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Emergency Preparedness Program
Emergency and Humanitarian Action Department

GUIDELINES FOR HEALTH LOGISTICS MANAGEMENT IN EMERGENCY SITUATION

MAKING A DIFFERENCE TO VULNERABILITY



WORLD HEALTH ORGANIZATION
GENEVA



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Preface

Despite the long experience already accumulated on prevention, preparedness and disaster's response in most of the disaster prone countries, there are aspects that still need further efforts to optimise the access of the affected population to the humanitarian assistance in a disaster situation. This means a qualitative improvement on the logistic capabilities of the organisations managing the emergency's actions.

A recurrent nightmare on every new emergency is the acquisition, management and distribution of the supplies intended to relief the needs of the damaged population, not only those coming from the humanitarian donations but also those locally acquired.

The fast saturation of the supplies' access points is easily worsened by the lack of a flow strategy for those materials. There are losses on deteriorated products, either because inadequate transport or storage, expiring or, even worst, because the material can not be sent, or it is sent too late to the field where it is needed.

Nowadays it is understood that the best help on a disaster situation is that intended to be helpful to a faster recovery of the affected area and population, such as construction materials, seeds and agricultural tools. Nevertheless, because a disaster is a sudden interruption of the normal living of the community, they would need some basic help to support their survival, recovery and a faster return to their normality.

The SUMA system, originally developed by the Pan-American Health Organisation, the Latin American and the Caribbean countries, brings a useful tool to manage and control the information about supplies in disaster situations. However, the countries still need to define procedures and to train their emergency staff on proper techniques to acquire, store, transport and distribute the costly emergency relief resources and to evaluate the whole operation.

In these guidelines is broached the issue of the Health Logistics Management which main components are supplying, transport, warehousing and distribution. These components needs to be understood on a fully integrated process involving the planning of actions prior to disasters, the co-ordination with other relevant local and international actors on relief activities, as well as the monitoring, control and evaluation of the whole process.

The present guidelines are mainly targeting the regional emergency focal points and the national or provincial emergency co-ordinators. Input from those responsible for implementing emergency preparedness programs will be used to validate the applicability and usefulness of these guidelines. This review will be conducted on a yearly basis in all regions.

We acknowledge with gratitude the generous financial support of the UK Department for International Development in the production of these guidelines, which are a milestone in the progress of countries towards self-sufficiency and dignity in the face of emergencies.

Dr. Reinaldo Flores
Emergency Preparedness Program
World Health Organization

1. Planning the Health Logistic Management in emergency

To have an adequate response to cope with emergency situation it is necessary a good prior planning process. Disasters are different from one to another but their scenarios are the same or very similar. That is why forecasting the needs and planning the response are quite possible. Knowing the probabilities for a disaster or big emergencies to happen in the country or region, some activities should be done on normal times to ensure a good level of preparedness:

1.1. Risks and threats

Identifying and monitoring risks and threats that could lead to an emergency or disaster in the country, either sudden or slow-onset, natural (seismic, volcanic activity, hurricanes, floods, drought...) or human made (political tension, displaced population, civilian disturbances, epidemics...). Normally this is already done by the national organisations in charges of disasters management where they exist, so in these cases the contact with these organisation would be very useful to know the disasters potential of the country. A larger view at this respect can be obtained on the "Health Sector Emergency Preparedness Guide" issued by WHO¹

1.2. Resources Inventory

Making previous identification and inventories of resources and useful contacts. A survey on availability of key persons, material, equipment, services and means should be done, in terms of what can be found locally, where we can find it and with whom we have to co-ordinate to get it. This inventory should be reviewed regularly to keep it up to date. This also would help to determine what items are locally available and what should be brought from abroad. It is important to determine the availability of specific items in neighbouring countries, as well.

1.3. Getting to know the country

Identifying routes and ways to reach the areas of the country and appropriate resources for transport, procurement and warehousing at the central but also at local level. Meeting local or international organisations (governmental and non-governmental) and keeping good, close and frequent contact to share information about the country.

