Dangerous Goods Regulations in Europe and Worldwide Inland Navigation and Other Modes of Transport

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1. Introduction

For thousands of years a flourishing exchange of goods has been taking place all over Europe, and once gunpowder had been invented, this trade included dangerous goods. As early as 1831 regulations where introduced for the Rhine river - the world's busiest inland waterway today - to cover the transport of those goods.

Another mode of transport was added in 1891 with an international convention on the carriage of dangerous goods by rail. Today these regulations are known as the RID. Air transport, road transport and carriage by sea each followed in the middle of the 20th century. These international regulatory regimes have been supplemented by national regulations; in 1958 regulations for the carriage of radioactive materials were added.

Since, for historical reasons, separate dangerous goods regulations were developed for each mode of transport, there now exist several different regulatory regimes. For Europe, and indeed the whole world, these uncoordinated regulations pose a serious problem.

In my paper I will show
- which regulations are applicable in Europe,
- which role international transport organizations play
and
- which role the European Community plays.

Special emphasis will be placed on inland navigation, since it is this mode of transport that will experience extensive changes during 1992.

2. Regulations

All told, there are today in Europe 2 international recommendations, 5 international regulations with (in parts) domestic applicability in some countries, and 2 guidelines of the European Community (EC). In Germany, on top of this there are applicable 1 domestic Act, 2 larger domestic rules, 2 smaller rules as well as some 5 provisional or immediate orders. Finally, there are guidelines and other notices, which puts the number of pages of German regulations to some 5000+ (K. Ridder, 1993a).

2.1 Inland navigation

As said before, this paper's main subject is on inland navigation, and more on that subject will follow. But let me mention beforehand that the Agreement on the Transport of Dangerous Goods on the Rhine (ADNR) with its appendices A and B has already been agreed upon by the Central Commission for Navigation on the Rhine in Straßbourg and that it is applicable to the Rhine - the world's busiest inland waterway - today (Hermann and Ridder, 1986).

2.2 Rail transport

The opening of railways goes back to the beginning of the 19th century. Railways had a revolutionary effect on transport and allowed land-based exchange of goods to reach an intensity unkown before.

Early on in rail transport carriage of dangerous goods at the international level was dealt with by the International Regulations concerning the Carriage of Dangerous Goods by Rail (RID), which forms Appendix B of the Uniform rules concerning the contract for international carriage by rail (CIM), which itself is Annex I of the Convention concerning international carriage by rail (COTIF). The predecessor of COTIF has existed since 1890, and thus had its 100th "birthday" two years ago.

The provisions of the RID pointed the way for the regulations that were added later on (ADR, ADNR).

2.3 Road transport

Since 1957 cross-border road transport in the European sphere has been regulated by the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR for short). It has now been ratified by 20 (formerly 21) European States (Ridder, 1993b).

Development work on the ADR is conducted by the Working Party 15 (WP 15) under the auspices of the Economic Commission for Europe (ECE) in Geneva. Because ADR and RID are almost identical - at least as far as substances, packagings and labelling are concerned - both regulatory frameworks are jointly developed at so-called Joint Sessions in Geneva and Berne.

In 1990 hazard class 7 (Radioactive Substances) of ADR (and RID) was completely revised. The basis for the regulations for the carriage of radioactive materials were the 1985 IAEA-Recommendations (Safety Series N° 6).

2.4 Maritime Transport

Increasing use of certain dangerous goods after World War II had caused the carriage of these goods by sea to grow substantially. Carriage by sea of dangerous goods therefore was in need of regulation to protect seafarers and ships from harm. This carriage is the subject of Chapter VII of the 1974 (1960) International Convention for the Safety of Lives at Sea (SOLAS for short). The convention contains the basic provisions; they were last amended in 1986.

More detailed implementing regulations, particularly for packaged goods, were elaborated by a working group (Sub-Committee on the Carriage of Dangerous Goods - CGD) of the International Maritime Organization (IMO, formerly known as IMCO). The working group consisted of representatives of those countries with far-reaching experience in the carriage of dangerous goods by sea. It produced a compilation of these regulations under the title of International Maritime Dangerous Goods Code. This code was adopted by the Maritime Safety Committee (MSC) and the Plenary Assembly recommended its acceptance to the Contracting Governments.

