Best Practice Guide on Ammunition Transportation

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This Guide was drafted by the government of Germany.

FSC.DEL/554/05/Rev.2

17 November 2006

Annexes

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References

ADR *European **A**greement concerning the international carriage of **D**angerous goods by **R**oad / **A**ccord européen relatif au transport international des marchandises **D**angereuses par **R**oute*

RID ***R**egulations concerning the **I**nternational Carriage of **D**angerous Goods by rail / **R**èglement concernant le transport **I**nternational ferroviaire des marchandises **D**angereuses)*

AC/258 *NATO Group of Experts on Safety Aspects of Transportation and Storage of Ammunition and Explosives*

AC/326 *NATO Group of Experts on the Safety Aspects of Transportation and Storage of Ammunition and Explosives*

OSCE *Best Practice Guide on National Procedures for Stockpile Management and Security (FSC.GAL/14/03/Rev.2 dtd. 19.09.2003)*

I. Introduction

In addition to Small Arms and Light Weapons (SALW) the existing surplus and/or over-aged stockpiles of conventional ammunition pose significant dangers for people, the environment and the security of countries. The OSCE participating States therefore addressed, in their decision FSC.DOC/1/03 of 19 November 2003, the problem of stockpiles of conventional ammunition with the aim of clearly improving the current situation through a set of specific measures and international cooperation. The agreed OSCE Document on Stockpiles of Conventional Ammunition calls on the participating States, *inter alia*, to elaborate Best Practice Guides. The aim of these Best Practice Guides is to increase the knowledge of, and experience with, certain aspects of the problem of conventional ammunition, which already exist within the OSCE area and are available to all participating States. The information contained will therefore support them in solving problems with ammunition, such as preventing accidents or incidents during ammunition transportation or keeping the extent of damages as limited as possible.

II. Aim and Scope

This OSCE Best Practice Guide provides general recommendations and practical advice for the planning, preparation and conduct phase of ammunition transportation[1] by land.

This guide applies only to conventional ammunition as categorized by the OSCE Document on Stockpiles of Conventional Ammunition to be transported during peacetime.

This guide addresses the external transportation by road and rail as well as the internal transportation with the usual materials handling equipment. Special consideration is being given to aspects of ***safety*** *(accident prevention)*, security and ***administrative stockpile management***.

This guide is not meant to be any kind of binding directive or regulation. However, the information provided by this guide may be used for the development of policy and general operational guidelines and procedures on all aspects of ammunition transport.

This guide is based essentially on the ADR[2] and the RID[3]. Both guidelines are already legally binding in many states within the OSCE area as concerns the transportation of hazardous goods by road or rail. Thus, they constitute a specially suited and broad international basis for the recommendations in this guide[4]. Nevertheless, similar guidelines exist in addition to these and may be used instead.

1 Definition of "Transportation" in this context: see Annex 1.

2 ADR: «European Agreement concerning the International Carriage of Dangerous Goods by Road ».

3 RID: «Regulations concerning the International Carriage of Dangerous Goods by Rail".

4 ADR and RID were both referred to in Section II.6 on SALW transports in the OSCE Best practice Guide on National Procedures for Stockpile Management and Security.

The vast numbers of provisions in the ADR and RID and other legally binding regulations are naturally far more comprehensive than the recommendations and advice contained in this guide.

III. General information on the transportation of ammunition by land

This chapter and the related annexes contain general recommendations and practical advice that should be observed during all types of ammunition transportation by land. As necessary, they are supplemented by the chapters on *Road Transportation*, *Rail Transportation* and *Internal Transportation* of ammunition as regards the peculiarities of these types of transport.

Annex 1 contains a list of definitions of special terms that are important in the context of "transportation of ammunition by land"; they are used throughout this guide.

1. Responsibilities, training and qualification of the personnel involved in transportation

An important key for achieving accident-free and safe ammunition transportation is the clear assignment of personal responsibilities to the personnel involved in the transportation and their specialized training. Furthermore, the personnel must be physically, mentally and morally qualified to carry out the assigned responsibilities.

Taking part in the transportation of ammunition does not only comprise the actual conveyance of the ammunition by a means of transportation but also the phases of planning and preparation. Hence, the following personnel are generally involved: the dispatcher, the loader, the packer, the ammunition specialist, the carrier, the chief transportation officer, the transportation escort team, the co-driver and the driver. Annex 2 contains a brief summary of an appropriate distribution of responsibilities among these personnel involved in the transportation of ammunition.

The personnel involved in the transportation should receive adequate specialized training so that they are able, within the scope of their responsibilities and irrespective of the quantity of ammunition, to make the arrangements necessary in accordance with the nature and extent of the predictable risks to prevent damage and, if an incident occurs, to keep the extent of the damage as limited as possible. Annex 3 contains a list of knowledge and skills, which should be taught during such specialized training.

2. Safety

2.1. Transportation planning

Besides the production of ammunition, its transportation poses the greatest risk in the handling of ammunition. For this reason, ammunition transportation should be limited to a minimum. It should be carefully planned, prepared and conducted so as to ensure that the am-

munition arrives accident-free and safely at its destination. In this context, the aspects of Safety, Security and Stockpile Management must always be taken into consideration. The type, route and time of ammunition transportation must be selected so as to keep the risk for all personnel involved in the transportation at a justifiable low level. Due to the lower risk of a traffic accident, ammunition transportation should primarily be conducted by inland watercraft rather than by rail, while transportation by rail should be preferred to transportation by road. Special attention is to be paid to the planning of ammunition transports, which have inevitably to pass through potentially dangerous waypoints like tunnels or bridges.

2.2. Ammunition transportation safety / approval for transportation

Before ammunition is transported, a competent and adequately qualified agency should establish whether the ammunition is technically safe to transport at all. On the basis of this determination, a decision can be made as to whether the ammunition is approved for transportation or not, or which requirements are to be met for the transportation of this ammunition.

The results of the transportation safety check and the decision to approve the ammunition for transportation are to be recorded in writing in a protocol stating the reasons for the relevant decision. This protocol should be handed over to the person responsible for managing the ammunition concerned; it should also be carried along during the transportation of this ammunition. In addition, all ammunition transport packaging should be marked with the issued approval for transportation and, if applicable, with requirements applying to the transportation.

It is especially important to determine the transportation safety of ammunition that has been exposed to extreme stresses (e.g. fire, accident, jettisoned ammunition, inundation, modifications because of technical examinations) or that is damaged, corroded, oxidized or outdated, or of ammunition items that are unexploded ordnance (UXO), duds or recovered or extraneous ammunition.

All reasonable efforts should be undertaken to minimize the risks of any ammunition accident, when transporting seriously stressed or damaged ammunition as described above.

2.3. Determination of the hazard potential of ammunition

Conventional ammunition is a *hazardous good*. The main danger for human beings and animals in the vicinity of detonating ammunition is generally a combination of blast, fragmentation and incendiary effects. Moreover, some types of ammunition also contain toxic and/or corrosive material.

The Safety Measures taken during transportation should be based on the danger or combination of dangers posed by the ammunition concerned.

Different effective approaches exist for the determination of the hazard potential of ammunition. One of them is the so-called ADR[5].

The ADR divides hazardous goods into nine different classes. Conventional ammunition and explosive is grouped in class 1 as *hazard divisions 1.1 to 1.6*. Due to the considerable differences between the types of ammunition or explosives, goods of *hazard divisions 1.1 to*

5 «European Agreement concerning the International Carriage of Dangerous Goods by Road ».

1.6 are again subdivided into *compatibility groups*. More details are provided at Annex 4.

A competent and specially qualified agency should be appointed to decide whether a substance or item belongs to a *hazard division* and a *compatibility group*, thus providing a reliable basis for the planning of appropriate safety measures for the transportation.

2.4. Mixed loads of class 1 materials for transportation

Due to its hazard potential ammunition should not be transported together with hazardous goods belonging to other classes (i.e. inflammable or radioactive materials etc.).

Due to the often greatly differing characteristics of ammunition types, even some combinations of ammunition or explosives in one shipment for transportation should be avoided for safety reasons, whenever the situation allows doing so. Information on dangerous and on acceptable mixed loads is provided in the following sub-paragraphs:

2.4.1 Mixed loads within a vehicle, trailer, railroad wagon and container

Annex 5 exemplarily contains a table of dangerous and of acceptable mixed loads. It is strongly recommended to avoid mixed loads indicated as dangerous, when the cargo for a vehicle, a trailer, a railroad car or a bulk container is put together.

2.4.2 Mixed packing within a package

In general, the same principles apply to the mixed packing of ammunition within one package (e.g. ammunition box) as to the mixed loads within one vehicle (cf. III.2.4.1 and Annex 5). In addition, duds, increment charges and unserviceable ammunition parts containing hazardous material must not be packed in one package together with serviceable ammunition or nonhazardous goods, and should be packed separately for each *compatibility group*.

2.5. Ammunition packaging material

The packaging (e.g. ammunition box, propellant charge container, container) primarily serves to protect the ammunition from the influence of the weather and damage; it is thus a means of safety. A proper packaging includes the securing of the ammunition inside the package against slipping.

The ammunition packaging should be made of robust material so as to withstand the stresses expected during transportation. The entire packaging and tie-down material should be nonflammable or flameproof. As a rule, the original packaging provided by the arms industry for the transportation of a certain type of ammunition is the best choice.

A competent and specially qualified agency should be appointed to technically check ammunition packaging and issue a certification if the packaging is deemed suitable.

2.6. Information / markings on ammunition packaging

In case of an accident involving ammunition, it might be vital that the emergency response personnel (i.e. police, fire brigade, explosive ordnance disposal (EOD) etc.) is able to identify quickly which packaging (e.g. ammunition boxes, propellant charge containers) actually holds ammunition and which kind of ammunition is present.

For this reason, transportation packaging containing ammunition should have inscriptions and/or signs on the outside that provide information on the actual con-

tents of the packaging and the potential danger deriving from it. For the latter purpose so called hazard labels (cf. Annex 6) are particularly useful.

In order to avoid inappropriate actions of the emergency response personnel in case of an accident, the aforementioned *hazard labels* should be removed from packaging containing no ammunition.

2.7. Approval of ammunition means of transportation

Vehicles, trailers and other equipment used for the transportation of ammunition by road, by rail or within sites should be specifically approved for this purpose by a competent and qualified agency.

The approval should be based on an examination of, at least, the suitability of the transportation equipment in terms of ammunition safety and roadworthiness. The examination of such vehicles, trailers or equipment as to their suitability for the transportation of ammunition should be repeated regularly after an appropriate period of time to account for negative influences due to use and age.

The competent agency should confirm in writing the approval of transportation equipment for the transportation of ammunition. The certificate of approval should be carried along on the vehicle during transportation of ammunition.

2.8. Ammunition transhipment sites

The transhipment, i.e. the loading and unloading as well as the transfer of ammunition from one vehicle to another, constitutes a particularly hazardous situation, because the ammunition or its packaging may be easily damaged during this process, which can result in accidents involving ammunition. That is why the following advice on how to set up and run transhipment sites should be followed:

- If possible, the transhipment site should be delimited and marked in a clearly visible manner. The access routes to the transhipment site should be marked with the appropriate *fire division placards* (see Annex 7) so that in the event of an accident rescue personnel may conduct a proper situation assessment for the firefighting operation.
- Uninvolved bystanders should be kept away from the transhipment site. If this cannot be achieved, loading should be discontinued until any disturbance by uninvolved bystanders is eliminated.
- Escape or rescue routes should be specified, kept clear and marked (if necessary) before loading commences. The personnel working in the loading area should be briefed accordingly.
- When it is dark, the transhipment site should be lighted to a sufficient degree. However, no artificial light except electric lights, electric lamps or floodlights of an approved type (protected against causing ammunition to detonate or deflagrate) should be used when handling ammunition.
- At the transhipment site, ammunition should be present only in such quantities as are necessary for the loading activities to continue smoothly.
- When several vehicles are loaded or unloaded at the same time, efforts should be made to ensure that each

of these vehicles could easily leave the transhipment site in case of emergency. During loading and unloading, the minimum distance between vehicles should be at least 50 m.

- Freight cars, containers, vehicles and trailers should be secured against unintentional movements during the loading process.
- Appropriate fire precautions need to be taken. Smoking, fire and naked lights should not be allowed in the vehicle, or within 25m of it.
- Loading and/or unloading should be suspended during thunderstorms. Ammunition and explosives at the transhipment site should be covered with tarpaulins and hanging wires or ropes should be secured at least 3 meters from the base of a stack of ammunition.

2.9. General principles on ammunition storage

All cargo that is being transported is affected by various forces, which occur in normal road traffic. During transportation, lateral, transversal and vertical forces exert their effects upon the loaded goods. It is possible that the cargo or the vehicle tips or topples over due to acceleration or centrifugal forces when turning a corner or due to rolling movements or tilt angles. To avoid such incidents, all cargo must be secured laterally and transversally to prevent horizontal shifts, as well as vertically to prevent the lifting, tipping or toppling over of the cargo.

