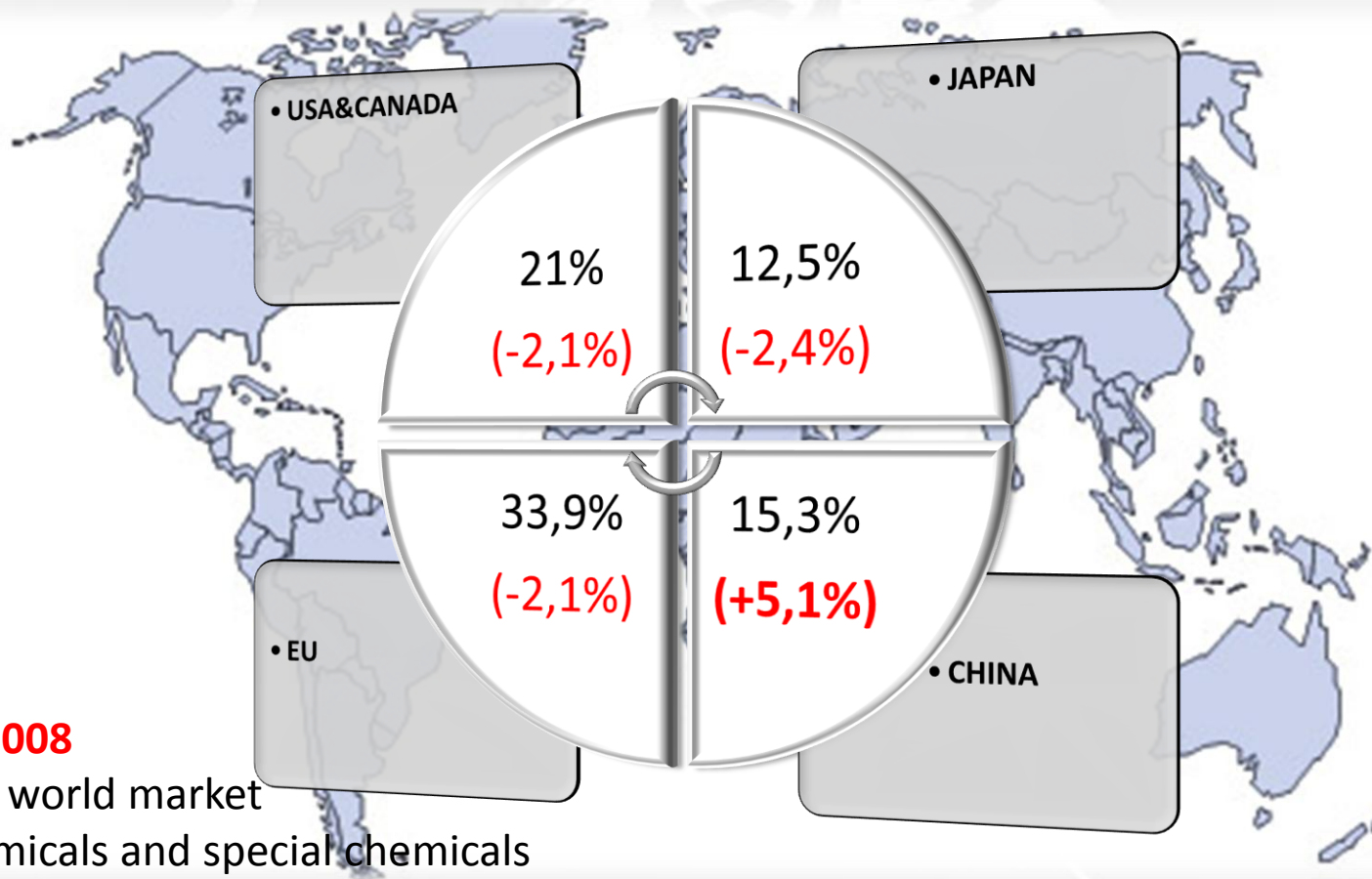
International Year of
CHEMISTRY
2011

- ▶ **1/3** of world production
- ▶ **27.000** companies
- ▶ Employees **1,5** million people
- ▶ Sales for **440** billion EUR in 2004
- ▶ More than **111** billion tonne-km per year