In the meantime some 50 of the world's nations have introduced the International Maritime Dangerous Goods Code (IMDG-Code) and made it legally binding.

Within the framework of the SOLAS convention and the International Convention on Marine Pollution (MARPOL) further codes are being adopted; the Bulk Chemicals Code (BCH-Code) is just one example.
The original English edition of the IMDG-Code presently comprises 6 volumes (inclusive of amendment 26/90); early 1990 it was published in a new edition.

The 1985 edition of the IAEA-Recommendations Safety Series N° 6 was put into force 1991.

Special provisions apply to carriage of dangerous goods by so-called ro/ro-vessels in the Baltic. These provisions are contained in the Memorandum of Understanding that has been agreed upon by the Baltic states of Denmark, Germany, Norway and Sweden.

2.5 Air transport

A special expert staff team of the International Air Transport Association (IATA) has drawn up specific provisions for the carriage of dangerous goods by air. These "IATA-Restricted Articles Regulations" (IATA-RAR for short), as they used to be called, were continually brought up-to-date (normally on an annual basis) based upon the latest technical developments in industry and air transport.

Since 1976 experts at governmental level have been concerned with the carriage of dangerous goods on behalf of the International Civil Aviation Organization (ICAO). ICAO has passed Annex 18 to the Chicago Convention on Civil Aviation which contains fundamental provisions for the carriage of dangerous goods by air. Based on this Annex 18, the details are dealt with by the "ICAO - Technical Instructions for the Safe Transport of Dangerous Goods by Air" (ICAO-TI). Since the 1st January, 1984 ICAO Member States had to adopt the ICAO-TI. A new version of the ICAO-TI is issued every other year.

In the meantime, IATA has adopted the contents of the ICAO regulations for its work and renamed it to "IATA -

Dangerous Goods Regulations" (IATA-DGR).

The 1985 edition of the IAEO Recommendations Safety Series N° 6 has been put into force since 1st January, 1991.

3. Recommendations of the United Nations and the International Atomic Energy Agency

3.1 United Nations

The United Nations (UN) has been concerned with the carriage of dangerous goods since 1956. The UN issues recommendations which find their way into the respective regulations and rules on the carriage of dangerous goods. (Figure 1) The latest UN recommendations have been published at the end of 1991 under the title "Recommendations prepared by the Committee of Experts on the Transport of Dangerous Goods - Seventh revised edition". As this publication comes with an orange cover, experts generally refer to it as "Orange Book" (United Nations, 1990).

The UN recommendations, first of all, divide goods into hazard classes. They further contain a list of goods most commonly carried, each of which has been assigned a UN number. This UN number, by the way, is the number that can be seen on the lower half of the orange-colored warning panels on road tank vehicles and rail tank wagons. The recommendations also contain a compilation of specimen risk labels used worldwide in dangerous goods transport. Other contents include:
- requirements for dangerous goods packagings;
- fixing of test criteria for the classification of dangerous goods;
- subdivision of dangerous goods for degree of hazard ("packing groups") (Figure 2)

3.2 International Atomic Energy Agency

The Vienna-based International Atomic Energy Agency (IAEA) is the appropriate authority for carriage of radioactive goods. Since 1961 the IAEA has published the "Recommendations for the Safe Transport of Radioactive Material". These recommendations were revised in the early 1980s and published in a new edition 1985. They have been incorporated into the respective transport regulations. For rail and road transport (RID and ADR) they came into force on 1st January 1990 (International Atomic Energy Agency, 1990). Due to organizational reasons, the incorporation for maritime and air transport followed with some delay on 1st January 1991. Another revision of the IAEA recommendations, the work towards which was begun in June 1991, is intended for 1996.
Again, it should be pointed out that neither the UN recommendations nor the IAEA recommendations are regulations in their own right but, in order to obtain the power of law, require incorporation into the respective transport regulations. (Figure 3)

4. European Community (EC)

The European Community takes diverse interests in dangerous goods transport. For example, 1984 and 1988/89 reports on the transport of radioactive materials were drawn up, and in 1987 a report on "Transport of Dangerous Goods and Wastes - final report of the Commission" (EG-KOM (87) 182 endg.) was written (Commission of the European Communities, 1987 and 1989).