¹ *Health Sector Emergency Preparedness Guide*. Emergency and Humanitarian Action Department. Emergency Preparedness Program. World Health Organization. Geneva, Octobre 1998.

1.4. National policies

Identifying and understanding national procedures and formalities; is convenient to take time to know the functioning of certain national systems, specially those related to our emergency activities and concerns, as well as customs and legal procedures.

1.5. Prior agreements

Getting prior agreements with local authorities and other organisations about actions and co-operation in disaster situation; building or getting inside of co-ordination and co-operation networks. This means to identify suitable partners at central and at local level, as well. A good contact with local key authorities, such as National Emergency Committees, ministries of Health, foreign affairs, customs, etc., should be established looking for previous agreements that facilitate actions at emergencies situation, especially in terms of procedures and formalities.

1.6. Local expertise/operational staff

Sometimes having local view and expertise can facilitate the access to difficult areas and the pertinence of actions. Local ONGs, Red Cross, Universities and such organisations could be pertinent places to look for qualified staff. This should be considerate accordingly with the circumstances.

1.7. When a disaster strikes

Every emergency intervention needs to have its own operational objectives in order to provide indicators that allow measuring up the accomplishing of our institutional goals. This will also helps to re-orient the actions to enlarge or specialise the scope and to prevent from deviations.

A regular up dating on inventories and contacts should be made. However, when a sudden event occurs, a fast check should be done to determine whether the resources previously identified have not been affected and are available still.

2. Co-ordination of actions on relief supply activities

Any activities or actions must have in mind the co-ordination component. There are two main instances for co-ordination:

2.1. Co-ordination at the planning phase:

Getting a clear picture of whom is who, and who does what on the humanitarian context acting in the country is very important. But first of all, we must clearly define the role we intend to play, the field where we can efficiently intervene and the activities that we are able to set up, accordingly with our mandate and resources. Taking part or even organising regular meetings with other international and/or national agencies about preparedness and planning actions for disaster situations are key activities. All this would help to have a prior identification of intervention fields, to define joint actions, share responsibilities and as result, to have a clearest panorama when a disaster strikes.

2.2. Co-ordination for response actions

It is important not to duplicate actions and to try to get a maximal yield; it is why a close, continuous and direct contact with other national and international partners must be kept. Activities such as joint field assessments, sharing reports and working and feedback meetings, are highly recommended. Normally, the government is the one in charge of co-ordinating the national response and relief activities, so we must take it into consideration when acting on emergencies. In the context of a disaster situation is frequent the emerging of co-ordination instances that gather various organisations and ad hoc arrangements can be agreed. Any action should be co-ordinated with other acting UN agencies

3. *Organising the Health Logistics Management in emergency*

3.1. **Supplying**

This is to acquire the resources requested, identify the sources and ways to get them, and make these supplies available to serve the needs on the field.

3.1.1. Type of supplies

The assistance in disaster can be of various types: in-kind, cash, technical aid, human resources, etc. This chapter concentrates on in-kind supplies. According to international agreements, the relief assistance is classified into 10 categories. This division has been successfully applied by organisations like SUMA that deals with supplies management activities, to register humanitarian supplies on the field. These categories are:

- Medicines
- Water and Environmental Health
- Health supplies and equipment
- Food and beverages
- Shelter/housing/electrical/construction
- Logistics/administration
- Personal needs/education
- Human resources
- Agricultural/livestock
- Unsorted

3.1.2. Assessment of the needs

Any request must be done only after determining the real needs expressed by the situation. The assessment of the situation and needs must be done rapidly but extensively. Normally, the type of emergency determines the kind of resources to ask, but there is a group of basic needs related to survival which are always to consider: **health, water, sanitation, food and shelter**.

Information about needs could be gathered from local authorities, UN agencies, international NGOs on the field, field evaluation and contacts (local NGOs, community leaders...), mass media, etc.

