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**DAGOB**

# Dangerous Goods Related Incidents and Accidents in the Baltic Sea Region



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Project part-financed by the European Union  
(European Regional Development Fund) within  
the BSR INTERREG III B Neighbourhood Programme



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# DANGEROUS GOODS RELATED INCIDENTS AND ACCIDENTS IN THE BALTIC SEA REGION

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# 1 INTRODUCTION

This report is part of the Interreg III B funded project called DaGoB. It collects the data of incidents and accidents of dangerous goods that have happened in the Baltic Sea Region. This report includes road, rail, sea and inland waterway modes.

Safe and Reliable Transport Chains of Dangerous Goods in the Baltic Sea Region –project aims at improving the co-operations between public and private stakeholders related to DG transport in the BSR by connecting the stakeholders on different levels, providing up-to-date information on cargo flows, supply chain efficiency and risks related to DG transport.

Data on dangerous goods accidents in the BSR, which includes all the different modes, has, according to our sources, never been collected before. There have been reports e.g. on national DG road accidents in one BSR country and reports on shipping accidents in the BSR not separating DG accidents, but not a report like this. So this is the first comprehensive report on dangerous goods accidents in the BSR.

This report has collected the incident data from the international magazine called Hazardous Cargo Bulletin (HCB), which covers the transport and handling of oils, gases and chemicals. The magazine is keeping up an incident log database, which includes hazardous materials transport and storage incidents from the whole world. The data is collected from different sources including international and national newspapers and magazines as well as news agencies. HCB also gets direct hints about some accidents. What have been done in this report is that we have collected the incidents that have happened in the BSR in 2000-2006.

## 2 DANGEROUS GOODS TRANSPORT FLOWS IN THE BSR

The amount of dangerous goods transported in the BSR countries varies quite much. This is clearly shown in the Figure 1, which has collected the DG flows and the modal split of the DaGoB partner countries. The DaGoB project has provided the first comprehensive estimate of Dangerous Goods flows transported in the Baltic Sea Region. With estimates from North-western Russia, Denmark and Poland, combined with figures received from the DaGoB partner countries, the total amount of dangerous goods transported in the BSR adds up to 1,000 million tonnes. However the data collection in the Baltic Sea Region has not been very comprehensive and extensive implications from existing data have been impossible to make. (Ojala – Nummila – Suominen – Solakivi – Raitio 2007, 12.)

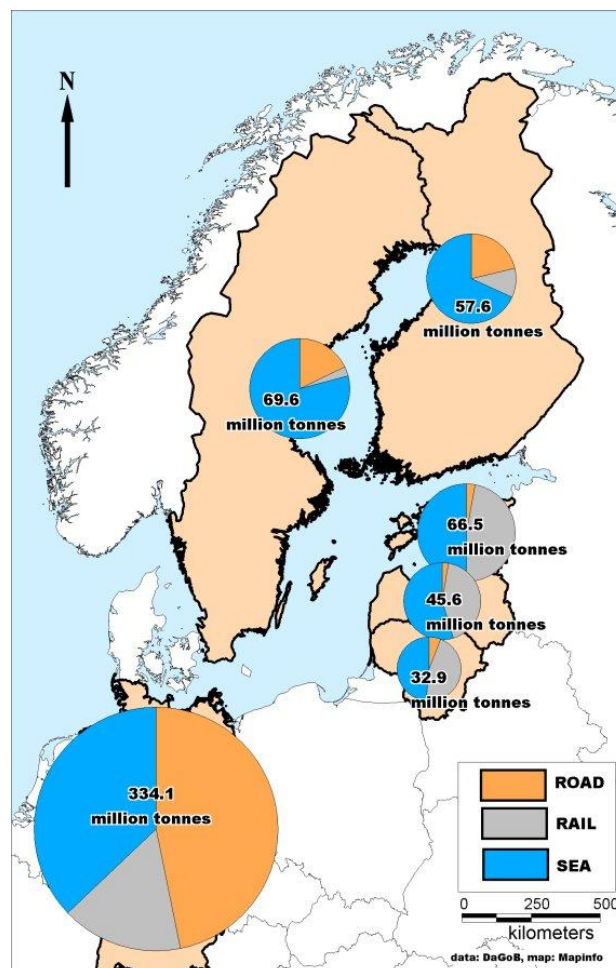


Figure 1 Dangerous goods transport flows in the DaGoB partner countries (Data collected from the competent authorities and ministries in the Baltic Sea Region) (Ojala et. al. 2007, 13)

Germany is in different category than other involved BSR countries, and the split between transport modes is also markedly different. However only northern Germany is part of the Baltic Sea Region. In Germany, where the annual dangerous goods transport volume is about 334 million tonnes, the largest transport mode is the road transport. In other DaGoB countries the sea mode is the largest transport mode. Finland and Sweden has quite similar amounts of dangerous goods transported annually by road and rail, but the volume of sea transport is significantly larger in Sweden than in Finland. In the Baltic states the rail transport is much more significant than in other BSR countries because of the dangerous goods flows from the Russia. (Ojala et. al. 2007, 13)

The Baltic states occupy a strategic location as transit centres for Russia's northern oil exports. This is the reason for their high share of dangerous goods transport. Russia holds large natural gas and oil reserves and is the world's largest exporter of natural gas and the second largest oil exporter. (Ojala et. al. 2007, 13)

### 3 THE HUMAN FACTOR

Up to 1,000 million tonnes of dangerous goods are transported in the Baltic Sea and on the roads and rails of the Baltic Sea countries. In case of an accident, these substances may be a threat to people and the environment. In order to avoid dangerous situations and major accidents, the official supervision of the area is constantly being standardised and improved. (Ojala et. al. 2007, 22)

The question is, above all, about the safety of the people and the environment. Common working methods and smooth cooperation beyond borders facilitate the supervision work of the authorities, whose goal is to avoid serious accidents. (Ojala et. al. 2007, 22)

Transport is always associated with human risk factors that cannot be completely excluded. Authorities try to minimise possible damages with common rules. For example, everyone can imagine how important it is during an accident to know what was loaded onto the car or container. The authorities must quickly find out whether the cargo contains explosive, corrosive, radioactive or flammable substances. The relevant notes immediately tell the authorities what the question is about. (Ojala et. al. 2007, 22)

It has been reported that human error is in fact the most common individual cause of dangerous goods related accidents. An analysis of the European Community's database on road transportation of dangerous goods found that almost half of the accidents are caused by a human error, or at least human error was a major contributor for the accident, whereas at the same time only some 8 per cent of accidents were caused by a technical failure. (Ojala et. al. 2007, 23)

Human errors may be caused by a number of different factors such as poor training, carelessness or indifference. The large share of human caused accidents can be seen as a potential improvement, since the human factor may be affected by more efficient education and training, as well as enhancement of the existing safety culture and attitudes towards potential risks in the human behavior. (Ojala et. al. 2007, 23)

The European Union has addressed the subject by issuing new and updated, rather specific requirements for course content and structure, basic courses and refreshment training for professionals in the transportation of dangerous goods on the road. At the moment, the requirements for rail transport are not yet specified on the same level. (Ojala et. al. 2007, 23)



## 4 INCIDENT AND ACCIDENT REPORTS IN THE BSR

There are only few reports available on transport accidents and incidents in the BSR. And even less reports on DG accidents and incidents. Dangerous goods accident data is collected by some authorities, but public reports do not exist. However the threshold of accident reporting varies quite much, which makes the comparison of the statistics very difficult.