4.1 International regulatory regimes / EC guidelines

It seems certain that the regulatory regimes on the carriage of dangerous goods that exist at present, such as RID, ADR and ADNR, will remain in force, especially so since their territorial purview extends far beyond the Common Market.

The European Community has revealed its intention to become active in those areas where it considers the provisions of the international regulations (for example ADR, RID etc.) to be insufficient. Since the end of 1989, for instance, the "Guidelines for the Training of Drivers of Vehicles Carrying Dangerous Goods" exist (Ridder, 1993a). These guidelines stipulate that EC Member States also have to train vehicle drivers within their territory; so far driver's training has been obligatory only for carriages across the border under the ADR.

4.2 Border checks

Intensive negotiations on equivalent measures to make up for the discontinuation of border checks are presently going on (conditions are: equal penal laws, equal domestic checks, ...).

A guideline already in existence (EWG 4060/89) has been amended to allow for discontinuation of internal border

checks for dangerous goods vehicles, even within the expanded sphere of the EC after 1992 from 1992 onwards (Ridder, 1992).

4.3 Domestic regulations

No EC Treaty State may enact new technical provisions liable to impede competition within the EC. Even domestic variation of the ADR - or, to be precise, changes to the german Rule on the Carriage of Dangerous Goods by Road (GGVS) - are permissible only to a limited extent. For example, if reasons of public order or security can be claimed (Article 35, EC Treaty). As a rule, notification of the EC will be inevitable when new domestic regulations are enacted.

Nevertheless, because of divergent safety philosophies, in future regulations for domestic and international road traffic in European states will still differ in some points.

European community foreigners apply their own technical regulations when approved for domestic traffic (cabotage). In that case the foreigners are not subject to the respective domestic regulations of the country in which the domestic carriages are carried out.

4.4 EC - summary

In conclusion, it can be said that no final assessment of the EC's role in transport of dangerous goods is possible at present.

However, priority ought to be given to the continuation of international transport organizations' (such as ECE, OCTI, CCNR,IMO) regulations. It needs to be stressed that dangerous goods regulations from the EC are, basically, not expedient. There is, in Europe, already sufficient regulation, and other activities from the EC would only aggravate the difficulty that arises from having different regulations specific to each mode of transport.

5. Inland navigation

At the outset I noted the existence, since 1831, of regulations on the carriage of dangerous goods, which solely applied to gunpowder. In 1888 regulations on toxic, explosive and flammable substances were added. These regulations were developed, even in those days, by the Central Commission for Navigation on the Rhine (CCNR) which today has its office in Strasbourg.

Today the Rhine is the world's busiest inland waterway, with approximately 50,000,000 tonnes of dangerous goods being carried annually in Germany alone. (It so happens that this was almost the figure for all Rhine traffic back in 1913; this shows the enormous increase in dangerous goods transport)

Inland navigation thus is the long-distance mode of transport with most dangerous goods carried. However, most of the goods are mineral oil products of hazard class 3, and hardly ever are they radioactive materials.

Nonetheless regulations are presently being developed for radioactive materials, both in Strasbourg at the Central Commission for Navigation of the Rhine and in Geneva at the Economic Commission for Europe (ECE). How the two are interrelated will be explained briefly.

5.1 Central Commission for Navigation of the Rhine

The Central Commission for Navigation of the Rhine has its origin in 1868, when all riverine States were guaranteed free passage on the international waterway Rhine from Switzerland to the open sea, and no single State was to raise impediments.

The Central Commission for Navigation of the Rhine (CCNR) was established in Mannheim / Germany as the central institution for all necessary settlements; today its seat is Strasbourg.

A task force "Transport of Dangerous Goods" within the Central Commission attends to regulations on the carriage of dangerous goods. Presently it works on the revision of the Agreement on the Transport of Dangerous Goods on the Rhine (abbreviation: ADNR, derived from the original French text Accord europeén relatif au transport international des marchandises Dangereuses par voie de Navigation interieure - ADN, with "R" added for Rhine).

The new ADNR, which is supposed to be completed in 1992, will incorporate the 1985 edition of IAEA recommendations-Safety Series N° 6 for the carriage of radioactive materials.

