Technical Guide for Waste Oil Collectors

Information for waste oil collection route drivers

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Karo As Umweltschutz GmbH

is a subsidiary of Avista Oil AG in Dollbergen, Germany. Avista Oil AG is one of Europe's key players for the collection and recycling of used mineral oil. Avista Oil AG has entered into an agreement with GIZ for a Public Private Partnership (PPP) project aiming to support the Ministry of Environment and Physical Planning of the Republic of Macedonia in its efforts to improve the existing management system for collecting and recycling used mineral oil in an environmentally and economically sound manner.

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POP Unit

was established in 2002 under the auspices of the Ministry of Environment and Physical Planning of the Republic of Macedonia. It is responsible for implementing the Stockholm Convention on Persistent Organic Pollutants in the Republic of Macedonia, coordinating a national expertise network, launching public awareness initiatives, and identifying and mobilising international assistance and partnerships.

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Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

is a federal enterprise with worldwide operations. It supports the German Government in the fields of international cooperation for sustainable development and international education work. GIZ assists people and societies in shaping their own futures and improving living conditions.

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Introduction

Used oil that no longer serves its original purpose is referred to as waste oil. Consisting wholly or in part of mineral oil (petroleum lubricant), synthetic or biogenic variants, most waste oil consists of hydraulic oil, motor oil or lubricating oil from the manufacturing and automotive sectors.

Acting on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ1), GIZ2 and Karo As are providing development partnership assistance to the Macedonian Environment Ministry to sustainably recycle the country’s approximately 8,000 annual tonnes of waste oil and, in doing so, to better protect the environment. The goal is to make the people of Macedonia more aware of environmental concerns in order to protect nature and human health while conserving resources.

Additionally, one of the prerequisites for Macedonia’s impending application for accession to the European Union is that the country’s legal framework for environmental protection be improved in time. This includes the ecologically viable management of waste oil.

With this in mind, GIZ and Karo As on the German side and the Environment Ministry’s POP unit on the Macedonian side have implemented a project for establishing a waste oil collecting and recycling system in Macedonia, in particular for used motor oil. At the same time, Macedonia aims to introduce and adopt the current pertinent EU standards.

This driver’s manual for operators of waste oil collection route vehicles was compiled within that same context as a means of ensuring safe transport in the course of waste oil collection and transfer to recycling facilities, hence enabling ecologically viable disposal of waste oil in Macedonia.

This driver’s manual summarizes the technical data and information covering a comprehensive system of waste oil management.

Even a minute amount of waste oil can impair the taste of drinking water and make it unfit for use for humans and animals alike. One litre of waste oil can make as much as one million litres of drinking water or groundwater unfit for consumption. That is what makes it so important to handle waste oil carefully, and that is what this manual aims to help achieve.

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1 Ministry for Economic Cooperation and Development (BMZ) of the Federal Republic of Germany
2 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Glossary

ADR
The European Agreement Concerning the International Carriage of Dangerous Goods by Road, commonly known as ADR (from the French abbreviation for Accord européen relatif au transport international des marchandises Dangereuses par Route), prescribes packaging, cargo securing and labelling conditions and requirements for the transportation of hazardous materials by wheeled vehicles.

ADR certificate
This confirms that the drivers of vehicles for the carriage of dangerous goods by road have been duly trained.

Waste oil
This term generally designates used oil that is no longer suitable for such purposes as lubrication or cooling. In particular, it refers to used oil from technical applications, e.g., engine oil, transmission oil or hydraulic oil.

BMZ
Ministry for Economic Cooperation and Development of the Federal Republic of Germany

GIZ
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Class 3
Flammable liquids

Hydrocarbons
The principal component of waste oil

n.o.s.* entries
Generic designations for substances, mixtures, solutions and items which:
a. are not specifically mentioned in the tables of ADR section 3.2 and
b. have chemical, physical and/or other hazardous properties corresponding to the class, the classification code, the packing group and the designation of the n.o.s. entry.

*not otherwise specified
PCB
Abbreviation for polychlorinated biphenyls, i.e., synthetically produced, chlorinated hydrocarbons, the use of which has been prohibited in Germany since 1998.

Placards = labelling
Identification markings for the transport of hazardous materials in the form of a rectangular orange hazard warning sign attached to the transport vehicle; also tags and panels (diamond-shaped placards attached either to the package or the vehicle). They provide information about the composition of the transported material and attendant hazards, hence serving rapid stipulation of measures to be taken in the event of an accident involving hazardous materials.

Tank code
An alphanumerical code consisting of four parts: type of tank, calculation pressure, openings and safety valve/device.

UN number
The hazard identification number (also hazard number or Kemler number, original official French designation numéro d'identification du danger) is a uniform ID number indicating a certain, particular hazardous substance. This number is shown at the top of the orange-coloured warning sign (hazard warning panel) mounted on all vehicles transporting hazardous substances or material. It describes the nature of the hazard posed by the transported material. For a complete list of UN numbers, please refer to the "List of UN Numbers".

Instructions
To instruct means to provide with knowledge and/or to furnish with practical information. Normally, this is accomplished by guiding, steering and demonstrating. The most frequent type of instruction is the job instruction, i.e., the methodical communication of skills, knowledge and experience required for successfully performing a task. The main objective of giving instructions is to teach behaviour and convey a sense of responsibility.