Some important information about needs:

- what and how much it is needed? Forecast further needs.
- what can be found locally and what must be brought from abroad?
- can supplies be brought into the country/region? Any specific constraints?

There is no agency capable to solve by itself the whole problematic confronted when a disaster occurs. An interagency co-ordination must be searched in order to complement other agency actions and/or to cover a more extended spectrum of needs. The previous planning and co-ordination principles should be applied.

A disaster scenario can rapidly change because the access to new information, evolution of the situation, and so on. Monitoring the situation would help to adjust our plan to the current needs.

3.1.3. Checking practical issues related to the arrival of supplies

Beside the previous information we had gathered about resources, services and agreements, when a disaster occurs, a checking review must be done in order to determine if they are functional still. For instance:

- availability of arrival points (airports, seaports and borders...)
- transport and warehousing resources
- measures from authorities to facilitate (or restrict...) humanitarian supplies
- agreements with local authorities to facilitate our actions

3.1.4. Procurement sources

A local or external purchase is a decision based in technical and political criteria.

- **Local purchase:** it depends on various criteria, such as the local availability of the product needed, the urgency for this product versus the time to get it from abroad. But in any case, a cost-quality check must be done and it is important to get technical advice. From a political point of view, sometimes a big purchase of a specific product could disrupt the local market or the accessibility of the population to this product. On the other hand, buying locally is a way of supporting the economical recovery of the affected place.
- **International purchase:** buying locally could be a good way to help the economic recovery of the affected country or area, but very often the specific items can not be found locally or the quality/quantity is not good enough to fulfil in a efficient way the needs. In this case, international orders would be the choice. Furthermore, WHO has developed goods and convenient Health Emergency Kits (mainly drugs and medical items) adapted to specific medical needs (see annexe 1)². These have to be ordered as an international purchase. Some other international organisation such as Oxfam and Medicins Sans Frontieres (MSF) has also developed useful kits, including water and sanitation, lighting, emergency health facilities, etc. They are ready to be sent from their headquarters or emergency stockpiles somewhere else in the countries and

² See also "*The new emergency health kit*", and "*Kits*" (October 1997) issued by the World Health Organisation. Geneva.

normally has a good delivery time, accordingly with the availability of transport and the accessibility to the affected area.

- **Loans or donations** by private individuals or organisations, and/or other agencies to procure some services, material and/or equipment could be identified or even arranged on the planning phase.

3.1.5. Request/ordering

The clearer and concrete the orders we make, the faster and exact we will receive our request. The misunderstandings could come from everywhere when requesting items, especially on technical issues.

- **Responsible:** only one person clearly identified will be in charge of requesting supplies.
- **Clearness:** the requests must be clearly specified, including all data and details available about the items we are asking for. Once more, technical advice is hardly recommended when ordering, especially on products to which we are not familiarised.
- **Ordering frequency:** it depends on the detected needs, the distribution and stock control. Nevertheless we should not wait to the last moment to issue new orders. Have always on mind the time that takes for a new freight or delivery to arrive.
- **Importation of drugs and dangerous goods:** be aware of the national laws and regulations about entering these products and the procedures to get clearances.
- **Follow up of the order:** orders must be numbered and dated so we can follow them. When asking about an order always mention date and consecutive number.

3.1.6. Incoming freights

When receiving international freights it is always better to hire a forwarding agency to take care of customs clearances and other shipment reception formalities. However, in many cases depending upon the country or the situation, this is not possible. Here are some important things to know:

- All international shipments must be accompanied by the following documents:

Waybill: this is a kind of acceptance from the carriage company that they have the cargo. It describes the cargo in terms of quantity of parcels, volume, weight and particular information provided about the freight. Waybill is a term for road, train and air carriage, if by ship, will be called bill of lading.

International Cargo Manifest: it describes the freight's details, so we can check what is in the freight without going into the boxes so far. It would be used as confirmation of reception, as well.

Packing list: it identifies the freight contents box by box.