In addition to the recommendations on mixed loads of different *compatibility groups* of ammunition (cf. paragraph III.2.4) and the recommendations on proper packaging (cf. paragraph III.2.5), it is especially important to properly stow away ammunition during the loading procedure so as to ensure that the transportation of ammunition will not impede the roadworthiness of the vehicle. This includes observing the maximum load weight permitted for a particular means of transportation.

Additionally, the total net weight of the explosive matter to be loaded on one transport unit should be limited based on the *hazard division* (cf. paragraph III.2.4) and the type of vehicle used for the transport (spark ignition, electric or special explosion protected vehicle etc.).

2.10. Additional ammunition safety issues

Depending on the specific type of ammunition, the impact of extreme heat, physical shock, high frequencies (i.e. emitted by radar or radiotelephones), electric energy or electromagnetic radiation may cause ammunition to detonate or deflagrate. These circumstances should be considered when planning and conducting a transport of ammunition, and adequate precautionary measures should be taken.

Sensitive or potentially dangerous waypoints like, i.e., tunnels or bridges, mountainous terrain or water protection areas should be avoided by ammunition transports. If it is inevitable to pass through these waypoints, one should be obliged to obtain special permission to do so from a designated competent agency. This permission should be given in writing and should prescribe the specific route to be used, the date and timeframe for the transport, the maximum speed, restraints in reference to the load, safety equipment to be carried along, employment of escort vehicles or other constraints or restraints deemed necessary by the responsible agency issuing the permission.

Repeatedly prescribed routes to by-pass sensitive or potentially dangerous waypoints should be marked with signs to simplify following this route.

It should be considered to establish designated technical halt areas for ammunition transports in front of the

entrance of a tunnel or in front of a bridges, allowing special technical checks before continuing the transport or allowing to inform a bridge or tunnel warden about the intention to do so or to receive latest information or instructions from the responsible warden.

It should be forbidden to overtake ammunition transport while crossing a bridge or passing through a tunnel. Additionally a minimum distance to be kept between vehicles transporting ammunition should be prescribed.

2.11. Accident Response during the transportation of ammunition

The greatest risk in the handling and transportation of ammunition and explosives is that of fire from a source external to the goods and it is vital that any fire should be detected and extinguished before it can reach the ammunition and explosives; consequently it is essential that fire precautions, fire-fighting measures and equipment should be of high standard and ready for immediate application and use.

Considering the robustness of the materiel and the packaging, emergency response to the situation should be scaled to the actual degree of danger. However, when a fire is present or is reasonably expected, all effort should be made to execute aggressive fire suppression and removal of non-involved personnel from the area.

Specific Instructions on appropriate conduct in case of accidents involving certain types of ammunition may be provided by means of *"accident instruction sheets"* or *"additional instruction sheets"* (cf. paragraph IV.1.4) applicable for the transportation of ammunition by road. Most of these instructions may be equally useful with respect to modes of transportation other than transportation by road.

In case of accident, standardized contingency plans should be at hand that include directives for traffic and safety regulation, instructions for medical care, as well as notification procedures in order to contact the authorities in charge, weapons experts, and medical and fire prevention personnel.

States may also consider installing and publishing a toll free telephone number for calling explosive ordnance disposal personnel, to be sent to the scene when an accident takes place during the transportation of ammunition. States may also consider installing tracking and monitoring systems connected with a positioning system (i.e. GPS or GALILEO) in their ammunition transport vehicles to allow a swift response to incidents.

3. Security

National civilian ordinances and military regulations are an essential basis for the standardization of transport security. These should be combined with international agreements like the ADR and the RID.

Ammunition, and particularly ammunition for small arms and light weapons, is especially at risk of being stolen. For this reason, it must be protected at all times – and particularly during transportation – against theft. While stationary ammunition storage facilities can be comprehensively and adequately secured against illegal entry and theft of ammunition, it is more difficult to ensure this same level of security during transportation.

With regards to security measures, ammunition transportation should be planned and conducted as is customary for other precious items (e.g. currency, gold, diamonds, weapons etc).

When a shipment is planned, the risks and vulnerabilities should be analyzed first. This analysis will then serve

as the basis for the overall planning of the necessary Security measures. Routes and times of transportation should be selected randomly. Special vulnerabilities are breaks in the ourney and low-speed routes as well as so-called "inevitable routes" that cannot be avoided during the transportation. The personnel tasked with the planning, preparation and conduct of ammunition transportation must be trustworthy, reliable and discreet. Information on the conduct of ammunition transportation should be classified.

As a rule, the personnel conducting the transportation should be armed when the transportation leaves the site. Depending on the risk analysis, it may even be necessary to employ an armed transportation escort team.

It may also be useful to have a single vehicle driving in advance of the ammunition transportation convoy covering the route to detect suspicious actions along the transportation route. Such an advance vehicle should be able to communicate with the convoy leader. In this way assaults on the ammunition transportation may be prevented.

Moreover, it should be ensured that the ammunition is continuously guarded not only during the actual transportation but also during the transfer.

Effective regulation for cargo verification and inspection mechanism can help prevent illicit transfers of SALW that are facilitated by falsified transport documentation.

As a rule, SALW and related ammunition should be transported in separate vehicles. Only in exceptional circumstances should they be transported together.

If civilian contractors are used to move ammunition by land, then procedures for authorization, security, monitoring and inspection of both the movements and the contractors themselves should be in place beforehand. They should be equipped with specific protection measures (e.g. alarm systems on vehicles or electronic tracers in boxes), monitored by the military police, or guarded by military or security forces, depending on the quantity and type of ammunition transported and the respective risk assessment.

The measures for the Security of ammunition transportation should not interfere with the measures required for Safety.

4. Stockpile management

For logistic reasons, and to prevent a theft of ammunition, the personnel responsible for stockpile management should know at all times – including during transportation – which and how much ammunition they have in their custody.

Errors and manipulations occur particularly in the transfer records of ammunition stocks. Such bookkeeping transfers are to be made for any addition to or removal from the inventory, which is to be transported. For this reason, simple but effective regulations concerning the stockpile management should be introduced that govern in particular the transfer of ammunition stocks from one responsible person to another.

The ammunition itself, as well as its packaging, generally show information on the ammunition designation, caliber, production batch number, producer and quantity and size; sometimes even serial numbers are shown. In most cases, this information ensures a definite identification and classification of the ammunition; hence, it can be very useful for stockpile management purposes – particularly for the comparison between nominal and actual quantities within the scope of book transfers (handing over/receipt of ammunition).

If ammunition is to be transferred from one responsible person to another, a formal handover and receipt procedure should be followed. This transfer procedure is based on a document that identifies type and quantity and, if applicable, other particulars of the ammunition to be transferred – i.e. the nominal data – that have to be compared. When the ammunition is handed over for transport, this document is generally referred to as a "transport document" (road transportation) or "waybill" (rail transportation). A sample "transport document" is provided at Annex 10.

The personnel involved in the transfer procedure should jointly compare the nominal quantity of ammunition indicated in the transport document/waybill with the ammunition actually present during the transfer – i.e. with the actual numbers – to detect any deviations. This check should be performed for 100% of the ammunition; random checks do not suffice.

In order to keep the amount of time needed for this transfer procedure to a minimum despite the necessity for a 100% check, it is possible to leave ammunition packages unopened that were sealed by an authorized agency. The crosschecks are then conducted by means of the signs or inscriptions (see III.2.6) attached to the packages.

The personnel handing over and receiving the ammunition should confirm the correct transfer of the ammunition by their signatures on the transport document/waybill; both sides should receive a copy of the paper for documentary purposes. This document should be carried along during transportation, since it is not only a cargo certificate but also the basis for another comparison between nominal and actual numbers during a subsequent ammunition transfer.

IV. Special aspects of external transportation of ammunition by road

This chapter and the associated annexes contain general recommendations and practical advice on transporting ammunition outside of stockpile facilities or other installations ("off-site") by road. This chapter supplements the information in the Chapter *General Information on the Transportation of Ammunition by Land*.

1. Safety

1.1. Vehicle crew

Whenever the situation allows doing so, a driver and a co-driver should man vehicles carrying ammunition. Both personnel should have the necessary driving licenses for the ammunition transportation vehicle. Prior to the ammunition transportation, the drivers should receive instructions on the rules to be applied to that particular transport.

Any physical or mental impairment which is due to, for example, alcohol consumption, the taking of tablets, indisposition, tiredness or the like and may have an impact on the driver's fitness to steer the vehicle is to be reported to the responsible transportation officer immediately.

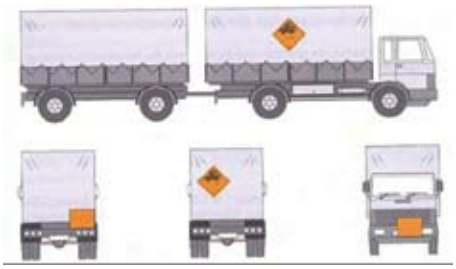
1.2. Safety equipment for the transportation of ammunition by road vehicles

Vehicles for the road transportation of ammunition should carry equipment designed for the special purpose of ammunition transportation so that the vehicle crew and/or the transportation escort personnel will be able to respond immediately and appropriately to a technical malfunction, a traffic accident or an ammunition accident. This equipment should include, but is not limited to, fire extinguishers, sets of individual protective equipment for self-protection of the vehicle crew and the escort team (i.e. NBC protective mask with an adequate filter), electrical warning lights designed in a way that their use will not cause the ammunition on board to ignite.

The equipment to be carried along for this purpose during ammunition transportation by road should be specifically approved for its intended use by a competent and qualified agency. This approval should be based on a specialized examination of the different items of equipment with respect to their necessity and suitability for use in ammunition transportation. The equipment should be carried along in the transportation vehicle; it should always be operational and ready to hand.

1.3. Marking of vehicles transporting ammunition by road

Vehicles transporting ammunition should be clearly identifiable as such from the outside so that, in the case of an incident or accident, the persons present at the scene by chance or emergency response personnel (i.e. police, fire brigade, explosive ordnance disposal) are able to correctly assess the situation without delay and take adequate measures.



The illustration above provides examples of how to mark vehicles transporting ammunition by road by means of *warning signs*, indicating the presence of hazardous goods, and *hazard labels* (cf. Annex 6), specifically indicating that the vehicle is transporting *Class 1* items or substances like ammunition.

Such *warning signs* and *hazard labels* should be made of flameproof material.

In order to avoid inappropriate action by the emergency response personnel, such markings should be removed or completely covered if the vehicle is not loaded with ammunition.

1.4. Accident instruction sheets and additional instruction sheets

Accident instruction sheets are written instructions for the vehicle crew and the escort personnel on the correct conduct in case of an accident. These measures can differ depending on the type of ammunition carried; for this reason, different *accident instruction sheets* (a sample is provided cf. Annex 8) should be issued for the different *hazard divisions* of ammunition (cf. III.2.3 and Annex 4).

If the transported ammunition contains one or more "other hazardous substances" in addition to the actual explosive, separate *additional instruction sheets* should be issued which address these other hazardous substances (sample cf. Annex 9).

Accident instruction sheets and *additional instruction sheets* should be carried along ready to hand in the cab of the ammunition transportation vehicle. In order to avoid inappropriate actions by the emergency response personnel in case of an incident or accident, only the *accident instruction sheets* and *additional instruction sheets* applicable to the specific ammunition transportation should be carried along in the transportation vehicle.

1.5. Loading of ammunition on road vehicles

A number of safety hazards are connected with the loading of ammunition on road vehicles that may lead to an ammunition accident. This risks may be decreased significantly by following some simple procedural guidelines in addition to those already mentioned in paragraph III.2.8 (ammunition transhipment sites):

- Before it is loaded, the vehicle should be refueled and checked for technical defects. Refueling is prohibited during loading/unloading of ammunition.
- During loading and unloading, engines should be switched off unless they are required for the loading process. External heaters should be turned off as well.
- When transported in vehicles, or trailers, the ammunition can be loaded both along and across the movement line. The ammunition should preferably be loaded to evenly cover all the space of the loading space of the vehicle, with the line of symmetry of the boxes across the vehicle. Even if the vehicle is just partially loaded, efforts should be made to ensure an even distribution of weight so that each axle carries about the same load. Any point loading on the vehicle floor or any unbalanced loading of the cargo bed should be avoided.
- The ammunition boxes should be stowed in a way that prevents them from sliding or falling during transportation. The vehicle's side panels should be used as a stabilizing element for the fixation of the cargo only if the relevant vehicle-specific technical regulations indicate for up to what cargo mass and under which conditions (e.g. bracing of the side panels with specific chains) the vehicle's side panels are approved for such a purpose.
- A vehicle (with the exception of container vehicles) should be loaded only up to the height of its side panels (including insertable boards). Bulky packages and cargo units consisting of fixed packages of ammunition may sometimes exceed the vehicle's side panels (including insertable boards) by approximately one third of their own height. The loading rates of the vehicles or trailer cannot be exceeded.
- Whenever a vehicle is transporting ammunition, its side panels and rear panel should be up.
- Ammunition should be covered with a waterproof and non-inflammable tarpaulin. The tarpaulin should be large enough to be pulled over and lashed to the vehicle's side panels.