Packing groups (PG)
PG I materials involving a high level of danger
PG II materials involving a medium level of danger
PG III materials involving a low level of danger

Viscosity
is a measure of an oil's "thickness" or "internal friction".
1. What is waste oil?

Waste oil is used oil that no longer serves its original purpose. Consisting wholly or in part of mineral oil (petroleum lubricant), synthetic or biogenic variants, most waste oil consists of hydraulic oil, engine oil or lubricating oil from the manufacturing and automotive sectors.

Waste oil is classified as constituting a serious hazard to water (water hazard class 3). It not only impairs the taste and appearance of water, but also disrupts aquatic plant and animal life, and its toxicity lowers the efficiency of sewage treatment plants.

2. How can I recognise recoverable waste oil? (Waste-oil product quality)

Waste oil considered suitable for reprocessing as base oil is allowed to contain:

- max. 20 mg/kg PCB acc. to EN 12766-1 (Determination of PCBs) and EN 12766-2 (Determination of PCBs and related products)
- max. 0.2% total halogens in the organic phase (oil phase)
- max. 10 % water acc. to ISO 3733

Recoverable waste oil should have the following characteristics:

<table>
<thead>
<tr>
<th>Property</th>
<th>Test method</th>
<th>Specification/Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td></td>
<td>black</td>
</tr>
<tr>
<td>Density at 15°C</td>
<td>DIN EN ISO 12185</td>
<td>860 – 940 kg/m³</td>
</tr>
<tr>
<td>Flash point (PM)</td>
<td>DIN EN ISO 2719</td>
<td>&gt; 61 °C</td>
</tr>
<tr>
<td>Viscosity at 40°C</td>
<td>DIN EN ISO 3104</td>
<td>50 – 70 mm²/s</td>
</tr>
<tr>
<td>Luxation test</td>
<td>Saponification tendency</td>
<td>1 (non-saponifying)</td>
</tr>
<tr>
<td>Sulphur</td>
<td>DIN EN ISO 8754</td>
<td>≤ 0.70 %w/w</td>
</tr>
<tr>
<td>Ash</td>
<td>DIN EN ISO 6245</td>
<td>≤ 2.00 %w/w</td>
</tr>
<tr>
<td>Sediment</td>
<td>Centrifuge</td>
<td>≤ 1.00 %v/v</td>
</tr>
</tbody>
</table>
What is waste oil not allowed to contain?

- solvents
- brake fluid
- anti-freeze
- chlorine-containing liquids
- PCBs
- petrol/gasoline
- fuel oil

The waste oil being collected should consist exclusively of the following types of lubricants and may not be mixed with other types of oil such as used industrial oils, metal-working oils, machine oils or any kind of readily biodegradable lubricating oil.

<table>
<thead>
<tr>
<th>Waste disposal code number</th>
<th>Waste designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 01 10</td>
<td>mineral-based non-chlorinated hydraulic oils</td>
</tr>
<tr>
<td>13 02 05</td>
<td>mineral-based non-chlorinated machine, gear and lubricating oils</td>
</tr>
<tr>
<td>13 02 06</td>
<td>synthetic machine, gear and lubricating oils</td>
</tr>
<tr>
<td>13 02 08</td>
<td>other machine, gear and lubricating oils</td>
</tr>
<tr>
<td>13 03 07</td>
<td>mineral-based non-chlorinated insulating and heat transmission oils</td>
</tr>
</tbody>
</table>

Mixing waste oil with PCB or chlorinated types of waste oil is strictly prohibited!

The Beilstein test *(Test for halogens using pyrolysis)*

Why and how do I perform a Beilstein test?

The Beilstein test is a quick and easy, on-the-spot means of determining whether waste oil is contaminated with chlorine/chlorides (PCBs). Basically, all the driver has to do is evaluate the colour of a flame.

Apply some of the substance suspected of containing halogens to a hot copper wire, and hold the wire in the outer (non-luminous) part of a Bunsen-burner flame.

Any halogens contained in the substrate will have combined with the copper to form volatile copper halogens that give the flame a green or blue colour.

Performing a Beilstein test:

Dip a glass rod into the waste oil to be disposed of, and allow a few drops of it to drip onto a copper wire. Hold the wire in the flame of a Bunsen burner. If the flame takes on a recognisably green colour, this is a positive indication of halogen content in the waste oil (Beilstein test: positive).
The test should be performed in dark surroundings to ensure good flame recognition.

Chlorine detection thresholds via Beilstein test³

- 0.1 % by weight chlorine – very brief, very weak green colour
- 0.2 % by weight chlorine – brief, very weak green colour
- 0.3 % by weight chlorine – brief, weak green colour
- 0.5 % by weight chlorine – distinct green colour
- 1.0 % by weight chlorine – intensive green colour lasting 0.5 seconds or longer

If the waste oil is found to contain > 0.2 % total halogens, it is unsuitable for use as base oil.

**Caution:** To ensure that the copper wire is completely uncontaminated for the test, it must first be heat-sterilised.

Be sure not to perform a Beilstein test in the near vicinity of easily inflammable chemicals/products.