World chemical industrial activity



2000 to 2008

Trends of world market

Fine chemicals and special chemicals



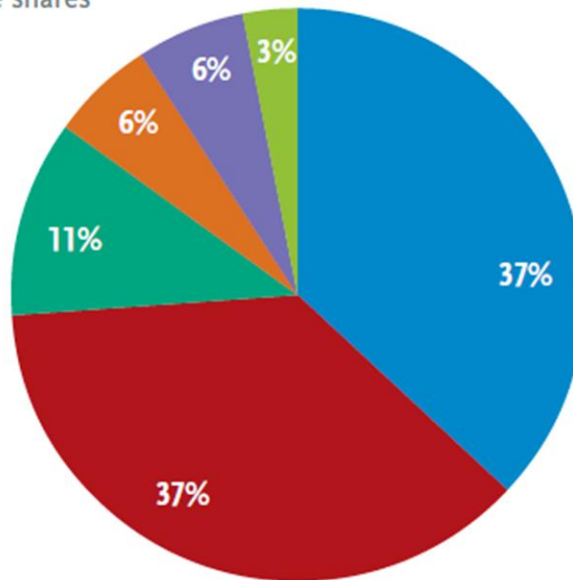
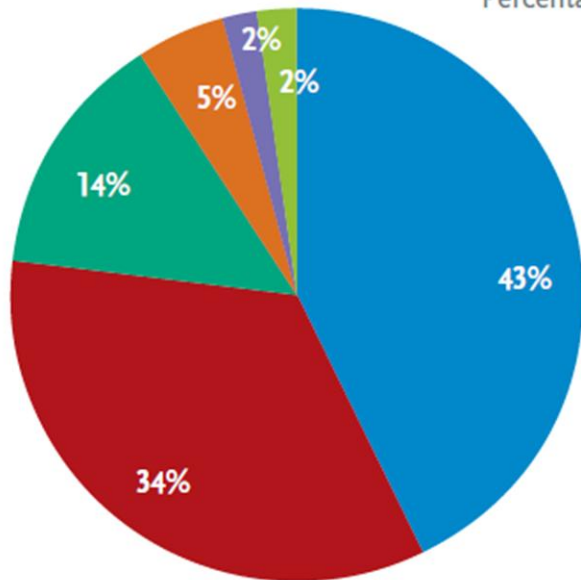


World chemicals market share - trade

World exports of chemicals 2011

World imports of chemicals 2011

Percentage shares



Asia



NAFTA



Rest of Europe



Latin America



Africa & Oceania



EU



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New solution for transports between Europe and Far East

—●— Transsiberian route

Delivery transit time from Shanghai to Europe via TransSiberian railway - 22-25 days