We should receive those documents from the sender prior to the arrival of the cargo. Otherwise, we have to ask for it to be sent as soon as possible because they are necessary for custom's procedures. Some other documents could be included under specific situations, such as the certificate of gift, the quality certificate for food (phytosanitary certificate), the Dangerous Goods certificate, etc.

- On the planning phase we should determine what are the specific procedures of the country, and try to get any special conditions such as exemption from customs duties (normally UN agencies already have), faster way for custom formalities, etc. See also the point 3.2.5. International Transportation.
- Reception: the cargo must be checked from the quality and quantity point of view. Do the contents received correspond to the items ordered and/or the packing list in terms of quality and quantity?. The state of conservation of the parcel and the items must be checked as well. Any difference or problem detected must be communicated to the sender ASAP. The reception of the goods must be reported to the sender, including any remarks about the arrival condition.

3.1.7. Dispatch, outgoing freights:

When sending freight, either national or international, some basic rules must be followed:

- **Preparation:** any parcel belonging to a same freight must be identified with a particular number related to the total amount of parcels (i.e., on a freight of 100 parcels, number 1/100, 2/100, 3/100, 4/100 and so on up to 100/100). This is to facilitate the verification and the follow up of the quantity of parcels at the reception point.
- **Packing and identification of parcels:** every parcel must be clearly identified with the sender's and consignee's name, address and telephone, the consecutive numbering of parcels as mentioned above, as well as any other specific characteristics (fragile, refrigeration required, etc). When packing a delivery, it is important to have in mind the journey and the manipulation that the parcels are going to suffer. Therefore, the resistance of the packing material is very important. Even more, depending upon the type of transport (i.e. plane), we should reduce the added weight as much as possible (the weight of the packing material). One of the parcels must contain the packing list and should be marked as "Packing List". This list is protected into a water-resistant envelope.

- **Size and weight:** as a principle the parcel's weight, size and form should be good enough to be handle for one person (between 25 kg to 50 kg maximum). Very often at the arrival points on the field there are no facilities to unload and handle cargo.
- **Contents:** supplies must be packed separately accordingly with their nature and must be accompanied with a packing list.
- **Waybill, cargo manifesto and packing list:** the carriage company will prepare the waybill and manifesto while we must prepare the packing list describing the contents by parcel. It is expected that this packing list will mention the contents of every parcel.
- **Insurance:** if sending the freight by an authorised carriage company, the insurance may be part of the carriage contract, otherwise we would need to get informed how to insure the cargo (see tables 3 and 4).
- **Dispatching notice:** the reception points must be informed about the dispatch of every single freight, including information such as transport mean (type, company, characteristics, person in charge, etc.), exact destination, arrival point and estimated time of arrival (commonly ETA).

3.1.8. Reception on the field

Follow the same procedures described for incoming freights. The stock keeper must check once more that the arriving items conform properly to the procurement order (request). Any inconsistency must be reported to the sender as soon as possible.

3.1.9. Control and follow up

It is very important to use numbered forms, including as well, the date, name of responsible, information about the mean of transportation, and all the information related and useful to control and follow the deliveries.

3.2. Transport

Is the strategy to bring the supplies to the places where they are needed, taking into account not only the necessary means but also the real possibilities and alternatives for a fast and safe delivery of the assistance.

3.2.1. Availability

A previous inventory of available transport must be done at the planning phase and kept updated, by way of transportation (aerial, sea, river, ground) and type of transport available (trucks, pick up, passengers, all terrain...), etc.

3.2.2. Types of transport and characteristics

They depends on the needs (urgency, size of the cargo...) and the possibilities (transport available, destination, routes condition...). We can mention:

- **Aerial:** faster and reliable shipping option but the most expensive. Used when goods are needed urgently or there is no other means of transportation. It is possible to reach long distances locations. Helicopters: low load capacity but can reach and land in very difficult areas.
- **Road:** very flexible mean. Depends on road conditions and access to the delivery points.
- **Railroad:** could be an interesting alternative in a given situation. It can transport heavy cargoes, but it is restricted to the availability of a railroad and its condition.
- **Sea:** time of delivery could be too long. Delivery of goods can be done only at a sea or river port. Customs procedures could take longer.
- **River:** used when there is no any other option to send the supplies where they are needed. Depending on the size of the river, normally the ships are too small and can not be overload.
- **People and animals:** this would be useful in remote areas or where there is no other possibility for motorised transport. This would be for small cargoes.