**Required materials** (to be brought along by the driver)

- Bunsen burner
- glass rod
- copper wire
- safety goggles
- safety gloves

### 3. What are the transport vehicle requirements?

Prior to loading, the road tanker must be carefully inspected and only accepted if found to be suitable for transporting hazardous chemicals.

- The vehicle must be in good general condition, exhibiting no damage or defects such as faulty lighting or worn-out tyres.
- All outer surfaces must be intact, i.e., free of holes and cracks and, ideally, watertight.
- The doors must be in good working order and all locks/closures in satisfactory condition.

All signs and labels (e.g., hazard warnings) relating to previous loads must be removed to ensure that no misunderstandings arise.

³ (Source: *Altölratgeber*, 3rd edition, 1989, by Dr. rer. nat. Uwe Jens Möller)
4. When is my road tanker safely equipped?

The vehicle itself and the tank both require appropriate registration, of course, but whether or not a particular substance can be transported in a given tank depends on the tank code (letter code describing the type of tank) stated in the ADR certificate of approval issued for the tank (made of aluminium, steel, stainless/duplex steel). The proper type of tank depends on the extent of material compatibility between tank and substance.

The four most common types of tank (LGBF)

L tank for carriage of substances in a liquid state (liquid materials or solid materials melted for carriage)
G minimum calculation pressure
B tank with bottom openings fitted with three closures for filling and emptying
F tank with open venting system, ADR-compliant, without flame arrester, not explosion-proof

Equipotential bonding – earthing in accordance with ADR

The electric systems of road tankers for flammable materials must be specially protected and equipped with items including a battery disconnecting switch. Road tankers for class 3 carriage must have earthing connectors for the earthing cable to enable safe discharge of electrostatic charges. The earthing connections must be situated in the lower part of the vehicle.

A road tanker is a potentially isolated conductor that poses a substantial ignition hazard in the case of faulty earthing. Consequently, the tanker must be properly earthed with an earthing cable prior to loading, i.e., even prior to opening the lids or connecting up the pipes or hoses, in order to prevent electrostatically induced spontaneous ignition. Both the tanker itself and the vessel to be emptied (drum) must be connected to an earthed equipotential bonding point. This entails connecting the tanker and the vessel to each other with an earthing cable, the far end of which must be earthed with an earth spike. The earthing cables should be fitted with clamping tongs to enable quick connection.

The cable must not be disconnected before all other work has been accomplished.
What does ADR mean (and require)?

The European Agreement concerning the International Carriage of Dangerous Goods by Road, commonly known as ADR (from the French abbreviation for Accord européen relatif au transport international des marchandises Dangereuses par Route), prescribes packaging, securing and labelling conditions and requirements for the transportation of hazardous materials by wheeled vehicles.

Contracting states
The number of ADR member countries presently stands at 48, including for example:

Albania, Bosnia and Herzegovina, Bulgaria, Greece, Croatia, Macedonia, Montenegro, the Republic of Moldova, Romania, Serbia, the Slovak Republic, Slovenia, Turkey and Hungary.

ADR governs such matters as

- the classification of freight as hazardous material (hazmat) and the relevant safety measures
- labelling and such documentation as transport documents and written instructions (transport emergency card [tremcard]) for hazmat transport operations
- the construction of tanks, vessels and vehicles for hazmat transport operations
- exemptions from compliance with the ADR rules
- multimodal hazmat transport operations (road, rail, water and/or air).

ADR requires, among other things, that

- in many cases, the driver be in possession of a "hazardous material license", i.e. the appropriate ADR training certificate (see next page)
- all persons involved in handling and hauling the cargo be able to demonstrate expert knowledge of the rules and regulations governing hazardous material
- all hauliers of hazardous material have a hazmat officer in their employ.

All parties involved in the transport of hazardous materials must take all necessary precautions appropriate to the manner and extent of foreseeable hazards to prevent damage or loss or, in the event of damage or loss, to minimise its scope and extent.

Illustration: ADR training certificate (in German)
Consider the following brief selection of essential ADR requirements.

**General legal requirements**

- Low-beam headlights must be kept on at all times, even in daylight.
- Obligatory use of seatbelts (buckle up!).
- Whenever the vehicle is in motion, mobile telephones or even a hands-free set may not be used at all.
- The legal blood-alcohol level for drivers is 0.0 per mil.
- The official winter season extends from 15 November through to 15 March, during which time snow chains are required in many areas (and spikes are prohibited). Drivers must always have a snow shovel on board, and winter tyres should have at least 4 mm tread.

**Operationally relevant workstations on road tankers must be equipped with at least the following safety devices:**

- A switch for interrupting all electric circuits (isolating switch) located as close as possible to the battery. This isolating switch is actuated by way of a corresponding switch in the cab. The isolating switch must be clearly labelled and easily accessible for the driver.

- A catwalk with a width of at least 40 cm should be mounted on top of the tank so that the driver can safely access and inspect the tank.

- Operationally relevant road-tanker catwalks situated two metres or more above ground level must be equipped with a hinged railing at least one metre high.

  **Road-tanker drivers and co-driver/passengers alike** must always wear safety shoes.

**Speed limiters**

The official speed limits prescribed in the Highway Code should always be observed. All road tankers used for transporting hazardous materials must be equipped with ADR-prescribed speed-limiting devices.
Rollover and anti-collision protection
The equipment and fixtures on top of the tank must be protected against damage in the event of a rollover accident. The rear of vehicles with rigidly mounted tanks must be equipped with a sufficiently strong bumper as protection against rear-end collisions.