1.6. Conduct of transportation by road

Within the scope of their responsibilities and irrespective of the quantity of the ammunition which is going to be transported, the persons involved in the transportation process are to take the precautions which, according to the nature and extent of foreseeable hazards, are required to prevent damage or, in the event of an accident, to keep the extent of the damage as limited as possible.

Ammunition transportation vehicles should be driven very carefully and with foresight in road traffic. In particular, the mode of driving and the driving speed should conform to local traffic laws and be consistent with road and weather conditions.

The stipulated driving and rest periods should be observed. Additionally, it should be considered to order special speed limits and/or minimum distances to be kept between the vehicles when driving in a convoy.

Ammunition should be transported without making unnecessary stops. During a planned stop, the following minimum distances are to be kept:

- 300 m to inhabited built-up areas or crowds;
- 50 m between vehicles loaded with hazardous goods.

Vehicles loaded with ammunition must not be parked and left unattended and built-up areas are to be by-passed when there is a beltway. During the journey, there should not be any persons on the cargo bed.

If a disabled vehicle, which is loaded with ammunition, cannot be repaired on the spot, it is, if possible, to be towed to the nearest site where the cargo can be trans-shipped without obstructing the other traffic. This site should be at least 300 m from inhabited built-up areas or crowds. In the event that towing is not possible, the ammunition is to be transshipped on site.

2. Security

As detailed in the chapter *General Information on the Transportation of Ammunition by Land*.

3. Stockpile management

As detailed in the chapter *General Information on the Transportation of Ammunition by Land*.

V. Special aspects of external transportation of ammunition by rail

This chapter and the associated annexes contain general recommendations and practical advice to be observed particularly when transporting ammunition off-site by rail. This chapter supplements the information in the Chapter *General Information on the Transportation of Ammunition by Land*.

1. Safety

Within the scope of ammunition transportation by rail, the same recommendations should be observed as in the ammunition transportation by road as regards the marking of freight cars and bulk containers as well as the carrying along of *accident instruction sheets and additional instruction sheets* (cf. paragraphs IV.1.3 and IV.1.4).

When ammunition is transported in freight cars, the doors of the cars should be closed when the car is moved. During the process of physically composing a train consisting of several freight cars or bulk containers, the freight cars or containers containing ammunition should be moved carefully. Bumping into other freight cars or bulk containers cars should be avoided.

When being transported by rail, the ammunition should be loaded only into roofed cars or closed bulk containers. If this is not possible, the ammunition should be protected by alternative means against weather effects, e.g. by a non-flammable, waterproof tarpaulin.

During rail transportation, stress is exerted upon the ammunition mainly through shunting shocks when the trains are assembled. The forces exerted in the freight car's longitudinal axis should especially be taken into account when the cargo is secured. Moreover, the cars or bulk containers should be so loaded that they can be unloaded later from both sides more easily.

Depending on the type and quantity of ammunition, it may be useful to add empty cars or cars not loaded with ammunition at certain intervals in order to minimize the danger of a mass explosion of the entire train in the case of an ammunition accident.

Damaged freight cars and bulk containers or cars and bulk containers in which the cargo is no longer tied down properly should be examined and unloaded only after the neighbouring cars or bulk containers have been unloaded.

2. Security

It is more difficult to guard the ammunition during rail transportation than during road transportation because of the usually large number of freight cars and the resulting difficulties in monitoring them. Moreover, it is generally not possible to stop a train at short notice in between stations to immediately examine, for example, a suspected illegal entry. These particular difficulties should be taken into consideration when planning Security measures for rail transportation. As a rule, the freight cars and bulk containers should be locked and padlocked during transportation.

3. Stockpile management

In many cases, large quantities are involved if ammunition is transported by rail. In order to enable the stockpile manager to check that the cargo is complete, ammunition earmarked for rail transportation should be delivered as a complete carload to the railroad loading facility.

Furthermore, the ammunition should be loaded in a way that the ammunition batches are kept together. Chalk lines on the inner walls of the freight car or the bulk container should mark the separation line between the individual batches.

Car doors and windows and hatches that cannot be locked from the inside, should be sealed. Prior to opening cars and bulk containers, the seals and, if applicable, the padlocks as well as the car floor, the car walls, doors, windows (hatches, ventilation lids) and the car roof should be checked to determine that they are still intact.

VI. Special aspects of internal transportation of ammunition

This chapter and the associated annexes contain general recommendations and practical advice to be observed particularly when transporting ammunition on site. This chapter supplements the information in the Chapter *General Information on the Transportation of Ammunition by Land*.

1. Safety

A peculiarity of the internal transportation of ammunition is the fact that, besides the usual means of transportation like motor vehicles and trains, the handling equipment normally used for storage operations is employed as well. In addition, the ammunition is sometimes transported and stored at storage sites without packaging. Moreover, the quantity of explosives at an ammunition storage site is generally much higher than in rail or road transportation. Mistakes in ammunition handling could thus have much more severe consequences.

As a rule, ammunition that is transported internally should also be packed in proper shipping packaging or in similar alternate packaging. Unpacked ammunition should be transported and handled only in *ammunition workshops* in appropriate containers (e.g. transport skids) by specifically approved vehicles and handling systems. The responsible personnel with the help of an ammunition specialist should designate the *ammunition workshops* in writing.

Vehicles or equipment for handling or transporting ammunition within the site do not have to be equipped with *warning signs* and *hazard labels* or carry *accident instruction sheets* and *additional instruction sheets* if the personnel working on site has an adequate level of training.

In the case of rooms holding ammunition appropriately packaged for transportation, preferably vehicles with diesel or electric engines or other vehicles especially approved for ammunition transportation by a competent and qualified national agency should enter.

In the case of rooms holding ammunition that is not properly packaged, only explosion-proof vehicles should enter, and only if there is no ammunition with open hazardous material placed near the traffic lines. Vehicles not meeting these requirements should only be permitted to approach rooms holding ammunition in proper shipping packaging. Other vehicles should approach rooms holding ammunition without packaging or without proper packaging to a distance of no less than 20 m.

With the assistance of an ammunition specialist, the responsible personnel should designate in writing and mark trans-shipment and refueling locations in ammunition storage sites.

2. Security

Generally, stationary ammunition storage sites can be secured quite effectively and comprehensively against entry by unauthorized personnel. For this reason, the Security against the illegal abstraction of ammunition by storage site personnel is of special importance. The following useful measures may be taken: Subdivision of the storage site into zones with different access rights; securing of ammunition stocks by storing them in locked rooms with access control procedures; and personal checks of staff when they leave the storage site (e.g. by searching bags and vehicles at the gate).

3. Stockpile management

For the management of ammunition stocks that are internally transported, please refer to the recommendations in the OSCE Best Practice Guide on the *Management of Stockpiles of Conventional Ammunition* (prepared by the United States of America).

VII. General information on the transportation of ammunition by air

Aim and scope of this OSCE Best Practice Guide are focused on ammunition transportation by land. The transportation of ammunition and other dangerous goods by air is regulated by the norms of the International Civil Aviation Organization Technical Instructions (ICAO-TI) and the International Air Transport Association Dangerous Goods Regulations (IATA).

ICAO[6] produces Standards and Recommended Practices in various areas of aviation to facilitate the international movement of civil aircraft. These are contained in annexes to the Convention on International Civil Aviation (usually referred to as the "Chicago Convention"). Most countries of the world are already party to this convention. Annex 18 to this convention deals with the „Safe Transport of Dangerous Goods by Air". This annex contains broad principles to be adhered to and a list of responsibilities of „Contracting States". These are, *inter alia*,

- to consider applications for the grant of exemptions to allow the carriage of dangerous goods forbidden by the normal requirements of the Technical Instructions.
- to ensure compliance with the Technical Instructions.
- to establish inspection, surveillance and enforcement procedures.
- to co-operate with other countries in exchanging information concerning suspected contraventions.
- to have penalties for proven contraventions of national legislation.
- to establish procedures for investigating and recording dangerous goods accidents and incidents.

The Technical Instructions contain detailed provisions, which include requiring that the training programs for operators (airlines) be approved by the State where the aircraft of an operator are registered.

The International Air Transport Association (IATA), has released its „Dangerous Goods Regulations" (IATA-DGR) in form of a handbook, which is by almost 100% identical with the contents of the aforementioned ICAO-TI, but much more easy to use.

6 ICAO is a special organisation of the United Nations conducting the strategy of civilian aviation. ICAO was founded in 1944 by the Convention on International Civil Aviation (Chicago Convention) with domicile in Montréal (Canada). 188 countries of the world are already party to this convention.

Annex 1

Definitions

It cannot be ruled out that the following terms may have another meaning in other contexts.

Ammunition: In the context of this Best Practice guide the term ammunition covers all substances and items that have or may have explosive properties like

a) **Explosive substances and pyrotechnic mixtures and**
b) **Items containing explosives** and
c) **Agents and items** not listed under a) nor b) that were produced to bring about a practical effect by means of an explosion or a pyrotechnic effect.

Ammunition transportation safety means the safety of ammunition as regards the unintended operation of its hazardous materials during regular transportation, taking into consideration the effects and influences inherent in normal transportation operations.

Ammunition Specialists are personnel authorized to carry out comprehensive measures and activities in the field of ammunition. They have comprehensive and fundamental knowledge of ammunition and of the handling of ammunition. Preconditions for such an authorization are the proof of the knowledge and certain skills as well as certain moral, mental and physical qualities.

Ammunition transhipment means all handling activities needed for loading ammunition on a means of transportation, for unloading ammunition from a means of transportation and for transferring ammunition from one means of transportation to another.

Blasting agents mean explosives that are used for demolition; an initiating device triggers their detonation. This kind of explosives may also be contained in initiators and initiating devices.

Carrier means the company that carries out the transportation with or without a transportation contract.

Deflagration means the chemical conversion of explosives with the generation of flames; this conversion is faster than burning, but still at subsonic speed. If the deflagrating material is being contained, gas pressure, temperature and conversion speed will increase, which may result in a detonation.

Detonation means the chemical conversion of explosives at supersonic speed with the generation of a shock wave (within the explosive).

Dispatcher means the company that dispatches goods on its own behalf or on behalf of a third party. If the transport is carried out on the grounds of a transportation contract, the dispatcher under this contract shall be deemed the dispatcher.

Driver means the person responsible for steering a vehicle in road traffic and for the operational and road safety of this vehicle.

Explosion means the mechanical effects of a sudden increase in pressure resulting from a rapid combustion under high gas pressure and the rapid generation of gas (deflagration or detonation of an explosive).

Explosive substances are solid or liquid substances or mixtures, which can, by chemical reaction, generate

gases of such a high temperature, pressure and speed that they can cause destruction in their vicinity.

Explosives mean blasting agents, propellants, initiating agents, igniting agents, and pyrotechnic mixtures.

External transportation of ammunition means the transportation of ammunition in public traffic. This, i.e., includes movements of ammunition:

- from provider (manufacturer or dealer) to an ultimate recipient (armed or security forces);
- from a governmental or supplier storage site to a military storage site;
- from one military storage site to another military storage site (including to reserve stocks and inventory of reserve organizations);
- from a military storage site to one or several units/formations;
- from a military storage site to a destruction facility; or,
- from a military storage site to a dealer or buyer (e.g. for elimination of surplus).

Extraneous ammunition means ammunition that is not under appropriate ownership and was taken over, seized or taken in custody by a third party.

Handling of ammunition means the internal and external transportation of ammunition with handling means or by hand.

Hazardous goods means material and items which, due to their nature, their characteristics or their condition, may pose a danger to public safety and order, particularly to the general public, essential public goods, life and limb of humans and animals and the integrity of other objects.

Internal transportation of ammunition means the transportation of ammunition in ammunition storage facilities or depots or other areas closed to public traffic by barriers, prohibitory signs or other appropriate means.

Items containing explosives are items containing one or more explosive substances or pyrotechnic mixtures.

Materials handling equipment are machines, equipment and devices used for the transportation of goods within a given workspace.

Mixed Load refers to loading Packages containing *class 1* items or substances – i.e. conventional ammunition – belonging to different *compatibility groups of class 1* (cf. Annex 4) together on one vehicle for the purpose of transport.

Mixed Packaging refers to packing items or substances belonging to different *compatibility groups* (cf. Annex 4) of *class 1* together into one package for the purpose of transport.

Package means a containment used to wrap and keep together the goods to be transported so that they can be stored and transported.

Propellants mean agents made of solid or liquid deflagrating explosives that are used for propulsion.

Pyrotechnic mixtures are substances or mixtures designed to generate an effect in the form of heat, light, sound, gas or smoke or a combination of these effects as a result of non-detonative, self-sustaining, exothermic chemical reactions.

Recipient means the recipient identified in the transportation contract. If the recipient authorizes a third

party to receive the shipment, this third party shall be deemed the recipient. If the shipment is carried out without transportation documents, the recipient shall be the company that receives the hazardous goods upon their arrival.