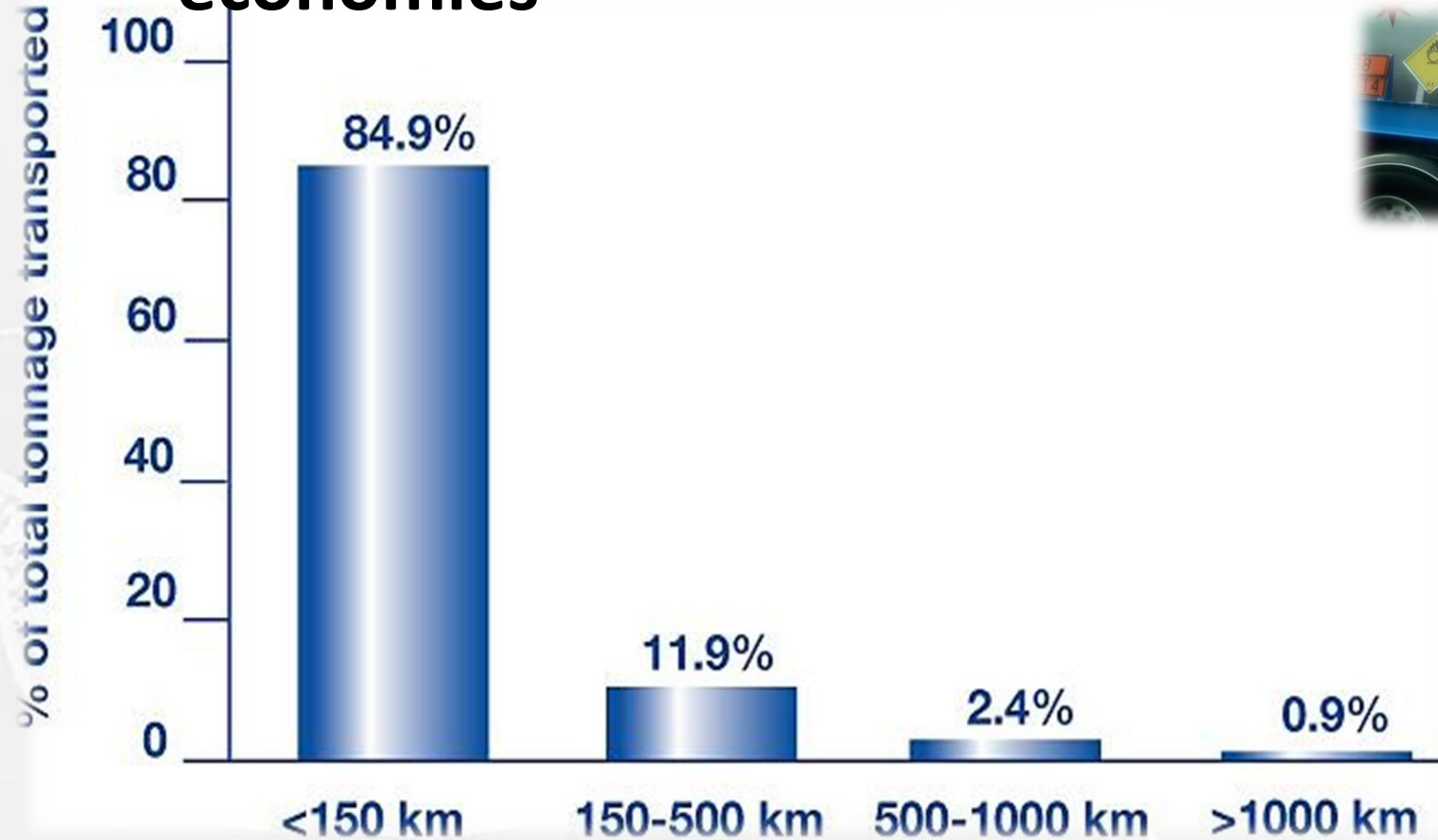
—●— Transoceanic route

Delivery transit time from Chinese and Korean ports to Russia via Deep Sea ports - 45-50 days





Road transport tonnage distances in modern economies





Licensing procedure for Seveso warehouse

Establishment of a licensed warehouse and installation

OECD average:

- ▶ **15,1** permit procedures are necessary for the building of a dangerous goods warehouse
- ▶ **157** days required time investment