Protective equipment
All road tankers used for transporting hazardous materials must be equipped with the following protective devices:

- at least one wheel chock per vehicle, sized appropriate to the tyres
- two self-supporting warning signs (pylons, warning triangles or hazard flashers)
- a shovel (and, practical though not prescribed, a broom)
- a folding polyethylene (PE) road drain cover
- a receiving vessel (e.g., a bucket)
- a flashlight or some other kind of portable lamp for each member of the vehicle crew. The flashlights should not be made of metal (that could cause sparks).
- a reflective jacket (high-visibility clothing; DIN EN 471) for each member of the vehicle crew
### ADR Clause 8.3.4

**Principles**
- It is not allowed to enter a place where there is fire. The portable lamp does not have a metal surface (exemption classes 6.2. and 7)
- One portable lamp per person in the truck

**Special directives**

- In cases where flammable liquids (UN number 3) and/or flammable gases (UN number 2.1) are transported in a closed truck and someone must access the loading area of the truck, an EX-type portable lamp is required.

### Special directive S2 (1), Column 19 of table A

**Permit for zone 1 required**

<table>
<thead>
<tr>
<th>ADR Clause 8.3.4</th>
<th>Special directive S2 (1), Column 19 of table A Permit for zone 1 required</th>
</tr>
</thead>
<tbody>
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<td>Principles</td>
<td>Special directives</td>
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<td>-</td>
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</tr>
</tbody>
</table>

Independently of the type or quantity of hazardous material being transported, a **fire extinguisher** (containing at least 2 kg extinguishing agent) of a design suitable for vehicle firefighting purposes must always be carried on board.

![Illustration of German fire-extinguisher weight requirements for tankers with gross admissible weights (zul. GesGew.) of 3.5 t – 7.5 t (left) and beyond (über) 7.5 t (right) with examples of 8 kg or 1 x 6 kg und 1 x 2 kg and 12 kg oder 2 x 6 kg respectively.](image)

**Illustrations:** German fire-extinguisher weight requirements for tankers with gross admissible weights (zul. GesGew.) of 3.5 t – 7.5 t (left) and beyond (über) 7.5 t (right)

Each member of the **vehicle crew** (driver, co-driver) must always take along the following items of **personal protective equipment** (cf. **ADR Written Instructions**):

For waste oil disposal purposes:

- eye rinsing liquid
- protective gloves (DIN EN 420)
- protective goggles

![Image of personal protective equipment for waste oil disposal.](image)
Required papers/documents

Certificate of approval

Each individual road tanker, tank lorry/truck, tanker trailer and articulated tanker vehicle with tank semi-trailer used for transporting hazardous material requires an ADR certificate of approval.
5. Instructions
General rules of conduct (including first aid), accident risks and compliance with accident prevention regulations

Giving these instructions is an important obligation for the employer, who must be able to show proof that the employee has been duly instructed and/or trained.

Instructions

Verbal instructions concerning risk of accidents and compliance with statutory accident prevention regulations.

On the basis of the statutory accident insurance and corresponding legal regulations of relevance to us, all disposal-route drivers – in particular newly hired disposal-route drivers – must be briefed at least once a year concerning potential risks of accident, emergency situations and strict compliance with accident prevention regulations.

5. 1. General rules of conduct

1. Before the shift begins, the vehicle crew must make sure that the road tanker is in roadworthy condition and that all prescribed equipment is on board.

2. Safety shoes must be worn at all times.

3. Never mount the cab with oily shoes, as this could cause the driver's foot to slip off of the clutch or brake pedal.

4. No smoking in the near vicinity of any vehicle containing hazardous material.

5. The fire extinguishers must always be kept in their designated holders on the vehicle.

6. The consumption of drugs and alcohol (consider residual alcohol levels too!) or any other intoxicant is strictly prohibited.

7. No person who is not a member of the vehicle crew may be taken on board as a passenger.

8. No other vehicles may be rescued or towed.

9. In the event of a fire, oil-soaked clothing can act as a wick and combust very quickly and intensely. Consequently, heavily soiled work clothes must be changed immediately.

10. Unsafe instructions must not be followed.
5. 2. How to fill and empty a road tanker

1. Always wear rubber gloves for all pumping operations. There is no other way to effectively avoid skin problems!

2. Whenever pumping operations are taking place in an enclosed space (factory hall or workshop) the exhaust gases must be either routed to a discharge air shaft or expelled to the atmosphere.

3. Never climb into the tank in order to clean it or remove residue: acute danger of poisoning!!!

4. Closed vessels (casks, drums, ...) containing hazardous materials previously exposed to high temperatures must be opened very carefully, because the hot liquid (possibly caustic or otherwise detrimental to health) might be pressurised, and its release could therefore pose a danger of facial or eye injury.

5. Whenever a road tanker is being filled, there must be sufficient safety clearance between the tanker and any other persons or vehicles.