Table 1		Ground load carrying capacities (*)
<i>Transport mean</i>	<i>Load capacity</i>	
Standard train trailer	30 MT (52 m ³)	
Standard Container 20 feet/6,1 m	18 MT (30 m ³)	
40 feet/12,2 m	26 MT(65 m ³)	
Large truck with towing	22 MT	
Large truck articulated	30 MT	
Medium size truck	6-8 MT	
Pick Up Four wheel drive type	1MT	
People		
Head or shoulder load	20-35 kg	
Back load	35- 70 kg	
Pack Animals		
Camel	200-300 kg	
Donkey	50- 120 kg	
Horse	100-150 kg	
Animal Carts (single Animal)		
Donkey	200-400 kg	
Horse	up to 1200 kg	
Ox	500- 1000 kg	
(*) Adapted from <i>Engineering in emergencies. Davis and Lambert. Intermediate Technology Publication Ltd. 1995, London and Handbook for emergencies. UNHCR. 1982, Geneva</i>		

3.2.3. Transport requirements

Type and quantity of transport would be decided depending on:

- Nature and quantity of the cargo to be transported
- Destination: distance, access (air, water, ground), roads condition
- Urgency of the cargo

Is helpful to know for example that because the volume, the WHO Emergency Health Kit takes the whole back platform of a Toyota pick up. By the way, the pre-set kits from UN agencies and international NGOs, have standardised sizes and weight, which facilitates de calculation on needs for transport.

Table 2**Calculation of number of trucks required (*)**

Procedure to calculate number of trucks needed:

What tonnage of supplies must be moved? In what period?

What is the turnaround time to move one load to its original location to its destination and for the truck to return? (Do not overestimate speed and include loading and unloading times)

What is the carrying capacity of the trucks?

$$\text{No. of possible trips per truck} = \frac{\text{given period}}{\text{Turnaround time}}$$

$$\text{No. of loads} = \frac{\text{total tonnage}}{\text{Capacity of one truck}}$$

$$\text{No. of trucks} = \frac{\text{No. of loads}}{\text{No. of possible trips/truck}}$$

Allow 25 per cent contingency for vehicle downtime

(*) Extracted from *Engineering in emergencies. Davis and Lambert. Intermediate Technology Publication Ltd. 1995, London.*

3.2.4. Transport strategies (within the country)

Depending on the situation and the needs:

- **Long distance transport:** from the base to the distribution or staging points.
- **Intermediate transport:** this would be useful in cases when transfers, separation of the cargo or partial deliveries need to be done.
- **Local transport:** inside of the operation field (i.e. mobilising supplies locally).

3.2.5. International transportation

International commerce and freights are ruled by a serial of conditions described by the International Commercial Terms, known as Incoterms. Some of the most commons are explained on tables 3 and 4.