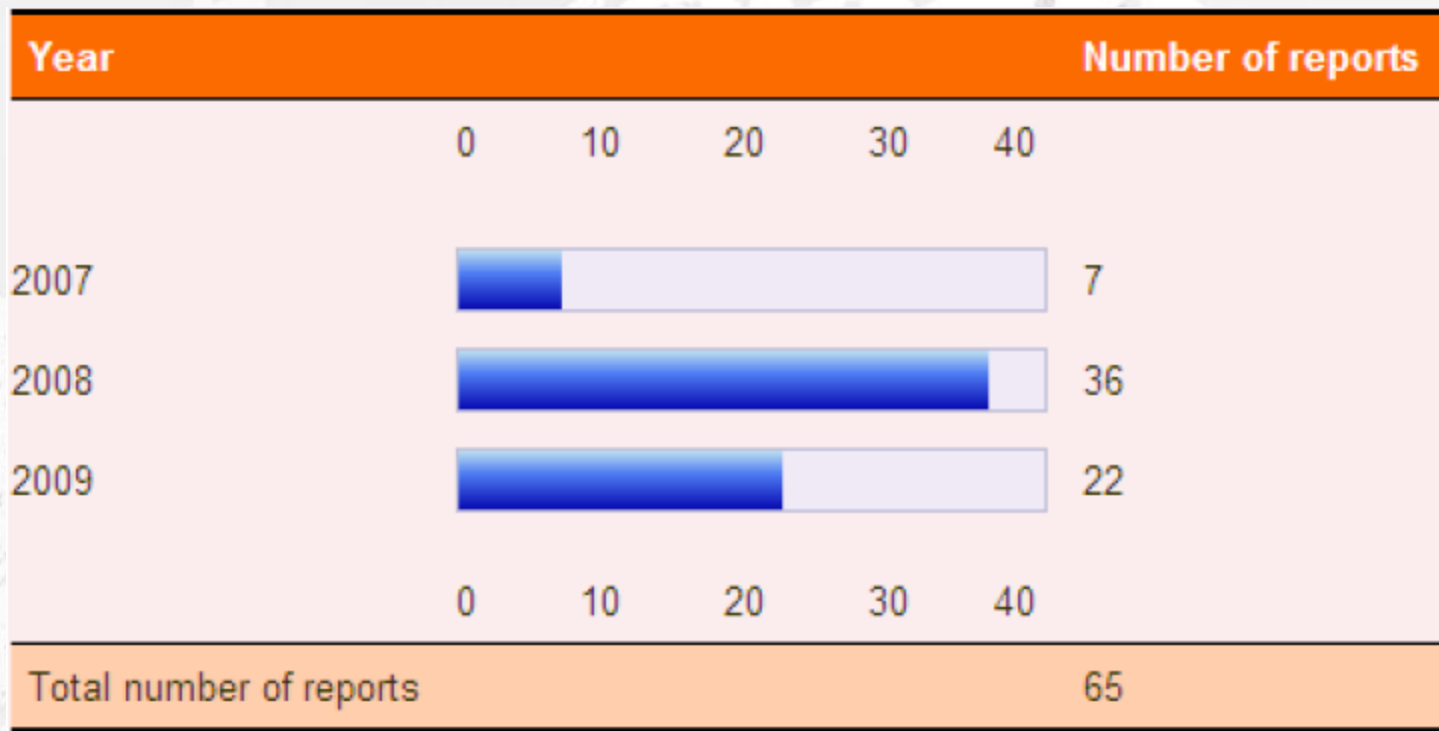
Characteristics of Dangerous goods warehouses in Europe - Outlook

- ▶ More than 2.000.000 pallets capacity
- ▶ About **100** DG warehouse (some part of it SQAS assessed)
- ▶ Average storage capacity: about **20.000** pallets
- ▶ Number of fire compartmentation: about **600**
- ▶ Average quantity per fire compartment: less than **3000** pallets
- ▶ More than the half of the warehouses in Germany
- ▶ 9 warehouses – Class 1 (Explosive substances)
- ▶ 12 warehouses – Class 6.2 (Infectious substances)
- ▶ 4 warehouses- Class 7 (Radioactive material)