6. During any pumping operation or waste-oil acceptance process, smoking is strictly prohibited in the near vicinity of road tankers. Danger of fire/explosion!!!
### Some typical examples of waste-oil filling operations in Macedonia

<table>
<thead>
<tr>
<th>Description</th>
<th>Image 1</th>
<th>Image 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000-litre metal tank for collecting waste oil at a garage in Skopje</td>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>Road tanker on a waste-oil collection route in Skopje. Originating from Germany, this tanker was purchased by Minol expressly for collecting waste oil.</td>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
<tr>
<td>Waste oil being pumped out of a collecting tank and into the road tanker. Such collecting tanks were distributed to various Macedonian waste-oil sources associated with the project.</td>
<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
</tr>
<tr>
<td>Road tanker parked in the garage prior to loading.</td>
<td><img src="image7.png" alt="Image" /></td>
<td><img src="image8.png" alt="Image" /></td>
</tr>
<tr>
<td>Waste oil being transferred from a collecting tank to the road tanker.</td>
<td><img src="image9.png" alt="Image" /></td>
<td><img src="image10.png" alt="Image" /></td>
</tr>
<tr>
<td>At a collecting stop in Skopje: The driver checks the hose on the tanker.</td>
<td><img src="image11.png" alt="Image" /></td>
<td><img src="image12.png" alt="Image" /></td>
</tr>
<tr>
<td>200-litre metal drums serving as collecting tanks for waste oil. The waste oil is being pumped out of the drums and into the road tanker.</td>
<td><img src="image13.png" alt="Image" /></td>
<td><img src="image14.png" alt="Image" /></td>
</tr>
<tr>
<td>The road tanker's pump.</td>
<td><img src="image15.png" alt="Image" /></td>
<td><img src="image16.png" alt="Image" /></td>
</tr>
</tbody>
</table>
5. 3. Vehicle operation

1. Commercial-vehicle hitching operations are especially dangerous!

   When a truck tractor unit is approaching a semi-trailer for coupling, no one must be allowed to remain between the two vehicles!

   Due to the great danger involved, semi-trailers must not be run up to the tractor unit for coupling! In the present sense, "running up" is understood as allowing the trailer to roll down a slope toward the waiting tractor unit. This improper practice has caused many fatal accidents.

2. The respective plant regulations in force at the factory site in question must be strictly observed, e.g. additional personal protective equipment must be worn (helmet, safety goggles and extra protective clothing), on-site speed limits, etc.

3. When backing out of a driveway, always enlist the aid of a spotter (guide who can give signals).

4. In the event that any defect with substantial impairment of operational safety occurs on the road and cannot be rectified immediately, the vehicle must be taken off the road. Even minor defects that do not impair the vehicle's operational safety should be repaired immediately, if possible. **Vehicle defects must be reported to the person/office responsible.**

5. With the exception of lamps and fuses, defective electrical parts and devices may not be repaired by the driver/co-driver.

6. Repair work on the waste-oil pump must be performed with the vehicle completely shut down.

5. 4. First aid

1. The “accident-response instructions” contained in the first aid kit must be complied with.

2. In case of an on-the-job accident, the head office must informed immediately by telephone, and a detailed accident report must be drawn up and submitted afterwards.

3. Minor accidents like small cuts, sprains and bruises that do not require medical attention must nevertheless be immediately noted in the on-board accident log. Otherwise, it would be very difficult to assert a claim for statutory accident insurance if the injury should happen to worsen at some later date.

4. The first aid kit must be checked for completeness, and the accompanying set of accident-response first aid instructions must be observed.
6. Accident response

If your vehicle is involved in an accident, please carry out the following in the order indicated:

1. **Survey the situation – and stay calm**

2. **Secure the scene of the accident – and initiate first aid measures**
   - Turn on the hazard lights
   - If the damage is minor, move off the road
   - In case of a hazmat transport, in particular if there is loss of material, assess the danger potential ⇒ observe the relevant written instructions (transport emergency card) for the transported material

3. **Help the injured – save lives**
   - Render first aid without endangering yourself
   - Remove injured persons from the danger zone

4. **Report the accident – wait for help**
   - **In the event of injuries, call the emergency number 112** (fire brigade, emergency doctor)
   - **In the event of property damage, call the emergency number 110** (police) or, if there is **loss of cargo, also call the emergency number 112** (fire brigade) ⇒ read and heed the written instructions for the cargo in question
   - a) head office xxx, Mr./Ms. xxx – **Telephone number ____________**
   - b) and, if there is loss of cargo, also inform the hazmat officer

5. **In the event of fire ⇒ read and observe the written instructions for the cargo in question**

6. **Never leave the vehicle unattended**

7. **Secure evidence**
   If you are personally involved in the accident:
   - write down the names and addresses of all persons involved in the accident and of any witnesses
   - write down the insurance data of the other involved party or parties
   - document the circumstances of the accident
   - make no oral or written admission of guilt

8. **Required reports**
   - police accident report
   - **report of damage/accident** (to be submitted to the head office on the same day – **first by facsimile transmission/telecopy** – and subsequently by mail !!!)
7. Transport operations – or how to use a road tanker

Road tanker operating procedure

1. Personal documents on board?

a) currently valid identity card
b) currently valid driver’s license
c) currently valid ADR certification
d) currently valid digital driver’s card (if the vehicle in question is equipped with a digital tachograph)
e) observe rules regarding on-board records of driving and rest periods
   a. digital driver’s card, tachograph charts, handwritten records and printouts of the current work day and of the preceding 28 calendar days for which tachograph charts, handwritten records or printouts were prescribed
   b. attestation of consider-free days (acc. to art. 20, German driving personnel ordinance)