### 4.1 Shipping accidents in the Baltic Sea

There are only limited amount of reports on shipping accidents available in the BSR. One of the most comprehensive ones is the Helsinki Commission's report on shipping accidents in the Baltic Sea area for the year 2006. Some of their results will be presented also in our report along with other statistics. This shipping accident data used by HELCOM has been collected since year 2000. According to HELCOM, all Contracting States have provided data for their report on shipping accidents in the Baltic Sea area for the year 2006 (2007).

According to the agreed procedure all accidents, which took place in territorial seas or European Economic Zone of the Contracting Party and involved tankers over 150 gross tonnage and/or other ships over 400 gross tonnage irrespectively, if there was pollution or not, are reported. (Report on shipping accidents in the Baltic Sea area for the year 2006; 2007, 1.)

The IMO regulation requires Automatic Identification System transponders to be fitted aboard all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages and all passenger ships irrespectively of size. The AIS enables the identification of the name, position, course, speed, draught and cargo of ships and displays all available data over a common background map. The traffic statistics presented below has been generated by the HELCOM AIS database. (Report on shipping accidents in the Baltic Sea area for the year 2006; 2007, 1.)

According to HELCOM there were 117 shipping accidents in the Baltic Sea in 2006, which is 29 less than the year before. Among the reported accidents three ships sank as a result of collision. In two cases the reporting Contracting Party did not provide information about whether the accident resulted in pollution or not. Collisions were the most common type of

accidents in the Baltic accounting for almost a half of all reported cases (46%) and for a second year in a row surpassing the number of groundings (39%). (Report on shipping accidents in the Baltic Sea area for the year 2006; 2007, 5-7.)

As can be seen from Figure 2, cargo vessels are the main group of ships involved in accidents, followed by passenger vessels and tankers. This proportion more or less reflects the amount of different vessel types making up the Baltic Sea traffic in 2006, however the slightly higher risk can be observed for passenger ships and slightly lower for tankers and cargo ships. (Report on shipping accidents in the Baltic Sea area for the year 2006; 2007, 9.)

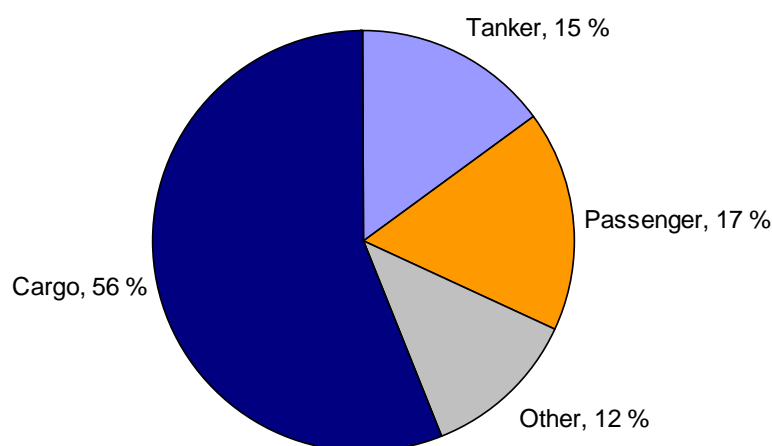


Figure 2 Types of ships involved in all shipping accidents in the Baltic Sea during 2006 (Report on shipping accidents in the Baltic Sea area for the year 2006; 2007, 9.)

As tankers are often the issue of high concern, the map on tanker accidents in 2000-2006 (Figure 3) is also presented here.