5.2 Economic Commission for Europe (ECE)

The Economic Commission for Europe has been dealing with the drafting and continuation of dangerous goods regulations for international road transport, the ADR. It also has been dealing for 25 years with international

dangerous goods regulations for inland waterways (ADN). While the ADR is a legally binding agreement, the ADN has remained a recommendation so far.

Due to the opening up of East Europe, traffic to the former Iron Curtain countries will intensify in Europe. Also, once the Rhine-Main-Danube canal, connecting the largest European rivers Rhein and Danube, has been completed (September 1992) large quantities of dangerous goods will be carried between these waterways. Since regulations in Europe at present differ, there is a compelling need for the coordination of regulations for all European inland waterways.

Acting on an initiative of the then Soviet Union, the Economic Commission for Europe undertook, in 1986, to continue development of the ADN provisions. It should be noted that the ADN recommendations had been left undeveloped for about 15 years, because of the greater attention that had to be paid to road traffic. The provisions are now nearing completion, and are to be adopted by the Inland Transport Committee of the ECE in February 1993.

The decision on whether the ADN is to remain a recommendation or be made an (binding) agreement will be considered later.

5.3 Coordination of ADN and ADNR

Whereas the ADNR covers the Rhine, the future ADNR will cover all European inland waterways. The groundwork for the new ADNR is done by the CCNR task force "Transport of Dangerous Goods" in Strasbourg, where the language of negotiation is German. However, at the ECE in Geneva it is English, French and Russian. Therefore the Federal Republic of Germany translates the results agreed in Strasbourg into English and passes them on as German applications to the ECE.

By and large, this procedures guarantees the future equivalence of the provisions of ADNR and ADN.

Following the current state of discussion many European states are in favor of a European agreement. The Rhine riverine States of Switzerland, France, Belgium and The Netherlands, however, have reservations. They fear that safety of navigation might be compromised (the level of safety on the Rhine probably being leading in the world) and therefore argue for continuing separate regulations on the Rhine.

5.4 Regulations for the carriage of radioactive materials on inland navigation vessels

After dumping of radioactive wastes in the North Sea has been outlawed, there is practically no carriage of radioactive materials by inland waterway. The last carriage was of a cobalt ^{60} source, built into a medical instrument and sent from Basle to Rotterdam. As the large dimensions of the medical instrument precluded use of a type B packaging, carriage at that time was under exemption.

There has been talk of carriage of highly radioactive wastes in glass receptacles from Mol (Belgium) via the Belgian Albert canal, Maas and Rhine to Karlsruhe (Germany). The Belgian authorities had reservations because of the Albert canal's other use as reservoir in Belgium.

In the vicinity of rivers and canals several nuclear power plants are situated. It is conceivable that supply and disposal are made by inland waterway.

Future regulations on dangerous goods carriage via the Rhine (which in Germany apply to all waterways) thus have to be designed for radioactive materials as well. The revision of the ADNR (ADN) has taken this into account. However, the schedules 1 through 13 will not be included in appendix A to the future ADN/ADNR; instead reference will be made to the regulations for road transport (ADR). On the other hand, Appendix B which applies mainly to the ship's master will contains most of the provisions. Also, the shipper will be obliged to provide the carrier with the necessary provisions of appendix A 8 (particularly the respective schedules).

6. Concluding remarks

It has been shown that a large number of dangerous goods regulations have to be observed in domestic and international carriage. Nevertheless more regulations will be added in 1992/93, especially for European inland navigation; and the European Community regulates in this field despite the host of regulations already in existence.

One can only hope that everybody abides by the international regulatory regimes; in particular, the UN recommendations (dangerous goods) which are valid throughout the world and the IAEA recommendations (radioactive materials).