Recovered ammunition means ammunition or ammunition parts, which were found and have not been continuously stored, monitored or managed. Hence, recovered ammunition will occur when the former owner has lost or abandoned his property.

Tie-down equipment means equipment and material for securing and fastening cargo on a truck bed or interchangeable truck bodies to prevent the load from dropping off the truck bed and from sliding.

Transportation

In the context of this Best practice guide, transport means any movement or carriage of conventional ammunition. Transport can be conducted by land, air and sea. This best practice guide further differentiates between internal and external transportation of ammunition.

Transportation safety is achieved when the goods to be loaded are in a proper and secured condition. The cargo must be secured in the cargo area of the transportation means so as to ensure that it will not be damaged by normal, contract-covered, transportation-related effects (vibrations, stop and go operations, panic stop, centrifugal forces, sea motion, etc.).

Transportation unit means a motor vehicle or a unit comprising a motor vehicle with trailer or a semi-trailer truck.

Annex 2

Recommendation for the distribution of responsibilities of Personnel Involved in the Transportation of Ammunition

1. A qualified and competent agency should be appointed by the responsible national authority to be responsible for officially grouping substances or items into *class 1* (i.e. ammunition), into one of the *hazard divisions* and into one of the *compatibility groups* of *class 1*.
2. A qualified and competent agency should be appointed by the responsible national authority to be responsible for officially certifying that vessels (i.e. trucks or railroad wagons) may be used for the purpose of ammunition transport.
3. A qualified and competent agency should be appointed by the responsible national authority to be responsible for officially certifying that packaging, handling and stowing materials may be used for the purpose of ammunition transport.
4. General safety obligations to be by **all** personnel involved in loading, unloading or in the execution of the transportation
   Within the scope of their responsibilities and irrespective of the ammunition quantity, the personnel involved in the transportation and transhipment of

ammunition must make the arrangements necessary in accordance with the nature and extent of the predictable risks to prevent damages and, if an incident occurs, to keep the extent of the damage as limited as possible.

All personnel involved must observe fire precaution measures like prohibition to smoke and to handle fire and naked light.

In addition to the aforementioned general safety obligations the following obligation are to be observed depending on the specific function of the employed personnel:

a) An appointed ammunition specialist should be made responsible
   - to once again determine and certify transportation safety, and
   - to examine damaged cargo prior to unloading.

b) The party ordering the transportation should be made responsible
   - to inform the dispatcher, the vehicle owner and the carrier about the type and quantity of dangerous goods to be transported, preferably in writing.

c) The owner of the transportation vehicle should be made responsible
   - to observe the provisions of regulations on the transportation of ammunition;
   - to employ only vehicles approved for ammunition transport;
   - to ensure that the safety and loading equipment is in a proper condition and is provided to the driver.

d) The dispatcher should be made responsible
   - to inform the owner and the carrier as well as the loading personnel and the driver about the dangerous goods to be transported, preferably in writing;
   - for packing of the ammunition and marking of the packages;
   - for filling in of the transport document and handing it over to the driver;
   - for the provision of accident instruction sheets and additional instruction sheets;
   - to attach the prescribed markings of the vehicle;
   - to ensure transportation of exclusively certified approved ammunition.

e) The loader should be made responsible
   - to instruct the driver on the dangerous goods;
   - for observing the mixed loading requirements;
   - for loading only approved vehicles and bulk containers;
   - for loading only appropriately equipped vehicles;
   - for marking containers with appropriate hazard labels;
   - to make sure, that the load corresponds with the data on the transport document;
   - to make sure, that no damaged packages are loaded;
   - to make sure, that the vehicles are properly loaded.

f) The carrier (in case of road transportation) should be made responsible
   - to consider whether the transportation can be carried out even if there are icy or snowy roads or if fog, rain or snowfall reduces the visibility to less than 50 m. If he conducts the transportation, he should consider to make sure that either breaks are made after short driving periods or that drivers can alternate;
   - to ensure, that - under conditions with less than 50 m visibility - a vehicle equipped with adequately visible rear (fog) lights brings up the rear of the convoy, and
   - if available – to ensure that a radio set for receiving the road traffic broadcasts is carried along.
   - to ensure that the driver is provided with the transport document, and
   - to assign a responsible chief transportation officer;

- to ensure, that only ammunition approved for transportation is transported;
- to ensure, that only approved vehicles are employed;
- to ensure, that the stipulated size of a transportation package is not exceeded;
- to ensure, that only properly equipped vehicles are employed;
- to ensure, that only reliable and trained personnel is employed as vehicle crew;
- to ensure, that the vehicle crew and the escort team are briefed prior to loading;
- to ensure, that accident instruction sheets and – if needed - additional instruction sheets are provided for the driver.

g) The recipient of the load should be made responsible

- for the removal of hazard labels from empty packages and containers;
- for proper unloading procedures.

h) The appointed chief transportation officer should be made responsible

- to - if deemed to be necessary - either order to make a sufficient break or to order a rotation of drivers;
- to give instructions on the carrying of matches and lighters;
- to act according to the accident instruction sheet/ additional instruction sheet if an incident occurs;
- to collect and return accident instruction sheets/ additional instruction sheets that are no longer required;
- to ensure, that no unauthorized personnel is transported;
- to ensure, that loaded vehicles are not parked and left unattended;
- to ensure, that the provisions governing the conduct during breaks are observed;
- to - if the cargo was damaged - request an ammunition specialist and, if applicable, inform police/ military police.

i) The driver should be made responsible

- to report to the appointed transportation officer prior to the start of the journey or during a break if he feels unable to continue driving;
- to bring along the appropriate equipment, the transport document and the accident instruction sheet/additional instruction sheet and present these papers upon request;
- to observe the prohibition to carry unauthorized personnel and to transport personnel on the truck bed;
- to compare, together with the loader, the cargo with the data on the transport document;
- to make himself familiar with the contents of the accident instruction sheet/additional instruction sheet prior to the start of the transportation;
- to observe the refueling provisions;
- to ensure, that no empty packages or packages containing non-hazardous goods marked with hazard labels are loaded;
- to ensure, that jerry cans with spare fuel are carried only in special brackets outside the truck bed;
- to act according to the accident instruction sheet/ additional instruction sheet in case of an incident;
- to interrupt the journey, request a specialist and inform, if applicable, police/military police if the cargo was damaged;
- to observe the regulations governing the conduct during breaks, and
- to ensure, that no damaged packages are loaded onto the vehicle;
- for the installation, uncovering or covering of warning sign / hazard labels;
- for conducting vehicle checks prior to loading and after unloading;
- for the proper loading and unloading of the vehicle;

- for maintaining proper distances between vehicles in a convoy;
- for adherence to regulations for the safe stowing of the load.

j) The co-driver should be made responsible

- to observe the aforementioned general safety obligations;
- to ensure, that the equipment is on the vehicle, and produce this equipment upon request;
- to make himself familiar with the contents of the accident instruction sheet/additional instruction sheet prior to the start of the transportation;
- to check the vehicle together with the driver prior to loading and after unloading;
- to know how to act in incidents and during breaks;
- to take the necessary measures when loaded vehicles are parked also in barracks.

Annex 3

Knowledge and Skills for Transportation of Ammunition

In order to cover all stages of the transportation process, this list also includes knowledge and skills, which are necessary for transporting non-hazardous goods. The list contains the minimum requirements.

I. Knowledge and skills required of dispatchers, loaders and carriers

Dispatchers, loaders and carriers should

- know the general health and safety regulations for handling ammunition;
- know the meaning of *hazard divisions*, *compatibility groups* and *ammunition fire divisions*;
- know which dangers ammunition can pose to humans, animals and the environment in case of accident or fire;
- be able to determine whether ammunition has been approved for transportation;
- be able to apply for an exemption permit for the transportation of ammunition;
- be able to determine whether a particular mode of transportation is required;
- be able to suggest a mode of transportation on the basis of an economic efficiency calculation;
- be able to determine the necessary number of specialist and auxiliary personnel;
- be able to properly employ specialists and auxiliary personnel;
- be able to determine the required transportation means;
- be able to order transportation capacity i.a.w. the relevant transportation request procedures;
- be able to determine whether the supplied vehicles and bulk containers are approved and suitable for transporting ammunition;
- be able to determine the required means of transhipment;
- be able to verify whether the means of transhipment may be used and are suited for the respective transportation;
- be able, among others, to determine the required tie-down equipment, tools, dunnage and consumable materials;
- be able to verify whether the equipment and/or material may be used for the respective transportation;
- know which fire prevention and first-aid measures are necessary;
- be able to determine the route, taking into account any prohibited or prescribed routes and possible traffic

congestions, as well as the actual course of the journey, taking into account driving bans at certain times, prescribed breaks and possible weather conditions;
- know which regulations (e.g. compatibility requirements for mixed loading and storage) have to be observed when supplying the ammunition;
- know the ammunition-related technical safety requirements (e.g. loading requirements and heights of fall);
- be able to handle the loading procedures applicable within their field of activity;
- know the load limit of the means of transportation;
- know how to distribute the cargo on the cargo bed of the means of transportation;
- know the criteria of ammunition transportation safety;
- be able to assess whether any measures have to be taken in case of damaged packages, depending on the kind and extent of damage;
- be able to determine for which kinds of transportation the packages have to be marked or labelled;
- know how to mark vehicles and containers and which markings are to be used;
- know how to mark packages containing duds;
- know which accompanying documents are necessary for the transport, how to fill them in and use them;
- know which general and special protection measures have to be taken (e.g. cordon off a transhipment site, employ an escort team);
- know the occupational safety regulations for their respective field of activity;
- be able to instruct the personnel involved in the transport with respect to the current health and safety regulations;
- be able to set up and operate a transhipment site;
- know what to do during the transfer of a shipment; e.g. know from which point on they are responsible for which kinds of protection and safety regulations and be able to arrange in due time for the ammunition to be guarded or unloaded;
- know which details to pay attention to and which measures to take before, during and after the unloading procedure (e.g. check for external damage, initiate measures in the case of damaged ammunition and/or packages or remove/cover markings).

II. Knowledge and skills required of drivers of ammunition transports

The driver should

- hold the necessary driver's license;
- have sufficient experience as a driver;
- be reliable and physically and mentally qualified for the job;
- know which vehicle and accompanying documents to carry, where they have to be carried and which data they should contain;
- know the meaning of the data in the *accident instruction sheet/additional instruction sheet*;
- know which kind of equipment has to be carried along in the vehicle any time ammunition is transported, what it has to look like and how to use it, including first-aid measures in case of burns;
- know how to prepare the vehicle for loading;
- know which engines and units to turn off during loading;
- know what to do when there are damaged packages;
- know how to distribute the cargo on the cargo bed;
- have knowledge on how to secure the cargo;
- be able to verify whether the transportation documents correspond with the cargo;
- be able to properly handle the packages;
- be able to use the tie-down equipment;
- be able to properly tie down the protective tarpaulin;
- know in which case and how to mark a transportation unit;
- know the requirements for the driving route and times;

- know which persons he may take along;
- know under which conditions he may drive without a co-driver;
- know what to do in various weather and road conditions;
- know which detour routes he may or must use in case of a traffic congestion;
- know what to do in case of a vehicle breakdown, an accident or a fire (he should have trained for these incidents);
- know which distances have to be maintained in a convoy;
- know which details to pay attention to when parking the vehicles (e.g. safety distance, guarding the vehicles);
- know what to do when the cargo is damaged;
- know when to remove or cover the markings;
- know when the *accident instruction sheets/additional instruction sheets* are to be removed by the record-keeping agencies;
- know the general health and safety regulations;
- observe the prohibition to smoke and handle fire and naked light during transhipment and road transportation;
- observe the prohibition to carry along fire-starting devices to the transhipment site and into the vehicles and follow the respective instructions by the chief transportation officer.

IV. Knowledge and skills required of co-drivers of ammunition transports

The co-driver should

- know the general health and safety regulations (with respect to fire and smoking);
- understand the data in the *accident instruction sheet/ additional instruction sheet*;
- be able to act according to the *accident instruction sheet/additional instruction sheet*;
- know what to do in case of a vehicle breakdown, an accident or fire (he should have trained for these incidents);
- be able to properly operate and employ the equipment (warning lights, emergency reflective triangles, fire extinguishers, first-aid equipment, etc.);
- be able to properly handle the packages;
- be able to properly handle the tie-down equipment on instruction by the driver.

Annex 4

Classification of Substances into Hazard Divisions / Compatibility Groups / Classification Codes

1. Classification of Class 1

Substances and items that have or may have explosive properties (ADR, Class 1) should be examined by a competent agency (e.g. government authority) using the required test procedures and test criteria in order to determine whether they are to be classified into Hazard Divisions. Class 1 agents include:

a) <u>Explosive substances and pyrotechnic mixtures</u>

Explosive substances are solid or liquid substances or mixtures, which can, by chemical reaction, generate gases of such a high temperature, pressure and speed that they can cause destruction in their vicinity.