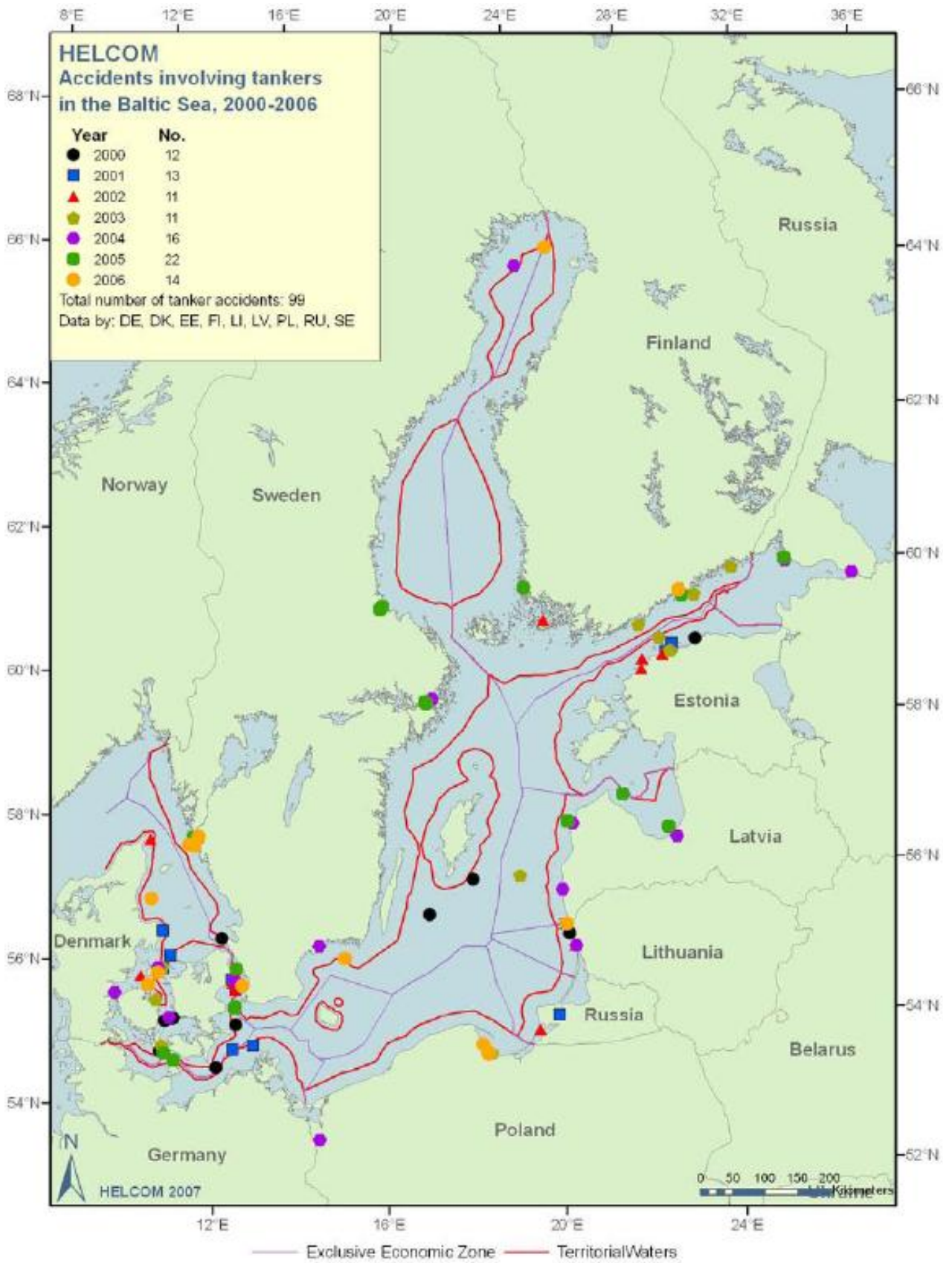


Figure 3 Tanker accidents in the Baltic Sea during 2000-2006 (Report on shipping accidents in the Baltic Sea area for the year 2006; 2007, 10.)

## 4.2 Road and rail accidents in the Baltic Sea Region

Only limited statistics are available also regarding accidents involving trucks and even less is known about the cause of these accidents. European Commission (EC) and the International Road Transport Union (IRU) has made a scientific study (the European Truck Accident Causation study) to fill this lack of knowledge. The study gives valuable information about the causes of trucking accidents, but does not give actual accident statistics. However it is very useful report for the stakeholders involved in the road transport sector.

There are also some statistics about the national road accidents, for example Finnish report on dangerous goods accidents on road during 1997-2002, which has collected all the national DG accidents reported in the media.

However there are very limited amount of reports available, both on road and especially on rail accidents. And the case is even worse in the dangerous goods sector.

## **5 SECURITY DURING TRANSPORT OF DANGEROUS GOODS**

Companies that are engaged in the transportation of dangerous goods by all modes of transport should take into account the security provisions included in the UN Recommendations on the Transport of Dangerous Goods (see Appendix A). For transport of dangerous goods by road, rail and inland waterway the modal security provisions included in UN Recommendations should also be taken into account. The security provisions that are included in the modal regulations for the transport of dangerous goods (ADR, RID, ADN, ICAO, IMO) must also be implemented. (Guidelines for Transportation Security 2003, 3.)

Companies that are engaged in the transportation of High Consequence Dangerous Goods by all modes of transport should in addition develop a Security Plan that addresses at least the elements specified in the UN Recommendations. To assist companies in implementing the different elements that are required for the Security Plan for the transportation of High Consequence Dangerous Goods, the following guidance is provided. (Guidelines for Transportation Security 2003, 3.)

### **5.1 Responsible persons**

The company should appoint a person (employee or external expert), with appropriate qualifications and competence, as responsible person for security. This person should advise the management on the measures to be taken to reduce the security risks. The person should pass on all suggestions and information from employees regarding security to the management and is responsible for providing information to employees who are involved in activities related to High Consequence Dangerous Goods. (Guidelines for Transportation Security 2003, 3.)

### **5.2 Records**

The company should keep records on the transport of the different types of High Consequence Dangerous Goods. The records should be kept for 5 years and on request made available to the authorities. These data should be

integrated in the annual report prepared by the Safety Advisor under section 1.8.3 of ADR. (Guidelines for Transportation Security 2003, 3.)

### 5.3 Review of Operations

When establishing the Security Plan all current operations regarding storage, handling and transportation of High Consequence Dangerous Goods should be reviewed by the management. At regular intervals a general review of the operations from a security point of view should be carried out in co-operation between management and the person responsible for security. The outcome of this review should be used to take the necessary measures to prevent or reduce the security risks. (Guidelines for Transportation Security 2003, 3.)

### 5.4 Training

Every employee with activities related to High Consequence Dangerous Goods should receive security awareness training. This training should be part of existing training programs. When they take up functions related to High Consequence Dangerous Goods, such employees should also receive clear information from the management about the security prevention measures. (Guidelines for Transportation Security 2003, 3.)

### 5.5 Reporting of Threats, Breaches or Incidents

Every employee with activities related to High Consequence Dangerous Goods should report to the management and/or the person responsible for security any threat, breach or incident observed in relation to security. The management and/or the person responsible for security should decide if the authorities have to be informed. (Guidelines for Transportation Security 2003, 3.)

### 5.6 Security of Information

Every employee with activities related to High Consequence Dangerous Goods should be instructed not to inform other persons about the type of goods transported and handled by the company and its clients, except if such

information is needed according to other regulations (e.g. information in transport and customs documents) or demanded by the authorities. (Guidelines for Transportation Security 2003, 4.)

Also information about the security measures that are in place and the contents of the Security Plan has to be kept confidential by employees. For the communication between the Logistic Service Provider (LSP) and the driver there must be systems in place that allow the driver and the LSP's office to assure that the received information comes from a known and reliable source. The method used should provide sufficient guarantee that the identity of the source of information is securely established. (Guidelines for Transportation Security 2003, 4.)

## 5.7 Additional measures

In addition to the measures described above, each company should review whether the infrastructure and operations of the company or its customers give rise to more specific measures to reduce the security risks. (Guidelines for Transportation Security 2003, 4.)

## 6 DANGEROUS GOODS ROAD AND RAIL INCIDENTS AND ACCIDENTS

In the following chapter, there is a description of 32 dangerous goods related incidents and accidents, happened on road and rail modes in the BSR in 2001-2006. These statistics were obtained from the Hazardous Cargo Bulletin – Incident Log.