SQAS warehouse



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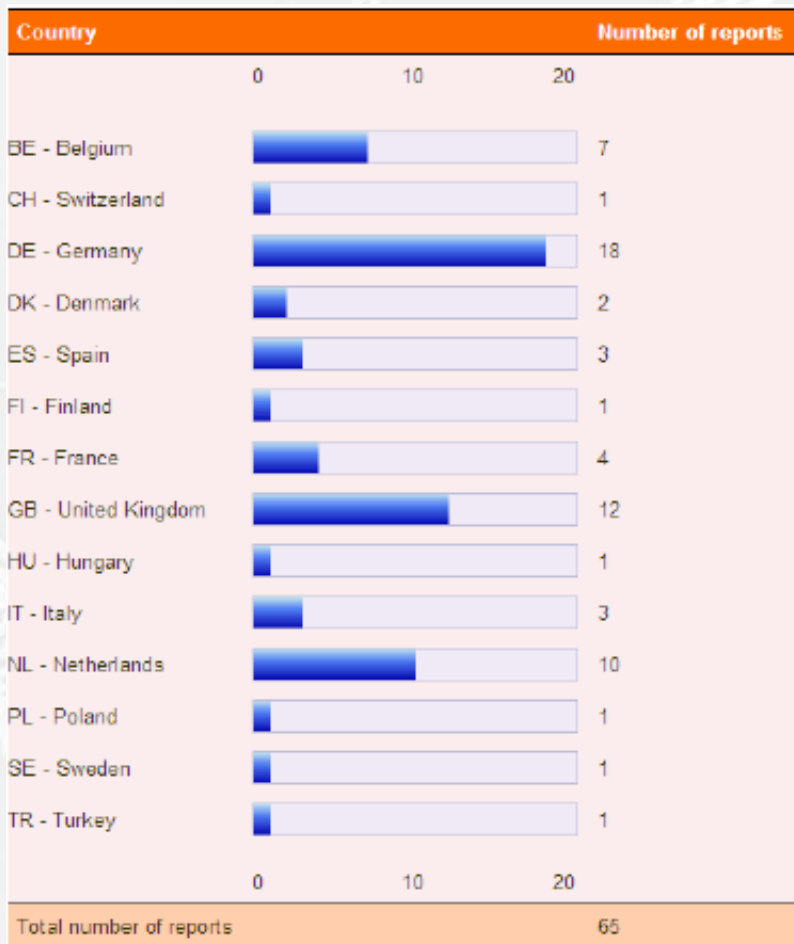
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SQAS warehouse



- ▶ Concentrated in D-UK-NL-B area (nearly 75 %)
- ▶ Large groups (about 50 %) f.e. Lehnkering
- ▶ More companies should apply the scheme





Dangerous goods warehouses in Hungary

Seveso higher tier warehouses - **11**

Seveso lower tier warehouses - **22**

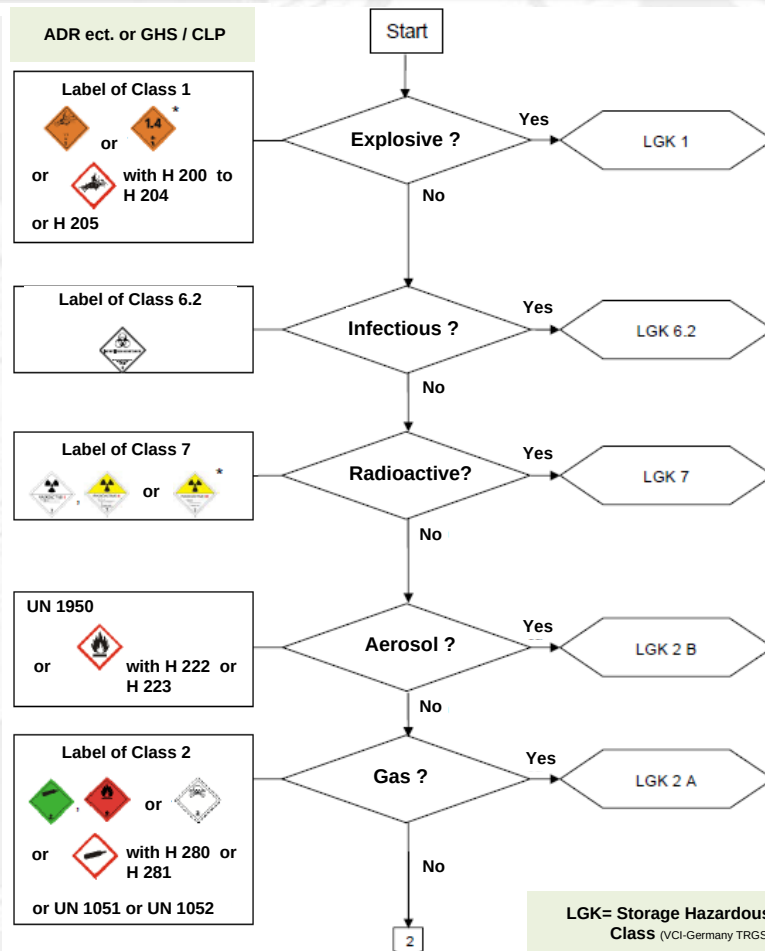
Specifically logistics warehouses - **7**