2. Vehicle documents on board?

f) certificate of vehicle registration (and, where appropriate, trailer document in accordance with the highway code)
g) currently valid confirmation of test-inspection of the tank for transporting hazardous materials (tank test)
   currently valid operating permit for vehicles for transporting certain hazardous materials (T9 certificate)
h) currently valid record of the latest safety check (SC)
i) currently valid record of the latest general inspection (incl. exhaust gas emission test)
j) currently valid fire-extinguisher test report

3. Cargo documents on board?

- Written instructions stored for quick retrieval in the cab
- The forwarding document for "empty, uncleaned tanks" is the waste disposal order for the most recent pick-up (e.g. the previous day). Typical forwarding-document entry:
  - \(\boxed{\text{NO HAZMAT}} \) or
  - \(\boxed{\text{UN 3295 WASTE HYDROCARBONS, LIQUID, N. O. S. 3, packaging group PG III,}}\)
    - harmful to the environment
- The certificate-of-receipt procedure is to be followed.
- The entries in the certificate of receipt must be checked for correctness. This includes the hazardous material data.
4. Preparations for departure / pre-departure inspection

- The consumption of drugs, alcohol (consider residual alcohol levels too!) or any other intoxicant is strictly prohibited
- All actuating and safety equipment in good working condition
- Dome protection gear in good condition
- Dome covers, dipstick covers, filling connections and all shutoff devices securely closed
- Bottom valves closed
- Fittings and end caps closed
- Drain lines from dome tub and valve box closed and drip pans empty
- Valve box clean (contains no dirty cleaning rags)
- Valve box lighting both suitable and intact
- No use of damaged hoses, valves or fittings
- Appropriate orange-coloured plates (warning signs) attached and legible
  - Multi-chamber road tankers transporting different products at the same time must carry orange warning signs on the individual chambers showing the code numbers of the product in each chamber. In this case, neutral warning signs with no code numbers are to be attached to the front and rear of the vehicle.
  - Empty trips with an uncleaned tank
    Warning signs showing the code numbers of the last-transported product.
  - Empty trips with cleaned tank and valves/fitting
    All warning signs and danger labels must be completely masked.
- Appropriate danger label (class 3) and "dead fish/dead tree" symbol legibly attached
- Reflective jacket/high-visibility clothing on board for each member of vehicle crew
- Personal protective equipment in accordance with written instructions on board and in good condition
- Electroconductive safety shoes (S3 acc. to DIN EN 345)
- Protective helmets
- At least 1 wheel chock per vehicle
- 2 certified fire extinguishers, 6 kg each, acc. to DIN EN 3 (The fire extinguishers must be sealed and marked with the date of their next inspection. The inspector must either sign the tag or attach a new one – two-year inspection interval.)
- 1 copper or rubber hammer
- Oil binding agent (suitable for spreading) for mineral oils or chemical bonding agent for other hazardous materials, plus a bucket with a minimum volume of 5 litres
- Road drain cover
- 1 suitable shovel with bucket and broom
- No passengers (except crew members)
- First-aid kit
- Clean rags
- Have all prescribed tests and inspections been performed on the road tanker (tank body and associated equipment; inspection of interior and exterior condition, hydrostatic test, leak test, function testing of all pieces of equipment)?
- Has the road tanker been inspected for operational reliability and safety once a year by a qualified technical expert?
- Brake test
5. Loading and unloading

- Make sure that you observe the
  - gross vehicle weight
  - axle loads
  - fifth-wheel load
- Proper earthing of the road tanker via the labelled earth connector
- Check overflow/overfill safety devices
- Observe no-smoking rule during loading and unloading (both near the tank and in the cab)
- Make third parties aware of the no-smoking rule
- Wear a helmet/hard hat
- Closely monitor the loading and unloading processes
- Carry no metal objects in pockets or clothing
- Make rolled-out hoses conspicuous
- Observe clearance widths and heights along the route
- Observe the maximum permissible filling level
- **Immediately eliminate oil contamination by means of a suitable for spreading bonding agent.**

6. Stopping and parking vehicles

- Depending on the local situation:
  - pull the parking brake
  - engage 1st gear
  - place the chocks as required (2 chocks necessary for vehicles with three or more axles and semi-trailers)
  - turn off the engine
- Prior to leaving the vehicle, secure it against unauthorised use and inadvertent rolling away
- Park only on adequately stable supporting surfaces
- Wear high-visibility clothing (reflective jacket) when performing towing, repair or salvaging work

7. Miscellaneous / Rules of conduct

- Follow the instructions given by the operating personnel (plant security, hazmat officer, waste management officer, ...) at the collecting point.
- Never endanger others when backing up; enlist the aid of a spotter as necessary.
- All vehicle crew members must wear closed safety shoes.
- Avoid pinching and shearing parts of power-operated hose reels; limit the tractive forces.
- Valve-box doors must remain safely in position when open.
- In the case of flammable products, the valve box must carry the appropriate prohibitory signs (“Fire, Naked Light and Smoking Prohibited!”).
- Always drive in a manner appropriate to the prevailing weather, traffic, visibility and road conditions.
- Wear the specified seat belts!
- During the tour:
  - monitor the vehicle for obvious defects
  - shut down the vehicle in the event of any defect with detrimental impact on operational safety and reliability
- Use the designated steps / handles / ladders to reach workstations.
Prior to climbing up on the tank, ensure that the fall protection equipment (railing, ...) is in position.