Table 1 Dangerous goods road and rail incidents and accidents in the BSR in 2001-2006 (Hazardous Cargo Bulletin – Incident Log)

Year	Road	Rail	Total	Fatalities
2001	0	0	0	0
2002	2	0	2	0
2003	11	3	14	1
2004	2	1	3	1
2005	7	1	8	1
2006	4	1	5	0

### Year 2001

No incidents reported

### Year 2002

#### 16.2.2002 Osnabrück, Germany

CN propane tank car derailed under Angus L MacDonald bridge over Halifax harbour; tank was on its side; officials evacuated area while cargo transferred to another car.

- Substance: Propane

#### 24.9.2002 nr Bispingen, Germany

Road tanker with 25 t bitumen at 200°C overturned after driver lost control; despite severe damage to tank barrel, cargo remained intact; product transferred to new tanker.

- Substance: Bitumen



**Year 2003**17.3.2003 nr Bad Homburg, Germany

Road tanker with some 37 m<sup>3</sup> gasoline and diesel hit crash barrier on A5, overturned; truck following collided with tanker; some 10 m<sup>3</sup> cargo lost; driver apparently fell asleep.

- Substance: Diesel, gasoline

25.4.2003 Eltville, Germany

Two tank containers on train seen with manlids open; response crews arrived to close lid on container of acetic acid; other container had ethyl acrylate.

- Substance: Acetic acid

3.6.2003 nr Ulm-Ost, Germany

Road tanker with some 22 m<sup>3</sup> heating oil hit central barrier on A8 due to driver error; some 15 m<sup>3</sup> oil leaked, mostly soaking into ground; rest of cargo pumped out of tank.

- Substance: Heating oil

16.7.2003 nr Idstein, Germany

Road tanker with vinyl acetate overturned on A3 between Idstein and Niederhausen; little cargo spilt; load transferred to second vehicle; police blamed excessive speed.

- Substance: Vinyl acetate

7.7.2003 Lüneburg, Germany

Road tanker with some 25 t sulphuric acid overturned on B4 after driver lost control while taking bend too fast; tank barrel split, leaking acid to road; booms deployed.

- Substance: Sulphuric acid

2.8.2003 Riga, Latvia

Road tanker with gasoline fell off bridge after driver lost control when approaching two-car accident; tanker exploded on road below; tanker driver thrown clear; one person killed.

- Substance: Gasoline

#### 12.8.2003 Neumünster, Germany

Danish truck ran off A7 autobahn, spilling three 200-litre drums of trichloroethylene; one drum ruptured; 500 l diesel fuel also leaked; truck not placarded; road closed for hours.

- Substance: Trichloroethylene

#### 30.8.2003 nr Frankfurt/Oder, Germany

Truck carrying IBCs with various acid solutions ran into lorry caught in traffic jam on A12; both vehicles caught fire; some 1 m<sup>3</sup> acid spilt to road, which was closed for 14 hours.

- Substance: Various acid solutions

#### 17.10.2003 Pasila, Finland

Several hundred litres of formic acid spilt in rail yard north of Helsinki as workers moved barrels of acid from rail cars to trucks when one car broke loose, spilling 80 drums.

- Substance: Formic acid

#### 30.10.2003 Brunsbüttel, Germany

Eight rail cars carrying earth contaminated with Lindan herbicide discovered in Itzehoe and Brunsbüttel rail yards; waste from Mauritania for incineration but packed in open bags.

- Substance: Earth contaminated with herbicide

#### 25.11.2003 Gothenburg, Sweden

Tank container found to be leaking from cargo of 25 t acid at Skandia container terminal; port area closed as fire crews attended; no injuries but acid cloud drifting in light wind.

- Substance: Acid

#### 3.12.2003 Kassel, Germany

Some 200 litres of benzene/methanol-based resin leaked from truck with six 1,000-litre containers; truck had run off Leipziger road, damaging two containers.

- Substance: Benzene/methanol-based resin

9.12.2003 Wetzlar, Germany

Dutch truck/trailer seen leaking Uralac synthetic resin solution by following truck driver; truck directed to parking area for recovery of leaking container, contaminated soil.

- Substance: Uralac synthetic resin solution

10.12.2003 Bremen, Germany

Leak of chlorine gas during loading of road tanker at Brenntag facility; 500 l sodium hypochloride solution had been mistakenly loaded onto 2,000 l hydrochloric acid.

- Substance: Chlorine gas

**Year 2004**17.3.2004 Osnabrück, Germany

Loco and 20 of 35 wagons derailed some 500 m from station; fire broke out in first wagon, with 50 t LPG; next three cars, with LPG and propylene, were cooled by fire crews.

- Substance: LPG and propylene

26.8.2004 Gummerbach, Germany

Tanker truck with 32 m<sup>3</sup> fuel fell 100 m from Wiehltal bridge onto A4 autobahn, exploded; driver killed; tanker, nearby barn destroyed; houses evacuated in case bridge collapsed.

- Substance: Fuel

31.8.2004 Bremervörde, Germany

Road tanker spun out of control on railway line, overturned; some 11 kg propane-butane mix spilt from filling pipe; fire crews sealed pipe; rail line closed; driver going too fast.

- Substance: Propane-butane mix

**Year 2005**18.2.2005 Melle, Nieder-Sachsen, Germany

Road tanker with 23 t VAM overturned on A-30, possibly going too fast; driver seriously hurt; about 200 litres VAM spilt; spill vaporised, dispersed with fans; road closed for several hours.

- Substance: VAM

27.2.2005 Ludwigshafen, Germany

Road tanker ran off A6 autobahn in heavy snow; driver injured; some leak of cargo of isobutyl methacrylate; no danger to public or environment, police said.

- Substance: Isobutyl methacrylate

14.3.2005 Letmathe, N'Rhein, Germany

Road tanker with nonyl phenol found to have leaked product over 800 metres from vent line not properly closed; leak spotted at weighbridge at Bakelite plant, where 20 kg product spilt.

- Substance: Nonyl phenol

5.4.2005 nr Schuby, Schleswig, Germany

Road tanker with some 30 m3 heating oil hit guardrail, overturned on A7 when driver fell asleep; two following vehicles hit barrel lying across road, resulting in spill, fire.

- Substance: Heating oil

7.6.2005 nr Itzehoe-Nord, Germany

Driver lost control of tanker on A23, colliding with central guardrail; vehicle overturned, rupturing tank and spilling some 30 m3 kerosene cargo to drains; remainder of cargo pumped out.

- Substance: Kerosene

28.9.2005 Salgitter-Drütte, Germany

Truck ran off B248, overturned in ditch, spilling around half its 25-tonne cargo of ammonium nitrate; cargo had to be unloaded before truck could be righted; 19-year-old driver escaped without injury.

- Substance: Ammonium nitrate

22.10.2005 Schwerte, Germany

Three rail tank cars with methanol derailed in railyard in Nordrhein-Westfalia; no leaks reported but nearby passenger station closed as a precaution; rail services diverted.