Pyrotechnic mixtures are substances or mixtures designed to generate an effect in the form of heat, light, sound, gas or smoke or a combination of these effects as a result of non-detonative, self-sustaining, exothermic chemical reactions.

b) Items containing explosives
Items containing one or more explosive substances or pyrotechnic mixtures.

c) Agents and items not listed under a) nor b) that were produced to bring about a practical effect by means of an explosion or a pyrotechnic effect.

2. Classification into Hazard Divisions

Due to the large number of different types of ammunition and explosives and corresponding hazard potentials, Class 1 is subdivided into six Hazard Divisions (1.1 to 1.6), with increasing numbers designating a decreasing hazard potential:

Class 1 hazardous goods should be classed into one of the following Hazard Divisions by a competent authority. The appropriate subdivision can be determined by tests and experiments, which will generally include a fire test.

Hazard Division 1.1

Hazard Division 1.1 substances and items have a **mass explosion hazard**. A mass explosion is an explosion that affects almost the entire load instantaneously and results in severe devastation or destruction close to the detonation site. Within a wide radius, blasts, projected fragments and debris as well as ground waves pose a danger to the vicinity.

Hazard Division 1.2

Hazard Division 1.2 substances and items do not have a **mass explosion hazard**. Subsequent single explosions (detonation, deflagration) occur in ever-shorter intervals. Depending on the size of the items and the explosive mass, the hazard through projected fragments and debris covers a wide radius. The blast pressure affects only the immediate vicinity.

Hazard Division 1.3

Hazard Division 1.3 substances and items do not have a **mass explosion hazard**. They have a **fire hazard** and a **minor hazard either because of the blast pressure** or projected **fragments and debris** or both. The burning process results either in a significant radiant heat (for instance in the case of propelling charges) or the agents and items subsequently burn or explode in such a way as to cause a minor blast pressure or projection of fragments and debris or both. In case of fire, the vicinity is exposed to the danger of radiant heat and projected burning parts and items (for instance pyrotechnic flares) or packaging, while the hazards of blast pressure and projected fragments and debris are relatively low. Apart from that, there will be heavy smoke when pyrotechnic agents and particularly smoke generating agents are burned. Smoke may have a caustic and/or toxic effect.

Hazard Division 1.4

Hazard Division 1.4 substances and items only have a **minor explosion hazard** when the propelling charge or the explosive agent ignites during transport. The effects are basically confined to the package itself, and it is unlikely that larger fragments will be projected over longer distances. An external fire must not cause virtually instantaneous explosion of almost the whole content of the package. The closer vicinity is subject to the danger of radiant heat and fire (normal fire). Igniter caps, high explosive mixtures or components such as cartridge shells that are propelled from the origin of the fire may lead to eye injuries and minor burns.

Hazard Division 1.5

Hazard Division 1.5 substances are **very insensitive** and **have a mass explosion hazard**. They are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal transportation conditions. The minimum requirement for these substances is that they must not explode in an external fire test.

Hazard Division 1.6

Hazard Division 1.6 items are **extremely insensitive** and **do not have a mass explosion hazard**. These items contain only extremely insensitive detonating substances and demonstrate a negligible probability of accidental initiation or explosion propagation. The danger posed by subdivision 1.6 items is limited to the explosion of a single item.

3. Classification into a compatibility group

Since different **explosives and items containing explosives (for example ammunition)** can react very differently owing to their chemical characteristics, sensitivity, structure and composition, the ADR divides ammunition into altogether thirteen so-called *compatibility groups*. This classification is very significant when one has to determine the permissibility which of the different ammunition types may be combined in one transportation unit.

The classification of a certain type of ammunition into one of the following thirteen compatibility groups (**A – L**, **N** and **S**) should be determined by a competent agency (e.g. government authority) using the required test procedures and test criteria.

A Primary explosive substances, e.g. initial detonating agents.

B An item containing a primary explosive substance and less than two effective protective features. Some items such as detonators for blasting, detonator assemblies for blasting and cap-type primers are also included in this category, although they do not contain primary explosives.

C A propellant explosive substance or other deflagrating explosive substance or item containing such explosive substance.

D A secondary detonating explosive substance or black powder or an item containing a secondary, detonating explosive substance, in each case without means of initiation and without a propelling charge, or an item containing a primary explosive substance and at least two effective protective features.

E An item containing a secondary detonating explosive substance without means of initiation, with a propelling charge (other than one containing flammable liquid, gel or hypergolic liquid).

F An item containing a secondary detonating explosive substance with its means of initiation and a propelling charge (other than one containing flammable liquid, gel or hypergolic liquid), or without a propelling charge.

G A pyrotechnic substance or item containing a pyrotechnic substance or item containing both an explosive substance and an illuminating, incendiary, tear-producing or smokegenerating substance (other than a water-activated item or one containing white phosphorus, phosphide, a pyrophoric substance, a flammable liquid or gel or hypergolic liquid).

H An item containing both an explosive substance and white phosphorus.

J An item containing both an explosive substance and a flammable liquid or gel.

K An item containing both an explosive substance and a toxic chemical agent.

L An explosive substance or item containing an explosive substance and presenting a special risk (e.g. due to water-activation or presence of hypergolic liquids, phosphides or a pyrophoric substance) requiring isolation of each type.

N An item containing only extremely insensitive detonating substances.

S A substance or item packed or designed in such a way that any hazardous effects arising from accidental functioning will be confined to the package itself, unless the package has been damaged by fire. In the latter case, the blast and fragmentation effect will be limited to the extent that they do not significantly hinder or prohibit fire fighting or other necessary emergency response measures in the immediate vicinity of the package.
The compatibility group S is limited to Hazard Division 1.4.

4. The classification code

Hazard Division and ***compatibility group*** in combination make up the *classification code*, which provides information about the hazard potential and the composition of Class 1 goods.

Example:

An explosive is classed into *classification code 1.1D*:

- *Hazard Division 1.1* (explosive substance with mass explosion hazard) and
- *Compatibility Group D* (secondary detonating explosive substance without means of initiation and propelling charge).

Annex 5

Mixed Loads of class 1 Substances or Items

Class 1 substances or items – i.e. conventional ammunition – should not be transported together on one vehicle[7], with items or substances belonging to classes other than class 1[8].

Class 1 substances or items belonging to different compatibility groups (cf. Annex 4) should not be transported together onto one vehicle[9], unless the following table permits this "mixed loading". Restraints indicated in the table should be observed.

7 If a transport unit consists of a truck plus a trailer, both, truck and trailer are considered to be separate vehicles.

8 Fuel for the purpose of refueling the ammunition transport vehicle should be transported in jerry cans located in racks outside the loading space of the vehicle

9 If a transport unit consists of a truck plus a trailer, both, truck and trailer are considered to be separate vehicles.

Compatibility Group	A	B	C	D	E	F	G	H	J	K	L	N	S
A										(5)			
B				(1)						(5)			
C										(5)		(2), (3)	
D										(5)		(2), (3)	
E										(5)		(2), (3)	
F										(5)			
G										(5)			
H										(5)			
J										(5)			
K	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
L										(5)	(4)		
N			(2), (3)	(2), (3)	(2), (3)					(5)		(2)	
S										(5)			

= "mixed loading" is permitted

(1) = Packages of substances and articles in compatibility group B and D may be loaded in the same vehicle, providing that they should be transported in container or in a separate compartment approved by competent authority, to prevent any transmission of detonation from articles in compatibility group B to substances or articles in compatibility group D.

(2) = Different types of articles of division 1.6, compatibility group B, may only be transported together when is proven that there is no additional risk of sympathetic detonation between the articles. Otherwise they should be treated as division 1.1.

(3) = Articles of compatibility group N transported together with substances or articles of compatibility group C, D or E, should be considered as having the characteristics of compatibility group D.

(4) = Packages containing substances and articles in compatibility group L, should only be stowed with packages containing the same substances and articles type within compatibility group L.

(5) = Admissibility to the road transport of goods in compatibility group K should be authorized by an appointed and competent authority.

Annex 6

Hazard Labels

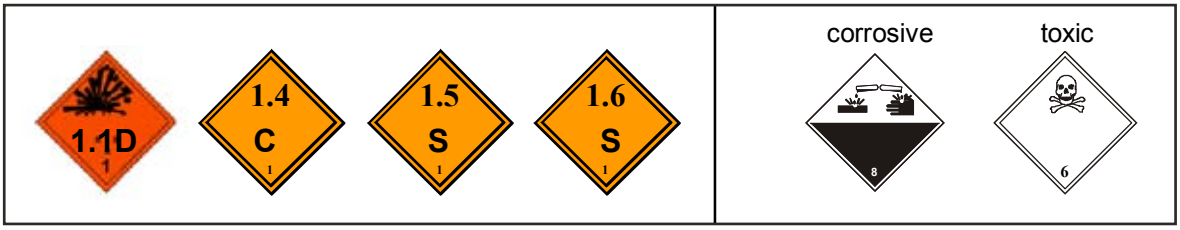
The *hazard labels* listed below serve as markings for packages (sets of packaging), containers and transportation units (vehicles) that are used for transporting ammunition.

Hazard labels provide information on the hazard/combination of hazards, which is posed by the ammunition they mark. *Hazard labels* for *class 1* goods indicate the *hazard division* (from 1.1 to 1.6) and the *compatibility group* (from A to S) of the ammunition that is being transported. For *"hazard division "* and *"compatibility group"* see Annex 4.

As ammunition may contain several hazardous substances, two other *hazard labels* are of importance for the transportation of ammunition in addition to the above-mentioned *class 1* labels ("explosives"). These labels are primarily intended to mark hazardous goods falling into *division 6* ("toxic substances") or *division 8* ("corrosives").

Depending on the type of ammunition, it may be necessary to attach *hazard label(s)* no. 8 and/or 6.1, which are shown below, to the package, container or vehicle in addition to a *division 1 hazard label* (no. 1.x) in order to specify the hazards posed by the cargo as accurately as possible.

Hazard Labels



Indication of hazard division and compatibility group

The size of a *hazard label* should be commensurate with the label's intended use and, if possible, be weatherproof. On packages, stickers are often used for *hazard labels*; on transportation units they mostly have the form of plastic signs.

Annex 7

Fire Placards for Class 1 Hazardous Goods

The classification of ammunition into the four fire divisions listed below is based on the classification of ammunition into one of the hazard divisions of class 1 (cf. Annex 4). Fire division placards furnish emergency response personnel (fire brigade/police) with the following information:

- reaction of the ammunition in the event of fire or explosion (= reaction of the ammunition);
- resultant hazards to the objects that are to be protected (= hazard to objects).

Hazard Divisio n	Fire Division	Reaction of the Ammunition	Hazard to Objects
1.1		**Mass explosion of the ammunition!** The detonation generates a large number of fragments and debris. In case of fire, an increase in temperature and pressure may cause a detonation. A detonation most often leads to a mass explosion.	Severe devastation is to be expected in the vicinity of the explosion site! Objects in the wide proximity are endangered by fragments and debris as well as by shock and ground waves. The pressure has a crushing impact on the surrounding objects.
1.2		**The ammunition explodes!** In the initial stages of the fire, there are only occasional explosions of ammunition. As the fire progresses, more and more ammunition reacts at increasingly small intervals but there is no mass explosion.	Shock waves and projected fragments cause moderate to severe damage in the surrounding area. Some burning and non-exploding ammunition is catapulted from the cargo bed and may cause new fires or explosions upon impact.
1.3		**The ammunition deflagrates, generating a blaze and intense heat. There is a danger that a mass fire will develop!** It does not come to a mass explosion. The deflagration spreads at an increasing speed.	The close vicinity of the explosion site is endangered by intense heat and fire as well as by thick smoke! The surrounding area is endangered by flames, heat, flying sparks, firebrand and flying, usually burning parts of the ammunition or packaging.
1.4		**Above all, the ammunition poses a moderate fire hazard!** The effect of the fire is basically confined to the stowage container and its contents. An external fire will not lead to a simultaneous explosion of a package's entire contents.	The immediate surroundings are endangered by heat and fire! As a rule, ammunition burns down. Flying sparks or firebrand is a rare occurrence. Occasionally, parts and fragments of the ammunition and its packaging are catapulted from the cargo bed. The distance they cover is small, though.

Annex 8

Accident Information Sheets (AIS) "Ammunition and Explosives Class 1" for Transportation of Ammunition by Road

This Annex includes 6(six) AIS covering the Hazard Divisions 1.1 to 1.6.

Adherence to these principles should enhance the safety of ammunition and explosives operations. It does not ensure or guarantee a risk-free situation, neither can the principles cater for every possible situation which could be encountered.

The shipper of class 1 hazardous goods is responsible for the contents of these instructions.

For each transport the AIS are to be filled out by the persons responsible with related datas.

All class 1 hazardous goods are assigned a ‚UN number' which identifies the hazard presented.

The UN publishes a list of all UN numbers for all classes of hazardous goods in their *Recommendations on the Transport of Dangerous Goods*, better known as the ‚Orange Book'.