Total area of storage - about 50.000 m²





Classification



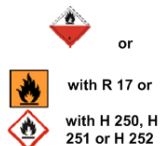


Classification



ADR ect. or GHS / CLP

Label of Class 4.2



or with R 17 or

with H 250, H 251 or H 252

2

Pyrophoric or self-heating ?

Yes

LGK 4.2

No

Label of Class 4.3



or



with R 15 or



with H 260 or H 261

With water emit flammable gases ?

Yes

LGK 4.3

No

Storage group I to III

or



with H 240 or H 241

or



with R 2 or R 3

Other danger of explosion ?

Yes

LGK 4.1 A

No

Label of Class 4.3



or



with H 242

Organic peroxides or self-reactive ?

Yes

LGK 5.2

No

3

LGK= Storage Hazardous Class (VCI-Germany TRGS)



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Classification



ADR ect. or GHS / CLP

Label of Class 4.1



and solid with



with R 11 or



with H 228

Group A-C

or

UN 1942, UN 2067,
UN 3375 and UN 2071



Listed substances



Label of Class 5.1



with H 271 or H 272
And non-listed
substances



Label of Class 3

or

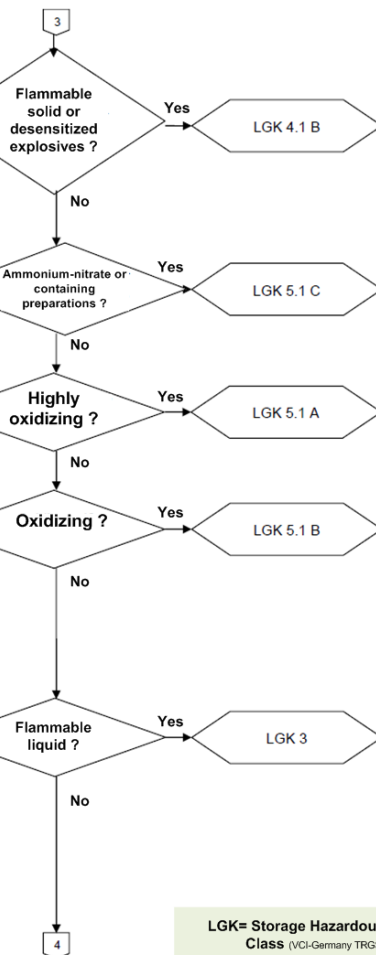


with R 12 or
R 11

or R 10



with H 224, H 225
or H 226

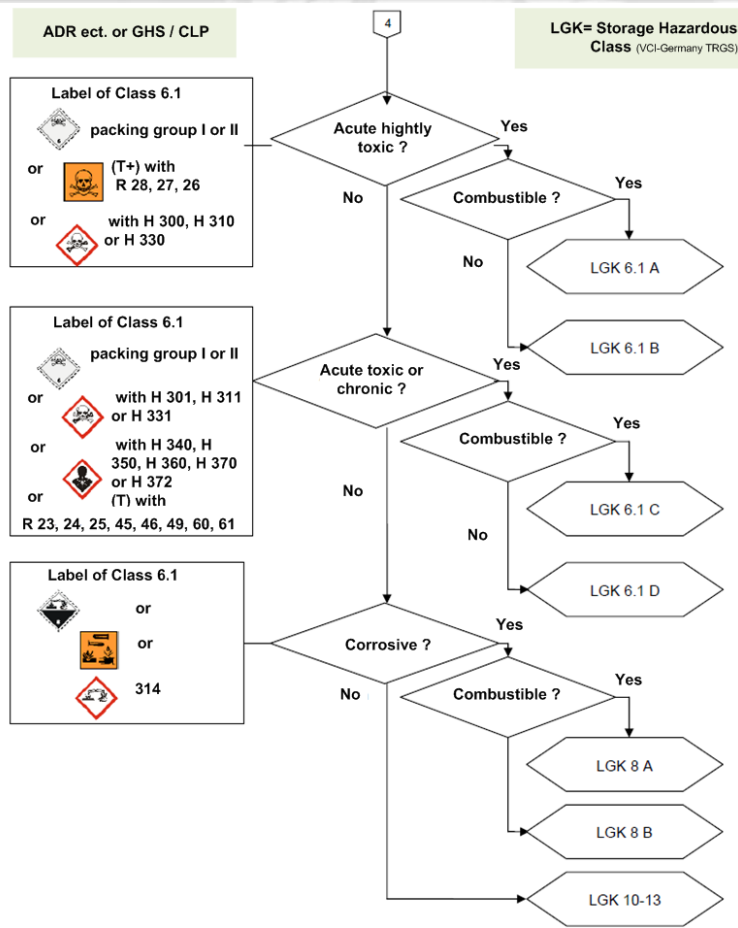


LGK= Storage Hazardous Class (VCI-Germany TRGS)