Equipment used for heating the cab must not generate any fire/flames and must not constitute an explosion or health hazard when in operation.

**The driver's field of vision must not be confined by objects (name signs, flags, coffee machines, ...).**

In the event of any problems occurring in connection with a police road check, the employer must be notified immediately.

In the event of a traffic fine, the employer must also be notified immediately. The same applies for the receipt of a pre-hearing questionnaire (one week time limit for appeal).

The road tanker may not be parked when loaded; in exceptional cases, the head office may permit an exception to this rule.

8. Written instructions

When transporting hazardous materials, it is mandatory for the driver to have on board a set of "Written Instructions" containing important information on how to handle hazardous material and what to do in case of an accident, including vehicle identification (signs, labels, ...).

**The written instructions are 4 pages long. All 4 pages must be kept on board.**

(one set in the local national language and one set in a language understood by the driver)

**Marking and labelling of hazardous material transport vehicles**

Correct identification is absolutely necessary, if:

- the flash point lies below 61°C and/or
- the customer requests hazmat labelling

**Size and content of hazard identification numbers (UN ID labels):**

- Background: orange
- Size: baseline 40 cm, height 30 cm
- Border and dividing line: black, 1.5 cm thick
- Identification numbers: black numerals, 1.5 cm thick, 10 cm high

Road tankers are labelled with so-called placards, the minimum size of which is 250 mm x 250 mm. All placards must have a horizontal dividing line ending 12.5 mm from the border on either side.
Labelling example for a suction-type waste collecting vehicle with a single-chamber tank

Transportation of waste oil, reference UN 3295, WASTE hydrocarbon, liquid, n.o.s., 3, VG III, hazardous to the environment, suction tanker

- Class-3 placard and "dead tree/dead fish" label (environmentally hazardous substance marking) at left, right and rear of truck
- Orange-coloured panel with label numbers at front and rear of truck

The following labels serve to indicate that a road tanker is transporting waste oil as hazardous material in accordance with ADR.

- The combination of UN number 3295 below and hazard ID number 30 above stands for: HYDROCARBONS, liquid, n.o.s., with the "3" in the hazard identification number standing for flammable liquids (gases/vapours) and "0" indicating "no particular hazard".
- The placard in the middle stands for "flammable liquid" and
- the placard at the right indicates "environmentally hazardous substances".
# 9. The pre-departure checklist

<table>
<thead>
<tr>
<th>Day</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Work clothes, protective helmet, safety shoes</td>
</tr>
<tr>
<td>2</td>
<td>Identity card and vehicle registration certificate</td>
</tr>
<tr>
<td>3</td>
<td>Speed and driving time control panel</td>
</tr>
<tr>
<td>4</td>
<td>If required, eye-washing water, protective goggles and protective gloves</td>
</tr>
<tr>
<td>5</td>
<td>Documentation for transport</td>
</tr>
<tr>
<td>6</td>
<td>Signal lamp and breakdown triangle, portable lamp</td>
</tr>
<tr>
<td>7</td>
<td>Isolating switch to cut battery / functional check</td>
</tr>
<tr>
<td>8</td>
<td>Electric lighting incl. equipment</td>
</tr>
<tr>
<td>9</td>
<td>Tyre equipment undamaged, visual inspection</td>
</tr>
<tr>
<td>10</td>
<td>No liquid residue, pollution outside of tank</td>
</tr>
<tr>
<td>11</td>
<td>Orange metal placard and hazard label</td>
</tr>
<tr>
<td>12</td>
<td>Earthing sign (earthed on both sides)</td>
</tr>
<tr>
<td>13</td>
<td>Legible operation sign, a clean-tank sign</td>
</tr>
<tr>
<td>14</td>
<td>Shovel, brush/broom, wheel chock</td>
</tr>
<tr>
<td>15</td>
<td>Closed drain line, fastener, leak-proof dome cover, functional hose</td>
</tr>
<tr>
<td>16</td>
<td>Waste hold-up tank, oil liner, drain cover</td>
</tr>
<tr>
<td>17</td>
<td>Valve box clean / closed</td>
</tr>
<tr>
<td>18</td>
<td>Functional railing</td>
</tr>
<tr>
<td>19</td>
<td>Brake test</td>
</tr>
<tr>
<td>20</td>
<td>Complete driver's documentation</td>
</tr>
</tbody>
</table>

### Road tanker (traction engine)

- **Tyre tread depth**, front view: _____________________  
  centre view: _____________________  
  rear view: _____________________
- **EC recorder (tachograph)** valid until:  
- **Driver card EG-control equipment** valid until:  
- **Next tank inspection**:  
  HP  
  ZP  
- **T9-certificate valid until**:  
- **Valid driver's licence**:  
  yes  
  no  
- **Safety test valid until**:  
- **1 first-aid-kit** valid until:  

### Trailer / Semi-trailer

- **Tyre profile depth**, front view: _____________________  
  centre view: _____________________  
  rear view: _____________________
- **Next tank inspection**:  
  main  
  intermediate  
- **General inspection valid until**:  
- **T9-certificate valid until**:  
- **Safety test valid until**:  
- **Fire extinguisher valid until**:  

<table>
<thead>
<tr>
<th>Month:</th>
<th>internal-No.</th>
<th>license number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

For safety reasons, this list must be checked through every day – prior to departure. This serves not only purposes of personal protection, but also as documentation for the employer, showing that he has fulfilled his internal quality control obligations.
10. How do I document disposal?