Accident Information Sheet ROAD

CLASS 1, DIVISION 1.1, ADR

UN – Number(s):

LOAD
- Ammunition and explosives

NATURE OF DANGER
- Mass Explosion
- Blast
- High velocity fragments and debris
- Potential additional environmental hazards – see Supplementary Hazard Warning Sheet, if attached

PERSONAL PROTECTION
- Two self-standing warning devices
- Warning vest or warning clothes for each crewmember
- Hand lamp for each crewmember
- See also supplemental hazard warning sheet, if attached

GENERAL DRIVER ACTIONS
- **KEEP CALM**
- Notify police with reference to ammunition.
- Notify fire brigade (via police) if necessary
- Stop engine. No naked lights; no smoking
- Secure accident area. Mark road hazard with warning devices
- Warn road users and passers-by about hazards. Advise to keep upwind if necessary.
- Provide first aid
- Guard cargo and keep unauthorized persons at least 25 meters away
- Do not touch dropped or projected ammunition
- Notify own agency/activity

ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER
- Supplementary hazard warning sheet attached: YES NO

FIRE

DEVELOPING FIRE – (cargo not yet on fire)
- Fight fire with all available means

ESTABLISHED FIRE – (cargo on fire)
- DO NOT fight fire
- Evacuate casualties as quickly as possible from hazard area
- Leave area of fire immediately
- Always seek significant cover (such as strongly built structure). Avoid glass surfaces

FIRST AID
- Standard unless supplemental hazard warning sheet specifies, if attached.

ADDITIONAL INFORMATION
- Emergency Service fire withdrawal distance recommendations on reverse.
- Brief description of material:
- For further information call:

EMERGENCY			
Austria	133	Italy	112
Belgium	112	Ireland	999
Canada	911	Netherlands	112
Croatia	112	Norway	112
Czech Rep.	112	Poland	112
Denmark	112	Slovenia	112
Finland	112	Sweden	112
France	112	Switzerland	117
Germany	110	Turkey	155
Hungary	112	UK	999

Accident Information Sheet ROAD

CLASS 1, DIVISION 1.1, ADR

- Emergency Service fire withdrawal distance recommendations

FIRE **ESTABLISHED FIRE – (cargo on fire)**

- Evacuate casualties as quickly as possible from hazard area
- Leave area of fire immediately
- **Keep all persons (except rescue personnel) away from fire area**
  Minimum distance to personnel - 1000 meters
- Always seek significant cover (such as strongly built structure); avoid glass surfaces
- **rescue personnel – 500 meters**
- Fight ambient fires from covered position

Accident Information Sheet ROAD

CLASS 1, DIVISION 1.2, ADR

UN – Number(s):

LOAD
- Ammunition and explosives

NATURE OF DANGER
- Progressive Explosions
- Fragments and debris
- Potential additional environmental hazards – see Supplementary Hazard Warning Sheet, if attached

PERSONAL PROTECTION
- Two self standing warning devices
- Warning vest or warning clothes for each crewmember
- Hand lamp for each crewmember
- See also supplemental hazard warning sheet, if attached

GENERAL DRIVER ACTIONS
- **KEEP CALM**
- Notify police with reference to ammunition.
- Notify fire brigade (via police) if necessary
- Stop engine. No naked lights; no smoking
- Secure accident area. Mark road hazard with warning devices
- Warn road users and passers-by about hazards. Advise to keep upwind if necessary.
- Provide first aid
- Guard cargo and keep unauthorized persons at least 25 meters away
- Do not touch dropped or projected ammunition
- Notify own agency/activity

ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER
- Supplementary hazard warning sheet attached: YES NO

FIRE

DEVELOPING FIRE – (cargo not yet on fire)
- Fight fire with all available means

ESTABLISHED FIRE – (cargo on fire)
- DO NOT fight fire
- Evacuate casualties as quickly as possible from hazard area
- Leave area of fire immediately
- Always seek significant cover (such as strongly built structure) Avoid glass surfaces

FIRST AID
- Standard unless supplemental hazard warning sheet specifies, if attached.

ADDITIONAL INFORMATION
- Emergency Service fire withdrawal distance recommendations on reverse.
- *Brief description of material:*
- For further information call:

EMERGENCY			
Austria	133	Italy	112
Belgium	112	Ireland	999
Canada	911	Netherlands	112
Croatia	112	Norway	112
Czech Rep.	112	Poland	112
Denmark	112	Slovenia	112
Finland	112	Sweden	112
France	112	Switzerland	117
Germany	110	Turkey	155
Hungary	112	UK	999

Accident Information Sheet ROAD

CLASS 1, DIVISION 1.2, ADR

- Emergency Service fire withdrawal distance recommendations

FIRE **ESTABLISHED FIRE – (cargo on fire)**

- Evacuate casualties as quickly as possible from hazard area
- Leave area of fire immediately
- **Keep all persons (except rescue personnel) away from fire area**
  Minimum distance - at least 1000 meters
- Always seek significant cover (such as strongly built structure); avoid glass surfaces
- **rescue personnel – 500 meters**
- Fight ambient fires from covered position

Accident Information Sheet ROAD

CLASS 1, DIVISION 1.3, ADR

UN – Number(s):

LOAD
- Ammunition and explosives

NATURE OF DANGER
- Explosions
- Fire; possibility of mass fire
- Firebrands may be projected
- Potential additional environmental hazards – see Supplementary Hazard Warning Sheet, if attached

PERSONAL PROTECTION
- Two self standing warning devices
- Warning vest or warning clothes for each crewmember
- Hand lamp for each crewmember
- See also supplemental hazard warning sheet, if attached

GENERAL DRIVER ACTIONS
- **KEEP CALM**
- Notify police with reference to ammunition.
- Notify fire brigade (via police) if necessary
- Stop engine. No naked lights; no smoking
- Secure accident area. Mark road hazard with warning devices
- Warn road users and passers-by about hazards. Advise to keep upwind if necessary.
- Provide first aid
- Guard cargo and keep unauthorized persons at least 25 meters away
- Do not touch dropped or projected ammunition
- Notify own agency/activity

ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER
- Supplementary hazard warning sheet attached: YES NO

FIRE

DEVELOPING FIRE – (cargo not yet on fire)
- Fight fire with all available means

ESTABLISHED FIRE – (cargo on fire)
- DO NOT fight fire
- Evacuate casualties as quickly as possible from hazard area
- Leave area of fire immediately

- Always seek significant cover (such as strongly built structure) Avoid glass surfaces

FIRST AID
- Standard unless supplemental hazard warning sheet specifies, if attached.

ADDITIONAL INFORMATION
- Emergency Service fire withdrawal distance recommendations on reverse.
- *Brief description of material:*
- For further information call:

EMERGENCY			
Austria	133	Italy	112
Belgium	112	Ireland	999
Canada	911	Netherlands	112
Croatia	112	Norway	112
Czech Rep.	112	Poland	112
Denmark	112	Slovenia	112
Finland	112	Sweden	112
France	112	Switzerland	117
Germany	110	Turkey	155
Hungary	112	UK	999

Accident Information Sheet ROAD

CLASS 1, DIVISION 1.3, ADR

- Emergency Service fire withdrawal distance recommendations

FIRE **ESTABLISHED FIRE – (cargo on fire)**

- Evacuate casualties as quickly as possible from hazard area
- Leave area of fire immediately
- **Keep all persons (except rescue personnel) away from fire area**
  Minimum distance to personnel - 500 meters
- Always seek significant cover (such as strongly built structure); avoid glass surfaces
- **rescue personnel – 60 meters**
- Fight ambient fires from covered position

Accident Information Sheet ROAD

CLASS 1, DIVISION 1.4, ADR

UN – Number(s):

LOAD NATURE OF DANGER

- Ammunition and explosives
- Moderate fire
- Effects largely confined to package
- Limited flight distance of fragments
- Potential additional environmental hazards – see Supplementary Hazard Warning Sheet, if attached

PERSONAL PROTECTION

- Two self standing warning devices
- Warning vest or warning clothes for each crewmember
- Hand lamp for each crewmember
- See also supplemental hazard warning sheet, if attached

GENERAL DRIVER ACTIONS

- **KEEP CALM**
- Notify police with reference to ammunition.
- Notify fire brigade (via police) if necessary
- Stop engine. No naked lights; no smoking
- Secure accident area. Mark road hazard with warning devices
- Warn road users and passers-by about hazards. Advise to keep upwind if necessary.
- Provide first aid
- Guard cargo and keep unauthorized persons at least 25 meters away
- Do not touch dropped or projected ammunition
- Notify own agency/activity

ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER

- Supplementary hazard warning sheet attached: YES NO

FIRE

DEVELOPING FIRE – (cargo not yet on fire)

- Fight fire with all available means

ESTABLISHED FIRE – (cargo on fire)

- Fight fire
- Evacuate casualties as quickly as possible from hazard area
- Keep all persons except firefighters well away from the area for the fire

FIRST AID

- Standard unless supplemental hazard warning sheet specifies, if attached.

ADDITIONAL INFORMATION

- Emergency Service fire withdrawal distance recommendations on reverse.
- Brief description of material:
- For further information call:

EMERGENCY			
Austria	133	Italy	112
Belgium	112	Ireland	999
Canada	911	Netherlands	112
Croatia	112	Norway	112
Czech Rep.	112	Poland	112
Denmark	112	Slovenia	112
Finland	112	Sweden	112
France	112	Switzerland	117
Germany	110	Turkey	155
Hungary	112	UK	999

Accident Information Sheet ROAD

CLASS 1, DIVISION 1.4, ADR

- Emergency Service fire withdrawal distance recommendations

FIRE **ESTABLISHED FIRE – (cargo on fire)**

- **Keep all persons (except rescue personnel) away from fire area**
  Minimum distance - at least 100 meters
- **rescue personnel – 25 meters**

Accident Information Sheet ROAD

CLASS 1, DIVISION 1.5, ADR

UN – Number(s):

LOAD
- Ammunition and explosives

NATURE OF DANGER
- Mass Explosion
- Blast
- High velocity fragments and debris
- Potential additional environmental hazards – see Supplementary Hazard Warning Sheet, if attached

PERSONAL PROTECTION
- Two self standing warning devices
- Warning vest or warning clothes for each crewmember
- Hand lamp for each crewmember
- See also supplemental hazard warning sheet, if attached

GENERAL DRIVER ACTIONS
- **KEEP CALM**
- Notify police with reference to ammunition.
- Notify fire brigade (via police) if necessary
- Stop engine. No naked lights; no smoking
- Secure accident area. Mark road hazard with warning devices
- Warn road users and passers-by about hazards. Advise to keep upwind if necessary.
- Provide first aid
- Guard cargo and keep unauthorized persons at least 25 meters away
- Do not touch dropped or projected ammunition
- Notify own agency/activity

ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER
- Supplementary hazard warning sheet attached: YES NO

FIRE

DEVELOPING FIRE – (cargo not yet on fire)
- Fight fire with all available means

ESTABLISHED FIRE – (cargo on fire)
- DO NOT fight fire
- Evacuate casualties as quickly as possible from hazard area
- Leave area of fire immediately
- Always seek significant cover (such as strongly built structure) Avoid glass surfaces

FIRST AID
- Standard unless supplemental hazard warning sheet specifies, if attached.

ADDITIONAL INFORMATION
- Emergency Service fire withdrawal distance recommendations on reverse.
- *Brief description of material*
- For further information call:

EMERGENCY			
Austria	133	Italy	112
Belgium	112	Ireland	999
Canada	911	Netherlands	112
Croatia	112	Norway	112
Czech Rep.	112	Poland	112
Denmark	112	Slovenia	112
Finland	112	Sweden	112
France	112	Switzerland	117
Germany	110	Turkey	155
Hungary	112	UK	999

Accident Information Sheet ROAD

CLASS 1, DIVISION 1.5, ADR

- Emergency Service fire withdrawal distance recommendations

FIRE

ESTABLISHED FIRE – (cargo on fire)

- Evacuate casualties as quickly as possible from hazard area
- Leave area of fire immediately
- **Keep all persons (except rescue personnel) away from fire area**
  Minimum distance to personnel - 1000 meters
- Always seek significant cover (such as strongly built structure); avoid glass surfaces
- **rescue personnel – 500 meters**
- Fight ambient fires from covered position

Accident Information Sheet ROAD

CLASS 1, DIVISION 1.6, ADR

UN – Number(s):

LOAD
- Ammunition and explosives

NATURE OF DANGER
- Fire and heat
- Potential additional environmental hazards – see Supplementary Hazard Warning Sheet, if attached

PERSONAL PROTECTION
- Two self standing warning devices
- Warning vest or warning clothes for each crewmember
- Hand lamp for each crewmember
- See also supplemental hazard warning sheet, if attached

GENERAL DRIVER ACTIONS
- **KEEP CALM**
- Notify police with reference to ammunition.
- Notify fire brigade (via police) if necessary
- Stop engine. No naked lights; no smoking
- Secure accident area. Mark road hazard with warning devices
- Warn road users and passers-by about hazards. Advise to keep upwind if necessary.
- Provide first aid
- Guard cargo and keep unauthorized persons at least 25 meters away
- Do not touch dropped or projected ammunition
- Notify own agency/activity

ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER
- Supplementary hazard warning sheet attached: YES NO

FIRE

DEVELOPING FIRE – (cargo not yet on fire)
- Fight fire with all available means

ESTABLISHED FIRE – (cargo on fire)
- Fight fire
- Evacuate casualties as quickly as possible from hazard area
- Keep all persons except firefighters well away from the area for the fire

FIRST AID
- Standard unless supplemental hazard warning sheet specifies, if attached.