Table 3**Explanation of common shipping terms INCOTERMS (*)**

Incoterms	Exporters (sellers) liability	Place of delivery	Place of transfer of risk/property from seller
ExW Ex Works	All charges are borne by the buyer, including the cost of preparation and packing for shipping, unless otherwise agreed	At the sellers factory or warehouse	When the seller places goods at the buyers disposal as provided in the contract
FCA Free Carrier	All charges incurred in loading the goods on any means of transport. Buyer is responsible for onward freight charges and insurance	At the agreed place of loading	When delivered into the custody of the carrier at the agreed location
FAS Free Alongside Ship	All charges incurred in delivering the goods alongside the vessel at port of loading. Buyer is responsible for onward freight charges and insurance	Under ships hooks	When the goods are delivered alongside the vessel at the agreed berth and port.
FOB Free On Board	All freight charges, port dues, etc. until the goods are loaded on board the ship. Onward freight costs and insurance are the buyers responsibility	At the ship once safely loaded	Over ships rail at the port loading
CFR Cost and Freight	Freight and other charges to agreed destination port only. Insurance of goods becomes the buyers responsibility	At the named port of discharge upon receipt by the buyer of the Bill of Lading	Over ships rail at the port loading
CPT Carriage Paid To	All charges involved in delivery of the goods to a named destination, excluding insurance	At the agreed destination aboard the transport	Upon delivery by the seller into custody of the first carrier
DES Delivered Ex Ship	All charges to agreed destination port aboard ship. Buyer pays discharge costs and duty	At the named port of discharge aboard ship	On board ship ate agreed port of discharge.
DAF Delivered at Frontier	All charges involved in delivery of the goods to a named point of the frontier including insurance but duty unpaid (lorry or rail)	At the agreed place of delivery at the frontier	At the agreed place of delivery at the frontier
DEQ Delivered ex Quay	All charges to agreed destination port including discharge and duty	At the named port of discharge at the quay or pier	At the named port discharge available to the buyer on the quay or pier
CIF Cost, Insurance, Freight	All charges involved in delivery of the goods to a named destination including marine insurance	At the named port of discharge (or other agreed destination)	Over ships rail at the port of loading
CIP Carriage & Insurance Paid to	Same as DDP but exporter is additionally responsible for insuring goods	At the agreed destination aboard the transport	Upon delivery by the seller into custody of the first carrier
DDU Delivered Duty Unpaid	All charges involved in delivery of the goods to a named destination including insurance less duty	At the agreed destination aboard the transport	At the agreed destination
DDP Delivered Duty Paid	All charges involved in delivery of the goods to a named destination, including insurance	At the agreed destination aboard the transport	At the agreed destination

(*) Extracted from *Handbook for Delegates. International Federation of the Red Cross and Red Crescent Societies*

Table 4**Common shipping terms and buyers/sellers liability**

Incoterms	Description	Rail/Lorry loading costs	Rail/Lorry freight	Air/ship loading costs	Air/sea freight	Insurance	Buyer also pays
EXW Ex Works	Goods made available at seller's works	Paid by buyer	Paid by buyer	Paid by buyer	Paid by buyer	Paid by buyer	All onward costs
FCA Free Carrier	Goods made available free on carrier	Paid by seller	Paid by buyer	Paid by buyer	Paid by buyer	Paid by buyer	All onward costs
FAS Free Alongside Ship	Goods made available free Alongside Ship	Paid by seller	Paid by seller	Paid by buyer	Paid by buyer	Paid by buyer	All onward costs
FOB Free On Board	Goods made available once loaded safely on board Alongside	Paid by seller	Paid by seller	Paid by seller	Paid by buyer	Paid by buyer	All onward costs
CFR Cost and Freight	Goods delivery to named destination	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Paid by buyer	All onward costs
CPT Carriage Paid To	Delivered at agreed destination. All charges paid except insurance	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Paid by buyer	All onward costs
DES Delivered Ex Ship	All charges to destination port aboard ship	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Discharge duty & onward costs
DAF Delivered at Frontier	Goods delivered to an agreed frontier point, duty unpaid	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Reloading & onward costs
DEQ Delivered ex Quay	All charges to destination port on the quay	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Paid by seller	All onward costs
CIF Cost, Insurance, Freight	Goods delivery to named destination, marine insurance paid	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Paid by seller	All onward costs
CIP Carriage & Insurance Paid to	Delivery at agreed destination, all charges paid	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Unloading & onward costs
DDU Delivered Duty Unpaid	Delivery at agreed. All charges paid except duty	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Duty, unloading & onward costs
DDP Delivered Duty Paid	Delivered at agreed destination, all charges paid	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Paid by seller	Unloading & onward costs