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Figure 1

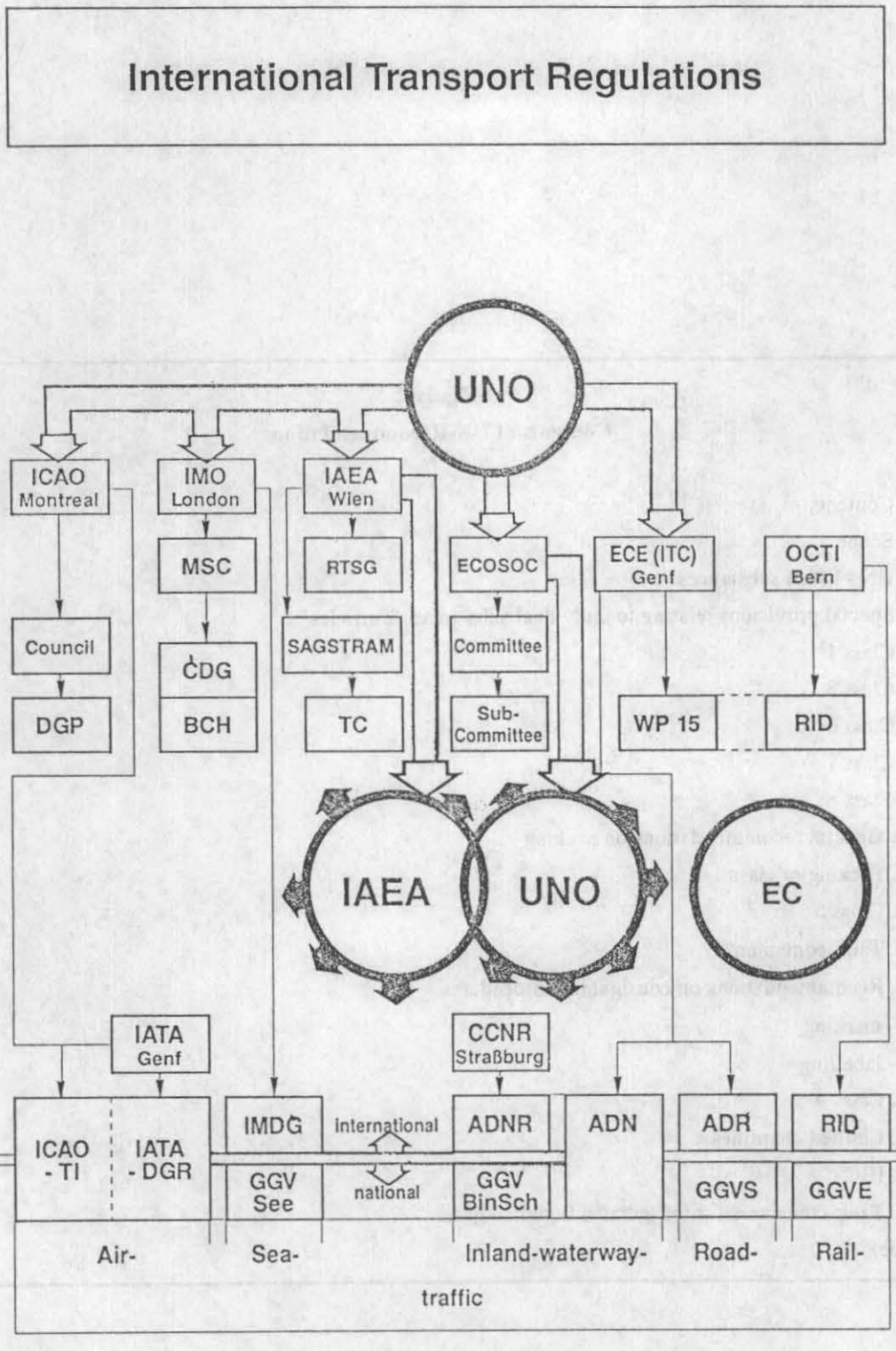
International Transport Regulations
UNO
ICAO Montreal
IMO London
IAEA Wien
ECOSOC
ECE (ITC) Genf
OCTI Bern
Council
DGP
MSC
CDG
BCH
RTSG
SAGSTRAM
TC
Committee
Sub-Committee
WP 15
RID
IAEA
UNO
EC
IATA Genf
CCNR Straßburg
ICAO - TI
IATA - DGR
IMDG
GGV See
international
ADNR
GGV BinSch
ADN
ADR
GGVS
RID
GGVE
Air-
Sea-
Inland-waterway-
Road-
Rail-
traffic