- Substance: Methanol

### 3.12.2005 Frankfurt/Oder, Germany

Road tanker carrying unspecified foodstuffs crashed into truck at Germany/Poland border crossing on A12; brake failure suspected; one driver killed, second injured.

- Substance: Unspecified foodstuff

## **Year 2006**

### 12.1.2006 Warsaw, Poland

Military truck overturned after accident at roundabout in Praga district, spilling some 800 canisters of ammunition to road, exposing some detonators; major disruption caused by resulting road closures.

- Substance: Ammunition

### 15.3.2006 Cologne, Germany

DB freight train ran into back of second freight train halted at stop signal; several wagons derailed, including one with hydrofluoric acid; next car had caustic soda; both cargoes transferred without incident or injury.

- Substance: Hydrofluoric acid and caustic soda

### 6.4.2006 nr Pori, Finland

Some 16 m<sup>3</sup> sulphuric acid spilt to road in Satakunta province after tanker veered across median and into ditch; road surface reported as being very slippery; no injuries.

- Substance: Sulphuric acid

### 7.11.2006 Oxelösund, Sweden

Malfunction during loading of road tanker spilt up to 1,000 litres sulphuric acid; driver was splashed with acid, had to be treated in hospital; spill did not enter water course.

- Substance: Sulphuric acid

### 22.11.2006 nr Wörth, Germany

Truck driver pulled into rest area on A3 after seeing fire in his trailer, carrying 17 metal IBCs each with 950 kg sodium hydrosulphite; driver uncoupled cab from trailer but was injured by fumes; fire allowed to burn out.

- Substance: Sodium hydrosulphite

## 7 DANGEROUS GOODS MARINE AND INLAND WATERWAYS INCIDENTS AND ACCIDENTS

In the following chapter, there is a description of 53 dangerous goods related incidents and accidents, happened on marine and inland waterway modes in the BSR in 2001-2006. These statistics were obtained from the Hazardous Cargo Bulletin – Incident Log.

Table 2 Dangerous goods marine and inland waterways incidents and accidents in the BSR in 2001-2006 (Hazardous Cargo Bulletin – Incident Log)

Year	Total	Fatalities
2001	6	0
2002	10	0
2003	5	4
2004	7	1
2005	9	0
2006	16	0

### Year 2001

#### 15.1.2001 St. Petersburg, Russia

Inland tanker, with some 500 t fuel oil cargo, grounded after taking on bunkers at oil Lloyd's.

- Substance: Fuel oil

#### 15.11.2001 St. Petersburg, Russia

Russia terminal in Ugolnyaya harbour; vessel sank, leaking fuel; salvors planning refloating.

- Substance: Fuel

#### 23.11.2001 Butinge, Lithuania

Tanker (134,000 dwt, built 1992), loading oil at Mazeikiu Nafta terminal, leaked some 60 t overboard; cause unknown; pollution cleanup commenced following morning.

- Substance: Oil

10.12.2001 Höganäs, Sweden

Chemship (4,700 dwt, built 1985), with 3,000 t methanol, grounded at entrance to harbour in heavy fog; hull damaged but intact; harbour entrance blocked until vessel refloated.

- Substance: Methanol

10.12.2001 off Ruissalo, Finland

Oil slick 2 km long, 200 m wide spotted in Baltic Sea near Turku; some oil blown ashore, polluting beaches and industrial areas; samples taken to try and identify source of oil.

- Substance: Oil

13.12.2001 Skagerrak, Sweden

Oil slick estimated at 30 km<sup>2</sup> spotted near Skaden; coast guard suspected oil had been dumped previous night; samples taken for analysis; slick remained away from shorelines.

- Substance: Oil

**Year 2002**7.1.2002 nr Dormagen, Germany

Tank barge (1,060 dwt), with 1,050 t gasoline for Wesseling, was hit by container barge; one cargo tank punctured, leaking several tonnes of product to Rhine; river closed to traffic.

- Substance: Gasoline

18.5.2002 Bremerhaven, Germany

Chemical tanker (3,500 dwt, built 1975), with 3,200 t bunker oil for Gothenburg, contacted pier while leaving port; vessel considerably damaged in bow area but no pollution reported.

- Substance: Bunker oil

16.8.2002 River Weser, Germany

Chemical tanker (2,650 dwt, built 1982), with rapeseed oil for Bremerhaven, struck buoy in outer channel and became tangled in buoy's anchor chain; no damage found by divers.

- Substance: Rapeseed oil

21.8.2002 nr Straubing, Germany

Inland waterway barge (1,440 dwt, built 1975) damaged in lock on Danube, spilling up to 50 m<sup>3</sup> gasoline; spill contained in lock but police concerned at risk of explosion.

- Substance: Gasoline

27.10.2002 Esbjerg, Denmark

Product tanker (6,200 dwt, built 1991), with full cargo gasoil, grounded on entry to Esbjerg, harbour in heavy seas; vessel later refloated with tug assistance.

- Substance: Gasoil

15.11.2002 Kummelbank, off Denmark

Bulk/oiler (54,500 dwt, built 1984), with 32,000 t heavy fuel oil, grounded on sandbar 10 nm off Laeso Island; six ballast tanks damaged but tanks were empty; vessel off route.

- Substance: Heavy fuel oil

29.11.2002 off Copenhagen, Denmark

Product tanker (2,600 gt, built 1968), with 5,000 t oil for Copenhagen, grounded on entry to harbour; tanker pulled free after 200 t cargo lightered; no pollution reported.

- Substance: Oil

11.12.2002 Klaipeda, Lithuania

Tanker (61,000 dwt, built 1979). with 50,000 t fuel oil for Singapore, grounded on leaving port at Klaipeda; ship refloated five days later after lightering of 7,000 t of cargo.

- Substance: Fuel oil

20.12.2002 Riga, Latvia

During cargo transfer operations at Riga, some 9.6 t oil products spilt from product tanker (5,900 dwt, built 1980); product seen among broken ice; owner fined Lat 923,000 (\$1.6m).

- Substance: Oil products



22.12.2002 off Turku, Finland

After discharging 4,000 t of 10,000 t gasoline cargo at Turku, fire was seen on deck of chemship (10,500 dwt, built 1993); crew extinguished fire before any damage was caused.

- Substance: Gasoline

**Year 2003**7.2.2003 Great Belt, Denmark

B+H-owned tanker (35,600 dwt, built 1981), with 37,000 t gasoil, grounded outside shipping lane; over 4,500 t cargo lightered before ship could refloat; no damage to hull.