ADDITIONAL INFORMATION
- Emergency Service fire withdrawal distance recommendations on reverse.
- Brief description of material:
- For further information call:

EMERGENCY			
Austria	133	Italy	112
Belgium	112	Ireland	999
Canada	911	Netherlands	112
Croatia	112	Norway	112
Czech Rep.	112	Poland	112
Denmark	112	Slovenia	112
Finland	112	Sweden	112
France	112	Switzerland	117
Germany	110	Turkey	155
Hungary	112	UK	999

Accident Information Sheet ROAD

CLASS 1, DIVISION 1.6, ADR

- Emergency Service fire withdrawal distance recommendations

FIRE

ESTABLISHED FIRE – (cargo on fire)

- Evacuate casualties as quickly as possible from hazard area
- Leave area of fire immediately
- **Keep all persons (except rescue personnel) away from fire area**
  Minimum distance - at least 1000 meters
- Always seek significant cover (such as strongly built structure); avoid glass surfaces
- **rescue personnel – 250 meters**

ANNEX 9

Accident Information Sheet ROAD

Supplementary Hazard Warning Sheets

The following list displays hazardous substances which may be contained in ammunition in addition to or instead of explosives and for which a specific *Supplementary Hazard Warning Sheet* may be required (find related samples attached to this annex):

Hazardous Substance	Code Designation
White Phosphorus	WP
Chlorobenzylidene Malonic Acid Dinitrile, also termed Ortho-Chlorobenzalmalononitrile	CS
Chloroacetophenone	CN
Titanium Tetrachloride	FM
Hexachloroethane	HC
Red Phosphorus	RP
Thermite	TH
Pyrotechnic Charges	PT
Calcium Phosphide	CP
Unsymmetrical Dimethyl Hydrazine	UDMH
Inhibited Red Fuming Nitric Acid	IRFNA
Depleted Uranium	DU
Otto Fuel	OF

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Chloroacetophenone (CN) or

CN

Chlorobenzylidene Malonic Acid Dinitrile (CS), also termed Ortho-Chlorobenzalmalononitrile

LOAD

(CN) Ammunition containing Chloroacetophenone, which is:
- Colourless to white or slightly yellowish crystals or powder.
- Nasty smell.
- Heavier then water; **or**

(CS) Ammunition containing Chlorobenzylidene Malonic Acid Dinitrile which is:
- White to slightly yellowish substance.
- Slightly pepper-like to pungent smell.

NATURE OF DANGER

- Irritation of eyes, skin and respiratory tract.
- Nausea, vomiting and cauterization. High concentrations will cause severe noxious effects. Detrimental to health when inhaled and swallowed.
- Potential hazard to waters and sewage treatment plants.
- Substances hazardous to water may be produced in the event of fire.
- CN -- Slow reaction with water producing a caustic mixture.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- One 500 ml eye-flushing bottle with fresh tap water for each individual.
- One container with 20 1iters fresh tap water

ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER

In event of moderate fire or development of fumes:
Throughout area affected by smoke and fumes:
- Short stay: wear appropriate respiratory protection equipment

EMERGENCY SERVICES advice: In event of longer stay:
- Wear self contained breathing apparatus
- Cover all parts of the body

FIRST AID

- Remove affected clothing.
- In the event of skin irritations, thoroughly rinse and wash affected skin areas.
- In case of eye contact, hold eyelids open and rinse with tap water 10 to 15 minutes while rolling eyes in all directions. Refer to ophthalmologist if necessary.
- In event of vomiting, place head in lateral position. Call physician to accident site.

EMERGENCY SERVICES advice:
- In the event of a respiratory arrest immediately apply expired-air ventilation or breathing apparatus and provide oxygen feed, if indicated

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Calcium Phosphide (CP)

CP

LOAD

Ammunition containing Calcium Phosphide (CP), which is:
- Solid substance.

NATURE OF DANGER

- Smell of rotten fish, carbide or garlic.
- Easily combustible.
- Reacts strongly with water (self-igniting) by forming highly toxic and explosive hydrogen phosphide.
- Irritation of skin, eyes and respiratory tract.
- Danger of poisoning by inhalation (notably near ground level), swallowing or skin contact.
- Substance hazardous to water.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- One 500 ml eye-flushing bottle with fresh tap water for each individual.
- One container with 20 1iters fresh tap water

ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER

In event of moderate fire or development of fumes:
Throughout area affected by smoke and fumes:
- Short stay: wear appropriate respiratory protection equipment

EMERGENCY SERVICES advice: In event of longer stay:
- Wear self contained breathing apparatus
- Wear protective clothing impermeable against toxic agents and flame resistant.

FIRST AID

Symptoms of poisoning:
- Irritation of the eyes, nasal/pharyngeal mucosa and skin.
- Coughing, feeling of tightness, shortness of breath.
- Headache, dizziness, ringing in the ears.
- Nausea, vomiting and diarrhoea.
- Rise in pulse rate, tendency to collapse. Unconsciousness, spasm

Action to be taken:
- In the event of a respiratory arrest apply immediately expired-air ventilation.
- Rush affected persons to hospital. Transport only in a lying position. Halfsitting position is permissible in case of breathing difficulties.
- In case of eye contact, hold eyelids open and rinse with tap water 10 to 15 minutes while rolling eyes in all directions.
- In the event of skin contact with calcium phosphide rinse with plenty of water and subsequently cover with sterile dressing material

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Depleted Uranium (DU)

DU

LOAD

Ammunition containing Depleted Uranium (DU), which is:
- Dull silver to blue-black metal.
- Very heavy.

NATURE OF DANGER

- Low specific activity. No radiation hazard involved under transport conditions.
- Combustible metal at approximately 300 degrees Celsius.
- Forms toxic (heavy metal) oxide dust of low specific activity when burning. Smoke and resulting dust may include Uranium Oxide.
- Impairment of health caused by inhalation, swallowing, or when oxide dust gets into wounds.
- Possible hazard to water and sewage treatment plants.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- Protective gloves

ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER

In event of moderate fire or development of fumes:
- Keep up-wind, out of area affected by smoke.
- Warn residents of populated areas to close doors and windows in smoke movement direction for several hundred meters.

For short stay:
- Wear respiratory protective equipment
- Wear protective gloves

EMERGENCY SERVICES advice:
- Wear self contained breathing apparatus
- Cover all parts of the body.
- Put down smoke with water spray, containing water runoff.
- Fight fire as if magnesium; **DO NOT** use halons.
- To prevent Uranium Oxide spread, survey equipment and personnel before departing the scene.

FIRST AID

- If a person is affected by smoke or breathes dust, remove to hospital.
- Inform medical personnel that victim may be contaminated with Uranium Oxide.

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Titanium Tetrachloride (FM)

FM

LOAD	Ammunition containing Titanium Tetrachloride (FM), which is: • Colorless or yellowish fluid.
NATURE OF DANGER	• Extremely caustic. • Reacts strongly with moisture or water, developing heat and forming hydrochloric acid during reaction.
PERSONAL PROTECTION	• Appropriate respiratory protection equipment. • One 500 ml eye-flushing bottle with fresh tap water for each individual. • One container with 20 1iters of fresh tap water
ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER	In event of moderate fire or development of fumes: Throughout area affected by smoke and fumes: • Short stay: wear appropriate respiratory protection equipment **EMERGENCY SERVICES advice:** In event of longer stay: • Wear self contained breathing apparatus • Wear protective clothing or a heat protection suit affording heat protection comparable to asbestos • Cover non-burning exposed FM with ground limestone to neutralize
FIRST AID	Action to be taken: • Remove immediately contaminated clothing. • Rinse affected body parts with plenty of water and cover with sterile dressing (no treated burn dressing) • If eyes are affected, hold open eyelids and rinse immediately with water for 10 to 15 minutes, rolling eyeballs in all directions. • Call physician to accident site. • Protect from body heat loss. • Transport casualties preferably in a lying position. **EMERGENCY SERVICES advice:** • In the event of respiratory arrest apply immediately expired-air ventilation or breathing apparatus For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Hexachloroethane (HC)

HC

LOAD	Ammunition containing Hexachloroethane (HC), which is: • Solid substance. • Insoluble in water.
NATURE OF DANGER	• Zinc chloride fume poisoning. • After ignition, high concentration of fumes with caustic effects is produced, particularly in cold and dry air. • Irritation of eyes and respiratory tract. • Substances hazardous to water may be produced in the event of fire.
PERSONAL PROTECTION	Appropriate respiratory protective equipment.
ADDITIONAL AND/OR SPECIAL ACTIONS BY DRIVER	In event of moderate fire or development of fumes: Throughout area affected by smoke or fumes: • Short stay: wear appropriate respiratory protective equipment. **EMERGENCY SERVICES advice:** In the event of a longer stay, • wear self-contained breathing apparatus; • cover all parts of the body.
FIRST AID	Symptoms of zinc chloride fume poisoning: • Irritation of the eyes. • Irritation of the upper respiratory tract and hoarseness. • Pains in the chest, especially behind the sternum. • Severe coughing, breathing difficulties and feeling of suffocation. Action to be taken: • Rush affected persons to nearest physician. • Transport casualties preferable in a lying position. **EMERGENCY SERVICES advice:** • If possible, apply oxygen douche (set equipment to 8 liters Oxygen/min). For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Inhibited Red Fuming Nitric Acid (IRFNA)

IRFNA

LOAD

Ammunition containing Inhibited Red Fuming Nitric Acid (IRFNA), which is:
- Brown liquid
- Red-brown to yellow vapours with pungent, acrid odour when exposed to air
- Completely water miscible.

NATURE OF DANGER

- Fire-conductive, caustic, and toxic.
- Ignites flammable solids (e.g. wood, cotton) upon contact.
- Violent reactions upon contact with flammable liquid (explosion hazard).
- Vapours cause acid bums on skin, eyes, and respiratory organs (pulmonary edema).
- Substance hazardous to water.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- Protective clothing
- One 500 ml eye-flushing bottle with fresh tap water for each individual.
- One container with 20 1iters of fresh tap water

ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER

Evacuation immediately of the hazard area.
Hazard area description on reverse

Throughout area affected by smoke and fumes:
- Short stay: wear appropriate respiratory protection equipment

INTERVENTION PERSONNEL advice:
- In event of longer stay: wear self contained breathing apparatus and protective clothing
- Capture runoff from leak or fire fighting operation

FIRST AID

Symptoms of intoxication/acid burn:
- Skin, eyes, nasal and pharyngeal mucous membranes, respiratory tract smart.
- Slight tussive irritation causing slight cough, which subsides after approximately 20 to 30 minutes.
- Dysponea, vomiting, shock.

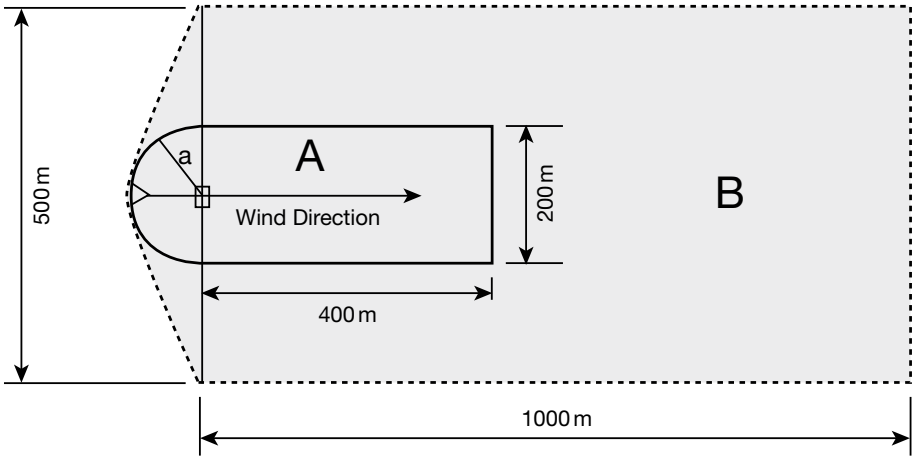
Action to be taken:
- Remove immediately contaminated clothing.
- Rinse affected body parts with plenty of water and cover with sterile dressing (no ointment, cream or oily solutions)
- If eyes are affected, hold open eyelids and rinse immediately with water for 10 to 15 minutes, rolling eyeballs in all directions.
- Transport promptly casualties for medical treatment in a lying position.

INTERVENTION SERVICE advice:
- In the event of respiratory arrest apply immediately expired-air ventilation or breathing apparatus
- If swallowed, and if conscious, make victim sip large quantity of water, possibly with milk added. DO NOT make victim vomit.
- In case of victim dyspnoea, half sitting position is permitted.