Figure 2

Contents of UN-Recommendations

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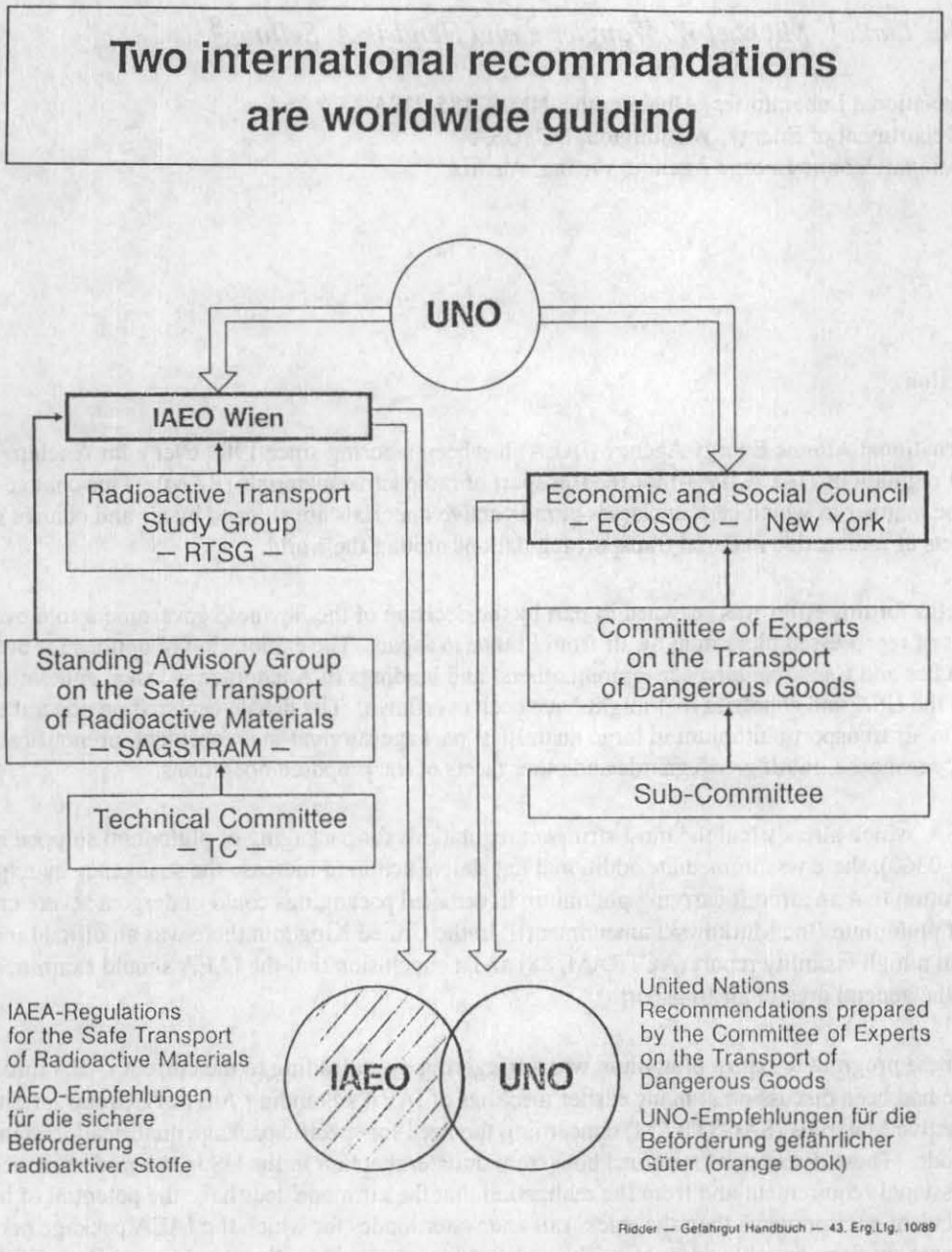
Figure 3


Two international recommandations are worldwide guiding
UNO
IAEO Wien
Radioactive Transport Study Group – RTSG –
Standing Advisory Group on the Safe Transport of Radioactive Materials – SAGSTRAM –
Technical Committee – TC –
Economic and Social Council – ECOSOC – New York
Committee of Experts on the Transport of Dangerous Goods
Sub-Committee
IAEA-Regulations for the Safe Transport of Radioactive Materials
IAEO-Empfehlungen für die sichere Beförderung radioaktiver Stoffe
IAEO
UNO
United Nations Recommendations prepared by the Committee of Experts on the Transport of Dangerous Goods
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