- Substance: Gasoil

20.2.2003 Gothenburg, Sweden

Product tanker (13,000 dwt, built 1993) had fire in engineroom during loading at Skarvik terminal; fire was in boiler used to keep gasoil warm; cargo not threatened by fire.

- Substance: Gasoil

24.2.2003 off Finland, Baltic Sea

Product tanker (28,600 dwt, built 1986), with 27,000 t diesel, collided with ro-ro 20 km offshore as both headed west from Finland; ships remained locked together for days.

- Substance: Diesel oil

4.5.2003 Gdansk, Poland

Explosion aboard barge with 20,000 m<sup>3</sup> gasoline moored at Rafineria Gdansk refinery; four people on barge killed; fire crews worked to prevent fire spreading to refinery.

- Substance: Gasoline

31.5.2003 off Bornholm, Denmark

Bulker (70,000 dwt, built 1995), with 66,000 t fertiliser, 1,800 fuel, collided with cargoship and sank; explosions heard aboard bulker; some fuel oil reached shore; leaks in hull plugged.

- Substance: Fertilizer and fuel

## **Year 2004**

### 16.3.2004 Tallinn, Estonia

Explosion in product tanker (20,000 dwt, built 2002) during hot work above reserve HFO bunker tank at Tallinn Shipyard; another 20 days work to replace damaged steelwork.

- Substance: Heavy fuel oil

### 17.7.2004 Mannheim, Germany

Fire broke out in engine room of tank barge enroute Antwerp to Karlsruhe with 1,000 t MTBE; fire out after two hours; towed to BASF Ludwigshafen to discharge.

- Substance: Methyl tertiary-butyl ether

### 25.7.2004 nr Essen, Germany

Inland tanker (3 months old) had explosion in cargo tanks during degassing after discharge of naphtha; master killed, 4 injured; degassing illegal on Rhein-Herne canal.

- Substance: Naphtha

### 28.6.2004 Hamburg, Germany

Inland tanker with 960 t sulphuric acid capsized after colliding with containership enroute NA acid terminal; almost all cargo lost to Elbe River; blood test showed master was drunk.

- Substance: Sulphuric acid

### 17.8.2004 Koblenz, Germany

Inland tank vessel with 1,800 t distillate fuel oil grounded in Rhine at Pfaffendorf bridge after ignoring notices of river closure; vessel blocked river; no pollution reported.

- Substance: Distillate fuel oil

### 25.11.2004 Slottön, Sweden

Chemical tanker (3,900 dwt, built 1981) grounded in Trollhatte Canal trying to avoid other vessel; booms deployed in case of leak of 2,000 t gasoil cargo; later refloated without spill.

- Substance: Gasoil

18.5.2004 St. Petersburg, Russia

Product tanker (3,500 gt, built 1972), Yaroslavl for St Petersburg, grounded in entry to Neva River; damage to forepeak but no loss of unspecified petroleum cargo.

- Substance: Unspecified petroleum cargo

**Year 2005**29.1.2005 Hamburg, Germany

Chemical tanker (4,300 dwt, built 2000), with 5,000 t 100% sulphuric acid, collided with bridge and tug on River Elbe in fog; pilot onboard at time; no significant damage to tanker.

- Substance: Sulphuric acid

20.2.2005 nr Düsseldorf, Germany

Inland tanker with 2,300 t diesel collided with empty tanker Erich Woge; laden tanker damaged in way of cargo tanks, spilling some diesel to Rhine; cargo offloaded to another tank vessel.

- Substance: Diesel oil

24.3.2005 nr Oberwesel, Germany

Austrian inland tanker with 2,600 t unspecified oil from Rotterdam grounded in the Rhine due to human error; second tanker despatched to offload cargo; no spill reported

- Substance: Unspecified oil

21.5.2005 nr Nackenheim, Germany

Inland tanker with 2,300 t gasoline Rotterdam for BASF Ludwigshafen touched bottom near Nackenheim; master found water ingress to engine room; tanker towed to Oppenheim.

- Substance: Gasoline

30.7.2005 St. Petersburg, Russia

Inland tanker, cargo 3,070 t fuel oil from Yaroslavl, struck Troitsky bridge, spilling about one tonne fuel oil to River Neva in St Petersburg; tug suffered bow damage but no injuries; steering problems blamed.

- Substance: Fuel oil

23.11.2005 Lake Vänern, Sweden

Cargo ship (550 dwt, built 1964) with sodium carbonate from Gdansk for Otterbacken ran aground on Luroe archipelago in high winds; hole in bow allowed water ingress to cargo; some cargo transferred.

- Substance: Sodium carbonate

30.11.2005 off Bornholm, Denmark

Chemical tanker (4,050 dwt, built 1981) with 3,500 t fluorosilicic acid for Helsingborg had engine breakdown; drifting without power; vessel towed to discharge port, then to repair yard.

- Substance: Fluorosilicic acid

28.12.2005 off Landskrona, Sweden

Chemical/oil tanker (7,000 dwt, built 2005), with 5,750 t naphtha Kaliningrad for Le Havre, ran hard aground; refloated several days later after 1,800 t cargo lightered; tanker lacked correct charts for passage.

- Substance: Naphtha

28.12.2005 Marstal Bay, Denmark

Chemical tanker (2,550 dwt, built 1981), cargo 2,000 t UN 1987 and 1120 alcohol, grounded and suffered hole in ballast tank; tanker later refloated by own means, was towed to Gdansk for repairs; no pollution reported.

- Substance: Alcohol

**Year 2006**3.1.2006 Kiel Canal, Germany

Chemical/oil tanker (8,500 dwt, built 1995, now Betty Theresa), cargo 6,600 t gasoil, collided with chemship Tarnhav (14,800 dwt, built 2002), in ballast, was holed by latter's ice-strengthened bow; some spill of oil.

- Substance: Gasoil

3.1.2006 Audorf, Germany

Tanker (3,600 dwt, built 2005) with 3,200 t oil cargo struck pilings while trying to stop in Kiel Canal in dense fog; pilings demolished; hull damaged but vessel allowed to proceed to Hamburg.

- Substance: Oil

### 2.2.2006 nr Cologne, Germany

Two river tankers, Joery P (1,810 gt, built 1971) with 600 t benzol and Katharinawith 700 t diesel, collided in dense fog on River Rhine; both suffered bow damage but no pollution resulted; no injuries reported.

- Substance: Benzol and diesel oil

### 2.2.2006 Kiel Canal, Germany

Chemical/oil tanker (21,800 dwt, built 2000), cargo gasoil from Vysotsk for Dunkirk, collided with ro/ro Estraden near Rade Bridge; both ships damaged; tanker ran into embankment but freed itself; no pollution.