The following document is a typical German "consignment note" of a type used for purposes of waste oil disposal.
11. Miscellaneous

Waste-oil exporting procedure

### Output

**Collector ⇒ Re-refinery**

<table>
<thead>
<tr>
<th>Comments</th>
<th>Workflow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documents Records</td>
<td></td>
</tr>
<tr>
<td><strong>Export permit/Notification available</strong></td>
<td>Collector informs re-refinery about delivery</td>
</tr>
<tr>
<td><strong>Notification according to EU-Regulation no. 1013/2006</strong></td>
<td>Notification/international authority: Collector announces delivery to the relevant authorities and re-refinery with the official transboundary movement document 3 days prior to pickup date.</td>
</tr>
<tr>
<td><strong>Transboundary movement document</strong></td>
<td>Re-refinery confirms to the collector and the Greek and the Macedonian Ministries of Environment that the delivery has reached the re-refinery</td>
</tr>
<tr>
<td><strong>Transboundary movement document</strong></td>
<td>Invoice from collector to re-refinery</td>
</tr>
</tbody>
</table>

**Responsibility**

- **D** = Operational responsibility
- **M** = Co-responsibility
- **I** = Give Information

- **Collector**
- **Re-refinery**
- **Greek and Macedonian Ministries of Environment**

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**D = Collector**

- **D = Collector**
- **M = Re-refinery**
- **M = Ministry of Environment in Greece & Macedonia**

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**D = Re-refinery**

- **D = Collector**
- **M = Collector**
- **M = Ministry of Environment in Greece & Macedonia**
Monthly report to the authorities (POP Unit)

(Suggested version)

This report is to be filled out each month by the waste-oil collector.

Month: _________________________

<table>
<thead>
<tr>
<th>Date of pickup</th>
<th>Pickup Station</th>
<th>Volume (m³)</th>
<th>Waste oil code</th>
<th>Waste oil collector</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

_________________________________________________________  ______________________________
Date/Location                                             Signature of waste oil collector
### Speed limits in Macedonia

<table>
<thead>
<tr>
<th></th>
<th>Passenger cars and motorcycles</th>
<th>Vehicle combinations (rigs)</th>
<th>Heavy goods vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Built-up areas</strong></td>
<td>40 km/h*</td>
<td>40 km/h*</td>
<td>40 km/h*</td>
</tr>
<tr>
<td><strong>Rural roads</strong></td>
<td>80 km/h</td>
<td>80 km/h</td>
<td>from 3.5 t to 80 km/h from 7.5 t to 70 km/h</td>
</tr>
<tr>
<td><strong>Highways / Expressways</strong></td>
<td>100 km/h</td>
<td>80 km/h</td>
<td>from 3.5 t to 80 km/h from 7.5 t to 70 km/h</td>
</tr>
<tr>
<td><strong>Super-highways / Motorways</strong></td>
<td>120 km/h</td>
<td>80 km/h</td>
<td>from 3.5 t to 80 km/h from 7.5 t to 70 km/h</td>
</tr>
</tbody>
</table>

* 60 km/h if appropriately signposted

**Related links in Macedonia:**
- Macedonian emergency numbers
- Macedonian blood alcohol limit
- Macedonian rules and regulations regarding mandatory on-board equipment
- Travel/security advice for Macedonia
- Toll charges in Macedonia

### 12. Rules and regulations

The following rules and regulations applicable to the disposal of waste materials are potentially scheduled for incorporation into national law:

**Links to legislation:**
- Accord européen relatif au transport international des marchandises Dangereuses par Route, [European Agreement concerning the international carriage of Dangerous goods by Road](http://eurlex.europa.eu/Notice.do?mode=dbl&lang=en&ihmlang=en&lng1=en,de&lng2=cs,da,de,el,en,es,et,fi,fr,hu,it,lt,lv,mt,nl,pl,pt,sk,sl,sv,&val=388685:cs&page) [Bitte hier Link einfügen]
Conclusion
Obviously, there are other ways to dispose of waste oil than to merely dump it somewhere out in the country – namely to collect it and deliver it to the designated facilities.

Waste oil is classified as a severe hazard to water (water hazard category 3). Once in the ground, it pollutes the groundwater and makes it unfit for use as drinking water. Oil impairs the taste and appearance of water and disrupts aquatic plant and animal life, and its toxicity lowers the efficiency of sewage treatment plants.

The purpose of this manual is to show that recoverable/recyclable waste oil is easy to collect. In observance of the measures addressed in this manual, and with the aid of simple means, Macedonia is in the process of setting a future-oriented, progressive milestone in connection with regional waste oil disposal in line with the pertinent regulations of the European Union.