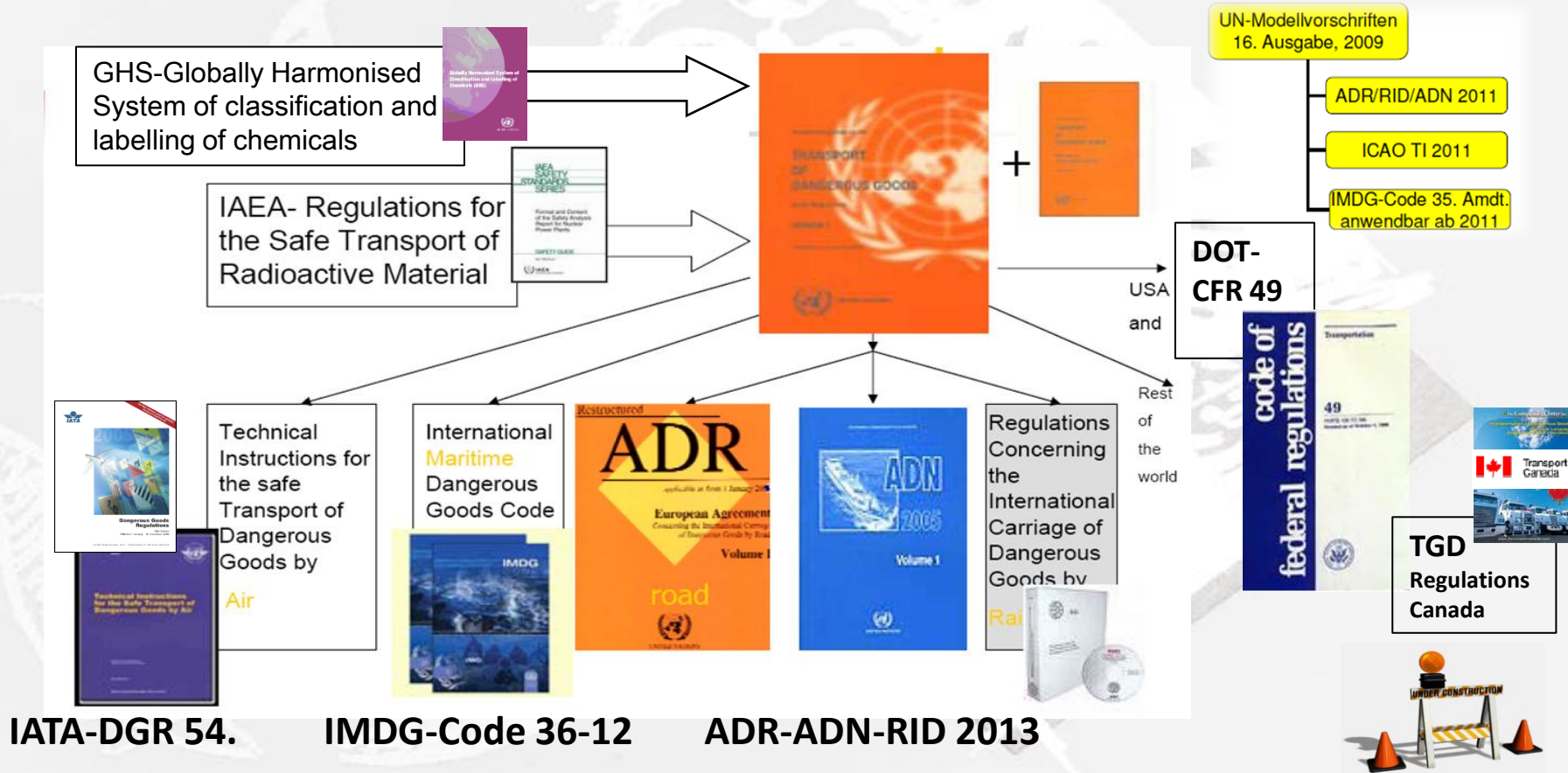


Classification





Overview of International Regulations – DG Transport





Overview of main warehouse literature

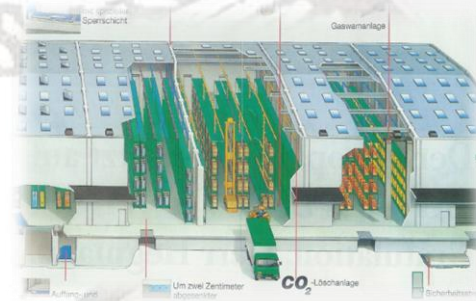
- ▶ Storage of Hazardous Materials: A Technical Guide for Safe Warehousing of Hazardous Materials - Paris, 1990 UNEP/IEO
- ▶ Recommendations on the safe Transport, handling and Storage of dangerous Substances in Port Areas - London, 1990 IMO
- ▶ A Guide to Safe Warehousing for the European Chemical Industry - Bruxelles, 1987 CEFIC
- ▶ Gefahrstofflager: Planung, Genehmigung und Bau - Baden-Baden, 1989 VDI-Verlag-Düsseldorf
- ▶ Lagern von gefährlichen Stoffen - Heidenberg, 1990 IVSS
- ▶ Richtlinien für den Brandschutz für Lager mit gefährlichen Stoffen - Zürich, 1988 CEA
- ▶ Opslag van verpakte gevaarlijke stoffen- PGS 15 - Den Haag, 2005 VROM
- ▶ Chemical warehousing: The storage of packaged dangerous substances - London, 1992/ 2009 HSE 71





Conclusion

- ▶ For Seveso higher tier and lower tier these regulations are relevant to EU regulations and standards.
- ▶ In general building requirements and operating procedures are governed by local regulations.
- ▶ International regulations would be required for dangerous goods warehouses





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