- Substance: Gasoil

### 6.2.2006 Kiel Roads, Germany

Ore/oil carrier (3,700 dwt, built 1995), with 3,300 t unspecified oil for Nordenham, had water ingress to engine room; cargo transferred to product tanker Mekhanik Voronkov.

- Substance: Unspecified oil

### 20.2.2006 Brunsbüttel, Germany

Gas tanker (7,200 m<sup>3</sup>, built 1980), fully laden with unspecified cargo, contacted gates of Brunsbüttel locks in Kiel Canal, gashing hull beneath port anchor; allowed to proceed after class inspection.

- Substance: Unspecified gas

### 4.3.2006 Holmsund, Sweden

Asphalt tanker (7,130 dwt, built 2003) grounded on approach to Holmsund to discharge at Nynås terminal; attempts to lighten part of 6,000 m<sup>3</sup> bitumen cargo hampered by cold; substantial hull damage but no leak.

- Substance: Bitumen

### 2.4.2006 off Porvoo, Finland

Chemical/oil tanker (11,000 dwt, built 1992), with 7,500 t naphtha, grounded on rocks on approach to Neste's Kilpilahti refinery; ship later towed off rocks by tugs without loss of product; hull inspected by divers.

- Substance: Naphtha

#### 5.4.2006 Kaliningrad, Russia

Two crew injured by explosion in chemical tanker (6,900 dwt, built 1978), apparently caused by short circuit igniting diesel vapours; blast blew hole in fuel tanks, causing spill; most of vessel on fire.

- Substance: Diesel oil

#### 12.5.2006 Leimersheim, Germany

Inland tanker with some 270 m<sup>3</sup> gasoline collided with cargo barge Bohmenon Rhine, possibly due to failure of steering gear; some 15 t gasoline leaked to river; booms deployed, other traffic halted; spill evaporated.

- Substance: Gasoline

#### 16.5.2006 nr Bonn, Germany

Inland tanker (built 1951) with diesel cargo grounded by the bow while attempting to anchor in River Rhine near Bonn; cargo to be lightered, tanker salvaged next day.

- Substance: Diesel oil

#### 17.5.2006 Wesseling, Germany

Departing port of Wesseling by stern, inland tanker (2,400 dwt, built 1992) collided with tanker Currency in River Rhine, became snagged in anchor chain and ran aground; no reports of pollution.

- Substance: Unspecified cargo

#### 16.8.2006 nr Kirschgarthausen, Germany

Inland tanker (built 1951) collided with tanker Vikingin Rhine, grounded on gravel bank near Mannheim; bow torn off, some loss of cargo; remainder lightered before tanker was patched, proceeded to repair yard.

- Substance: Unspecified cargo

#### 26.9.2006 nr Bingen, Germany

Dutch-registered tanker grounded in Rhine near Bingen; German authorities suspect tanker was overloaded; 14 t of 2,700-t diesel cargo spilt to river; remaining cargo pumped to intact tanks pending inspection by divers.

- Substance: Diesel oil

11.11.2006 Trollhattan, Sweden

Product tanker (4,500 dwt, built 2004), cargo 2,800 t diesel, lost power and grounded in River Gota, blocking channel; vessel refloated later the same day, without pollution or serious hull damage.

- Substance: Diesel oil

18.12.2006 Dortmund-Ems Canal, Germany

Inland tanker (1,600 gt), on maiden voyage with heavy fuel oil from Rotterdam, rammed railway bridge over canal at Baarentelgen; rudder house torn off; tanker anchored at Altenrheine; no pollution reported.

- Substance: Heavy fuel oil

## 8 CONCLUSIONS

The safety of transport of dangerous goods is most efficiently improved by improving the general safety on all transport modes. The actual material classified as dangerous goods is very seldom the actual cause of an accident. However, the consequences of accidents where dangerous goods are part of the cargo may be significant. The cornerstones of safe transport of dangerous goods are: sufficient level of knowledge, and a positive safety culture.

This report increases the knowledge by providing incident and accident information about DG transport. Report has collected accident data from the Hazardous Cargo Bulletin –magazine and also from some other sources.

However it soon became clear that obtaining incident and accident data requires a lot of work and inquiries. There was no joint data bank for this purpose, and in order to understand the situation, the validity of the data should be checked several times. It was clearly shown that different bodies collect and document dangerous goods incident and accident data in various ways, and that it is very difficult to get comparable data. In fact it was absolutely impossible for Interreg III B funded project such as DaGoB to collect extensive and comparable data.

Instead of this type of project collecting this data, the different international unions and organisations, such as EMSA, IRU, ERA, HELCOM and such, could and should have bigger role in collecting data and reporting on incidents and accidents.

This report presents one way of listing incidents and accidents. These statistics are not however very comparable, because the threshold of incident and accident reporting varies quite much. One cannot make extensive implications based on this data. This report however gives a general understanding of types of incidents and accidents happened in the BSR in 2001-2006.



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<[http://www.helcom.fi/stc/files/shipping/shipping\\_accidents\\_2006.pdf](http://www.helcom.fi/stc/files/shipping/shipping_accidents_2006.pdf)>, retrieved 15.6.2007

## APPENDIX A

Extract from “UN Recommendations on the Transport of Dangerous Goods, Model Regulations, Fifteenth revised version, United Nations” ([http://www.unece.org/trans/danger/publi/unrec/rev15/15files\\_e.html](http://www.unece.org/trans/danger/publi/unrec/rev15/15files_e.html))

### Chapter 1.4 Security Provisions

#### Introductory notes

*NOTE 1: This Chapter provides requirements intended to address the security of dangerous goods in transport in all modes. Mode specific security provisions can be found in Chapter 7.2. National and modal authorities may apply additional security provisions which should be considered when offering or transporting dangerous goods.*

*NOTE 2: For the purposes of this Chapter security means measures or precautions to be taken to minimise theft or mis-use of dangerous goods that may endanger persons or property.*

#### 1.4.1 General Provisions

- 1.4.1.1 All persons engaged in the transport of dangerous goods shall consider security requirements for the transport of dangerous goods commensurate with their responsibilities.
- 1.4.1.2 Consignors shall only offer dangerous goods to carriers that have been appropriately identified.
- 1.4.1.3 Transit sites, such as airside warehouses, marshalling yards and other temporary storage areas shall be properly secured, well lit and, where possible, not be accessible to the general public.