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET Ammunition containing Inhibited Red Fuming Nitric Acid (IRFNA)

IRFNA



Explanations: a = 100 m Radius

1. LEAK:

Hazard Area **A** must be evacuated.

Hazard Area **B** applies if the danger to the environment cannot be cleared away within one hour.

2. FIRE:

Hazard Area **A and B** must be evacuated.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Otto Fuel II (OF)

OF

LOAD

Ammunition containing Otto Fuel II (OF), which is:
- Oily liquid.
- Not miscible in water.
- Heavier than water.

NATURE OF DANGER

- Heating of closed containers may cause bursting due to pressure.
- Detrimental to health when inhaled and swallowed. High concentrations will cause severe noxious effects.
- Potential Hazard to waters and sewage treatment plants

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- One 500 ml eye-flushing bottle with fresh tap water for each individual.
- One container with 20 1iters of fresh tap water
- Protective gloves for each individual

ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER

In event of moderate fire or development of fumes:
Throughout area affected by smoke and fumes:
- Short stay: wear appropriate respiratory protection equipment.
- Wear protective gloves to discover leakage

EMERGENCY SERVICES advice: In event of longer stay:
- Wear self contained breathing apparatus
- Wear chemical protective clothing outfit

FIRST AID

Symptoms of intoxication:
- Irritation of nasal mucosa and rhinostenosis.
- Splitting headache.
- Dizziness, disorientation and disorder of balance.
- Irritation of the eyes.
- Contact with skin leads to a yellow skin hue.

Action to be taken:
- Move casualties into fresh air, put them on the ground in a comfortable position, loosen tight clothing, prevent chilling
- In case of respiratory arrest, start artificial respiration (mouth to mouth or breathing apparatus) immediately.
- Remove affected clothing (usually identifiable by yellow colour).
- Rinse affected parts of the body with lots of water.
- If eyes are affected, hold open eyelids and rinse immediately with water for 10 to 15 minutes, rolling eyeballs in all directions.
- If Otto Fuel has been swallowed, provoke vomiting.
- Call physician to accident site. Transport casualties preferably in a lying position.
- In case of danger of loosing consciousness handle and transport casualties in a stable lateral position

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Pyrotechnic Charges (PT)

PT

LOAD	Ammunition containing Pyrotechnic Charges (PT), which are: • Solid substances. • Fairly soluble in water.
NATURE OF DANGER	In fire: • Ammunition may cause intense burning or explosions. • Caustic or poisonous gases may be produced. Hazardous to water
PERSONAL PROTECTION	• Appropriate respiratory protection equipment. • One 500 ml eye-flushing bottle with fresh tap water for each individual. • One container with 20 1iters of fresh tap water
ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER	In event of moderate fire or development of fumes: Throughout area affected by smoke and fumes: • Short stay: wear appropriate respiratory protection equipment **EMERGENCY SERVICES advice:** In event of longer stay: • Wear self contained breathing apparatus • Cover all parts of body **DO NOT** use water to fight fire
FIRST AID	Action to be taken: • If eyes are affected, hold open eyelids and rinse immediately with water for 10 to 15 minutes, rolling eyeballs in all directions. **EMERGENCY SERVICES advice:** • In the event of respiratory arrest apply immediately expired-air ventilation or breathing apparatus For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Red Phosphorus (RP)

RP

LOAD	Ammunition containing Red Phosphorus, which is: • Solid substance. • Insoluble in water.
NATURE OF DANGER	• Combustion produces fumes, which are detrimental to health. Irritation of eyes and respiratory tract, cauterization is possible. • In the event of fire substances are produced that are hazardous to water.
PERSONAL PROTECTION	• Appropriate respiratory protection equipment. • One 500 ml eye-flushing bottle with fresh tap water for each individual. • One container with 20 1iters of fresh tap water
ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER	In event of moderate fire or development of fumes: Throughout area affected by smoke and fumes: • Short stay: wear appropriate respiratory protection equipment **EMERGENCY SERVICES advice:** In event of longer stay: • Wear self contained breathing apparatus
FIRST AID	Action to be taken: • Remove immediately contaminated clothing. • If eyes are affected, hold open eyelids and rinse immediately with water for 10 to 15 minutes, rolling eyeballs in all directions. • Have victim lie down even if feeling healthy. • Transport casualties preferably in a lying position. • Ensure medical care **EMERGENCY SERVICES advice:** • In the event of respiratory arrest apply immediately expired-air ventilation or breathing apparatus • If possible, provide oxygen feed. For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Thermite (TH)

TH

LOAD	Ammunition containing Thermite, which is: • Solid substance, metal mixture. • Insoluble in water.
NATURE OF DANGER	• Develops high temperatures in the event of fire. • Generation of explosive gases in connection with water.
PERSONAL PROTECTION	Appropriate respiratory protection equipment.
ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER	In event of moderate fire or development of fumes: **DO NOT USE WATER** for fire fighting. Throughout area affected by smoke and fumes: • Short stay: wear appropriate respiratory protection equipment **EMERGENCY SERVICES advice:** In event of longer stay: • Wear self contained breathing apparatus • Wear protective clothing or heat protection suit affording heat protection comparable to asbestos
FIRST AID	• Move affected persons to fresh air. For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Unsymmetrical Dimethyl Hydrazine (UDMH)

UDMH

LOAD

Ammunition containing Unsymmetrical Dimethyl Hydrazine (UDMH), which is:
- Colorless liquid with pungent ammonia-like odor
- Completely water miscible.

NATURE OF DANGER

- Nonpersistent and highly flammable, caustic and toxic.
- Spontaneous reaction upon contact with oxygen-rich substances (e.g. acid, rust).
- Vapours are heavier than air and combined with air from explosive mixtures.
- Acid burns on eyes and respiratory organs are possible (pulmonary edema).
- Substance hazardous to water.

PERSONAL PROTECTION

- Appropriate respiratory protection equipment.
- Protective clothing
- One 500 ml eye-flushing bottle with fresh tap water for each individual.
- One container with 20 1iters of fresh tap water

ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER

Evacuate immediately the hazard area.
Hazard area description on reverse

Throughout area affected by smoke and fumes:
- Short stay: wear appropriate respiratory protection equipment

INTERVENTION PERSONNEL advice:
- In event of longer stay: wear self contained breathing apparatus and protective clothing
- Capture runoff from leak or firefighting operation

FIRST AID

Symptoms of intoxication/acid burn:
- Eyes, nasal and pharyngeal mucous membranes, respiratory tract smart.
- Slight tussive irritation causing slight cough, which subsides after approximately 20 to 30 minutes.
- Trembling, dizziness, possibly convulsion, unconsciousness.
- Skin smarts, blisters appear.

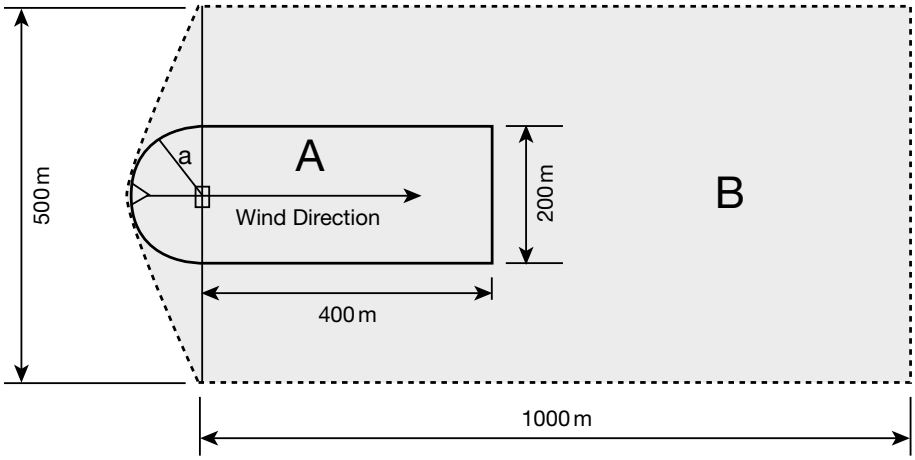
Action to be taken:
- Remove immediately contaminated clothing.
- Rinse affected body parts with plenty of water and cover with sterile dressing (no ointment, cream or oily solutions)
- If eyes are affected, hold open eyelids and rinse immediately with water for 10 to 15 minutes, rolling eyeballs in all directions.
- Call physician to accident site.
- Transport promptly casualties for medical treatment in a lying position.

INTERVENTION SERVICE advice:
- In the event of respiratory arrest apply immediately expired-air ventilation or breathing apparatus
- In case of victim dyspnoea, half sitting position is permitted

For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing Unsymmetrical Dimethyl Hydrazine (UDMH)

UDMH



Explanations: a = 100 m Radius

3. LEAK:

Hazard Area **A** must be evacuated.

Hazard Area **B** applies if the danger to the environment cannot be cleared away within one hour.

4. FIRE:

Hazard Area **A and B** must be evacuated.

SUPPLEMENTARY HAZARD WARNING SHEET
Ammunition containing White Phosphorus (WP)

WP

LOAD	Ammunition containing white phosphorus, which is: • Colorless to yellow wax-like substance • Pungent, garlic-like smell
NATURE OF DANGER	• Phosphorus poisoning. • Ignites upon contact with atmospheric oxygen producing thick fumes that are detrimental to health. • On contact with water, caustic phosphoric acid is produced. • Irritation of skin, eyes and respiratory tract; cauterization is possible. • Substance hazardous to water
PERSONAL PROTECTION	• Appropriate respiratory protective equipment. • One 500 ml eye-flushing bottle with fresh tap water for each individual. • One container with 20 1iters fresh tap water. • Three liters of 5% sodium bicarbonate solution.
ADDITIONAL AND/ OR SPECIAL ACTIONS BY DRIVER	In event of moderate fire or development of fumes: Throughout area affected by smoke and fumes: • Short stay: wear appropriate respiratory protection equipment **EMERGENCY SERVICES advice:** In event of longer stay: • Wear self contained breathing apparatus • Wear protective clothing or a heat protection suit (affording heat protection comparable to asbestos) • Spray water continuously on extinguished phosphorus fires or cover with moist sand/soil
FIRST AID	• Remove quickly all clothing affected by phosphorus to prevent phosphorus burning through to skin. If this is impossible: • Plunge skin or clothing affected by phosphorus in cold water or moisten strongly to extinguish or prevent fire. Then immediately remove affected clothing and rinse affected skin areas with cold sodium bicarbonate solution or with cold water. • Moisten skin and remove visible phosphorus (preferably under water) with squared object (knife-back etc.) or tweezers. Do not touch phosphorus with fingers! • Throw removed phosphorus or clothing affected by phosphorus into water or allow to bum in suitable location • Cover phosphorus burns with moist dressing and keep moist to prevent renewed inflammation. • In case of eye contact, prop eyelids open and rinse eyes with water for 10 to 15 minutes. For urgent information regarding assessment and treatment of noxious effects, contact poison control or medical treatment center.

Annex 10

Transport Document

Delivery note no(s). / Dispatch note no(s).	
Dispatcher	**Carrier** Person picking up consignment himself
Recipient	**Remarks**

Freight clause

Dispatcher's remarks / Special instructions

Number / Type	Contents / Designation	Gross weight (in kg)

Cargo / Documentation handed over Date:	Cargo / Documentation received	Receipt of consignment confirmed
	Driver's signature	Recipient's signature

Annex 11

Further information on “ammunition transport”

Further information on the topic “ammunition transport” may also be sought from the following sources:

1. The Intergovernmental Organisation for International Carriage by Rail
   www.otif.org
2. Convention concerning International Carriage by Rail of 9 May 1980 version applicable as from 1st November 1996 (Convention relative aux transports internationaux ferroviaires du 9 mai 1980 dans sa version applicable à partir du 1er novembre 1996 **(COTIF)**)
3. Convention on Uniform Rules concerning the Contract for International Carriage of Goods by Rail (Règles uniformes concernant le contrat de transport international ferroviaire des marchandises **(CIM)**)
4. NATO STANAG 4441/AASTP-2 “Manual of NATO Safety Principles for the Transport of Military Ammunition and Explosives” (Edition 1)
5. NATO STANAG 4123/AASTP-3 “Manual of NATO Principles for the Hazard Classifications of Military Ammunition and Explosives” (Edition 1)
6. United Nations Group of Experts on the Transport of Dangerous Goods / United Nations Committee on the Transport of Dangerous Goods
   http://www.unece.org/trans.
7. Report of the UN Group of Experts on the problem of ammunition and explosives (A/54/155) 1999
8. IATA Dangerous Goods Board (DGB)
   http://www.iata.org
9. IMO Sub-Committee on Dangerous Goods, Solid Cargoes and Containers (DSC) / **International Maritime Dangerous Goods (IMDG) Code**
   http://www.imo.org
10. OECD and PIARC (1997), Transport of Dangerous Goods through Road Tunnels: Current National and International Regulations (Report 2)
    http://www.oecd.org/dsti/sti/transpor/road/index.htm)