(*) Extracted from *Handbook for Delegates. International Federation of the Red Cross and Red Crescent Societies*

3.2.6. Loading, unloading and transporting goods

The following are some basic rules that should be taken to ensure a safe arrival of the supplies:

- **When loading a cargo:** heaviest parcels must be placed on the floor and lightest parcels, fragile cargo and weak packed parcels, over the heaviest. In case of intermediate delivery, the parcels being delivered first should be load the last. The cargo should be well distributed on the vehicle's platform in terms of weight. A reliable supervision and counting the parcels must be insured. Never overload the vehicle.
- **Transport and protection of the provision:** cargo should be protected against transport or manipulation damages, from steeling, etc. If the truck is open, the cargo should be covered with awning or plastic sheeting to protect against dust, rain and other agents. The cargo should be immobilised with ropes to avoid it from bouncing, which can damage the cargo or destabilise the truck. For the transport of items requiring refrigeration, such as drugs or medical goods, refers to the point 3.3.5. Cold chain, at the Warehousing chapter.
- **Unloading the cargo:** prepare a convenient site and a working team to unload. The process must be supervised to avoid bad treatment of the cargo that could leads to damages. The parcels must be counted to certify the matching with the documents.

3.2.7. Fleet control

Whenever is possible, it is better to hire contractors rather than managing a fleet, which is normally delicate and complicate. But if we are in charge of a fleet, it must be ensured that it is in good mechanical conditions and the maintenance measures and controls must be established. A proper insurance for civil liability should be ensured, as well.

The use of control forms is recommended such as mechanical services schedules, kilometres, fuel consumption, itinerary, etc. It is important to apply the "one car one driver" policy in order to have a better control of every single vehicle.

3.2.8. Fuel calculation, supplying and controlling

Fuel is one of the most coveted goods, especially at shortage times such as the emergency's periods. A very strict and meticulous control must be applied to follow the fleet fuel consumption, accordingly with it journeys. Every vehicle should have a consumption card. This control must be applied from the beginning of the operation.

In long journeys it is important to identify refuelling points. Transporting fuel together with human consumption supplies should be avoided, but if it is inevitable, the fuel must be separated from the merchandise. Prevent the use of breakable containers.

Table 3			
Average vehicle fuel consumption per 100 km (*)			
<i>Petrol engines</i>		<i>Diesel engines</i>	
Sedan	8-12 litres	2 wheel drive pickup van	10-13 litres
Pick up van	14-17 litres	4 wheel drive pickup van	13-16 litres
Land Cruiser	21-27 litres	Land Cruiser	14-17 litres
Minibus	15-18 litres	Small truck (3.5 to 8 tons)	18-28 litres
		Larger trucks	35-50 litres

(*) Extracted from *Supplies and food handbook*. UNHCR

3.2.9. Transport of dangerous goods

As said before, dangerous goods such as chemical products, must be transported separately from human use products. The compatibility between dangerous goods to be transported together must be checked in order to avoid any chemical reaction during the travel. As a security measure, fuel should not be transported on metallic receptacles, but if it is the case, receptacles should be isolated from metallic walls, from the floor and among itself by wood planks to avoid friction and the danger of a fire. Normally aerial transportation do not allows any fuel cargo and have a several restrictions to transport chemical products.

3.2.10. Organising a convoy and determining routes

- It is better to avoid convoys as much as possible because individual trucks move faster; but in long distances trips or because of security reasons it is possible to organise small groups of trucks. The group should be leaded by a person responsible, capable of maintaining the discipline and taking decisions in case of problems (breaks down, accidents, security incidents...).
- The group of vehicles on a convoy should be kept together and keeping a distance allowing a good visibility to each other. Sometimes would be useful to get a control car at the point and one at the queue of the line of vehicles.
- The choice of routes depends on transport availability, urgency for delivery, delivery timetable (intermediate points?), conditions of the routes, etc.