#### 1.4.2 Security Training

- 1.4.2.1 The training specified for individuals in 1.3.2 (a), (b) or (c) shall also include elements of security awareness.
- 1.4.2.2 Security awareness training shall address the nature of security risks, recognising security risks, methods to address and reduce such risks and actions to be taken in the event of a security breach. It shall

include awareness of security plans (if appropriate) commensurate with the responsibilities of individuals and their part in implementing security plans.

1.4.2.3 Such training shall be provided or verified upon employment in a position involving dangerous goods transport and shall be periodically supplemented with retraining.

1.4.2.4 Records of all security training undertaken shall be kept by the employer and made available to the employee if requested.

### 1.4.3 Provisions for High Consequence Dangerous Goods

1.4.3.1 In implementing national security provisions competent authorities shall consider establishing a programme for identifying consignors or carriers engaged in the transport of high consequence dangerous goods for the purpose of communicating security related information. An indicative list of high consequence dangerous goods is provided in Table 1.4.1.

#### 1.4.3.2 Security plans

1.4.3.2.1 Carriers, consignors and others (including infrastructure managers) engaged in the transport of high consequence dangerous goods (see Table 1.4.1) shall adopt, implement and comply with a security plan that addresses at least the elements specified in 1.4.3.2.2.

1.4.3.2.2 The security plan shall comprise at least the following elements:

- a) specific allocation of responsibilities for security to competent and qualified persons with appropriate authority to carry out their responsibilities;
- b) records of dangerous goods or types of dangerous goods transported;
- c) review of current operations and assessment of vulnerabilities, including intermodal transfer, temporary transit storage, handling and distribution as appropriate;
- d) clear statements of measures, including training, policies (including response to higher threat conditions, new employee/employment

verification etc.), operating practices (e.g. choice/use of routes where known, access to dangerous goods in temporary storage, proximity to vulnerable infrastructure etc.), equipment and resources that are to be used to reduce security risks;

- e) effective and up to date procedures for reporting and dealing with security threats, breaches of security or security incidents;
- f) procedures for the evaluation and testing of security plans and procedures for periodic review and update of the plans;
- g) measures to ensure the security of transport information contained in the plan; and
- h) measures to ensure that the security of the distribution of the transport information is limited as far as possible. (Such measures shall not preclude provision of transport documentation required by Chapter 5.4 of these Regulations).

*NOTE: Carriers, consignors and consignees should co-operate with each other and with appropriate authorities to exchange threat information, apply appropriate security measures and respond to security incidents.*

#### Table 1.4.1: Indicative list of high consequence dangerous goods

High consequence dangerous goods are those which have the potential for miss-use in a terrorist incident and which may, as a result, produce serious consequences such as mass casualties or mass destruction. The following is an indicative list of high consequence dangerous goods:

- Class 1, Division 1.1 explosives
- Class 1, Division 1.2 explosives
- Class 1, Division 1.3 compatibility group C explosives
- Class 1, Division 1.5 explosives
- Division 2.1 flammable gases in bulk
- Division 2.3 toxic gases (excluding aerosols)
- Class 3 flammable liquids of packing groups I and II in bulk
- Class 3 and Division 4.1 desensitised explosives
- Division 4.2 goods of packing group I in bulk
- Division 4.3 goods of packing group I in bulk
- Division 5.1 oxidizing liquids of packing group I in bulk

Division 5.1 perchlorates, ammonium nitrate, ammonium nitrate fertilisers and ammonium nitrate emulsions or suspensions or gels, in bulk

Division 6.1 toxic substances of packing group I

Division 6.2 infectious substances of Category A

Class 7 radioactive material in quantities greater than 3000 A<sub>1</sub> (special form) or 3000 A<sub>2</sub>, as applicable, in Type B(U) or Type B(M) or Type C packages

Class 8 corrosive substances of packing group I in bulk

*NOTE 1: For the purposes of this Table, "in bulk" means transported in quantities greater than 3000 kg or 3000 l in portable tanks or bulk containers.*

## DAGOB PUBLICATION LIST

- 1:2006      Summary of Evaluation of EU Policy on the Transport of Dangerous Goods since 1994  
*Editor: Mikko Suominen*
- 2:2006      Transport of Dangerous Goods in Finland in 2002  
*Editor: Mikko Suominen*
- 3:2006      Carriage of Dangerous Goods and Law  
*Author: Lauri Railas*
- 4:2006      Maritime Transport and Risks of Packaged Dangerous Goods  
*Author: Arben Mullai*
- 5:2006      Risk Management System – Risk Assessment Frameworks and Techniques  
*Author: Arben Mullai*
- 1:2007      Supply Chain Analysis of Dangerous Goods in the Baltic Sea Region – Multiple Case Study of 14 Supply Chains  
*Authors: Mikko Suominen, Markku Häikiö, Paula Lehtinen, Lasse Metso, Tuire Perna, Lauri Ojala*
- 2:2007      Estonian Experience in Implementing Mandatory Dangerous Goods Notification from Ships  
*Authors: Jaak Arro, Lauri Ojala*
- 3:2007      Dangerous Goods Transport in the Baltic Sea Region: Authorities, Agencies and Regulations  
*Editor: Bo Zetterström*
- 4:2007      Transport of Dangerous Goods in Sweden – September 2006  
*Editor: Mikko Suominen*
- 5:2007      Transport of Dangerous Goods in the Baltic Sea Region  
*Editor: Mikko Suominen*

6:2007 Safe and Reliable Transport Chains of Dangerous Goods in the Baltic Sea Region – Key Findings of the DaGoB project 2006-2007  
*Authors: Lauri Ojala, Sirpa Nummila, Mikko Suominen, Tomi Solakivi, Johannes Raitio*

7:2007 Dangerous Goods Related Incidents and Accidents in the Baltic Sea Region  
*Editors: Mikko Suominen, Matias Suhonen*

This report has collected the incident and accident data of Dangerous Goods in the Baltic Sea Region. The countries included are: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden. The statistics are from the years 2001-2006. Report includes information on dangerous goods road, rail, maritime and inland waterways modes.

This report is part of the Safe and Reliable Transport Chains of Dangerous Goods in the Baltic Sea Region –project. The project aims at improving the co-operations between public and private stakeholders related to DG transport in the BSR by connecting the stakeholders on different levels, providing up to date information on cargo flows, supply chain efficiency and risks related to DG transport.

This report increases the knowledge of dangerous goods transport by providing incident and accident information. Report has collected data mainly from the Hazardous Cargo Bulletin –magazine and also from some other sources.

The report presents one way of listing incidents and accidents. These statistics are not however very comparable, because the threshold of incident and accident reporting varies quite much. One cannot make extensive implications based on this data. This report however gives a general understanding of types of incidents and accidents happened in the Baltic Sea Region.

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