



OIL SPILL
RESPONSE

OIL SPILL RESPONSE GUIDE

– Instructions for cleaning oiled shores



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1. FOREWORD

The Baltic Sea is one of the busiest sea areas in the world, and the volume of vessel traffic increases every year. At this very moment, some 2,000 large vessels are traveling in the Baltic Sea, including passenger ferries, cargo ships and oil tankers. Over 250 million tons of oil is transported on the Baltic Sea annually, and it has been estimated that the volume will continue to grow until 2030. Increased traffic, busy cross traffic and the increased size of the oil tankers also increase the risk of a large-scale accident.

Compared to other sea areas, we have been lucky: no major oil disasters have yet taken place on the Baltic Sea. The sinking of the oil tanker *Prestige* by the Spanish coast in 2002 is only one example of the damage that an oil accident can cause to nature and people's livelihoods.

Of course, accidents have occurred in the Baltic Sea as well. On many unfortunate occasions, as vessels have run aground, hundreds of tons of oil has been spilled into the sea. Some examples of this include the freighter *Eira*, which ran aground in 1984, and the tanker *Antonio ramsci*, which ran aground in 1979 and 1987. Extensive spills have also been caused by colliding vessels, such as the oil tanker *Baltic Carrier* (2001) and the bulk carrier *Fu Shan Hai* (2003). In 2007, the Greek tanker *Propontis* touched ground in the Gulf of Finland, but an oil spill was avoided. At the time of the accident, the vessel was carrying some 100,000 tons of crude oil.

In 2005, the International Maritime Organisation (IMO) classified the Baltic Sea as a Particularly Sensitive Sea Area. The Baltic Sea is vulnerable and prone to changes, and the impact of a large-scale oil accident would be serious and long-lasting. To reduce this kind of environmental impact, WWF Finland founded voluntary oil spill response troops in 2003. In oil spill response work, good readiness is always an asset. Further restoration may take months and requires well-organised teams to help the authorities.

Countless pairs of helping hands are required for the cleaning once oil has reached the shore after an accident. This is when the voluntary WWF oil spill response troops stand ready to help the authorities. We hope that the oil spill response team will never be needed. We are still happy to know that new, enthusiastic members are constantly joining the troops, hoping to do their bit for the Baltic Sea. Thank you for your work for the Baltic Sea!

The WWF wants to thank the employees of the Finnish Environment Institute and the Finnish Oil Pollution Compensation Fund for their collaboration in preparing this guide.



A handwritten signature in black ink, reading 'Liisa Rohweder'.

Liisa Rohweder
Secretary General
WWF Finland

2. THE CONSEQUENCES OF AN OIL ACCIDENT

It is unfortunate how often the consequences of oil accidents become visible both in the natural environment and in public. Naturally, the greatest damage is caused to the environment of the spill site, but also the inhabitants of the area are affected. An accident affects the economy and commercial life, as well as leisure time and health.

ACCIDENTS AROUND THE WORLD

Oil accidents take place around the world every year. The consequences of major accidents have been devastating. For instance, the tanker **Prestige** foundered by the Spanish coast in 2002, spilling some 64,000 tons of oil into the sea. As a consequence, hundreds of kilometres of the Spanish and French coastlines were contaminated. The oil has been estimated to have killed or damaged around 300,000 birds and numerous other animals. The accident caused serious harm to fishing and tourism, the main livelihoods in the area, which resulted in tens of thousands of people losing their jobs. The estimated total cost of the accident is approximately four billion euros.

However, the Prestige accident is hardly unique. In 1999, the oil tanker **Erika** was shipwrecked by the coast of Brittany, causing similar damage. Similar accidents include the oil tanker **Sea Empress** foundering in Welsh waters in 1996; the **Braer** in Shetland in 1993; the **Exxon Valdez** in Alaska in 1989; the **Amoco Cadiz** in Brittany in 1979; and the **Torrey Canyon** in Southern England in 1967.

A shipwreck is not necessarily required for an oil disaster to occur. In winter 2006, over ten tons of oil was spilled in the sea by the northwestern coast of Estonia. The source of the illegal spill was never discovered. The spill resulted in several kilometres of oil-contaminated coastline and thousands of dead birds. In 2012, an air survey conducted by the authorities on the Baltic Sea observed 139 illegal oil spills.

THE IMPACT OF OIL ON THE NATURAL ENVIRONMENT OF THE BALTIC SEA

Oil is toxic and degrades extremely slowly in nature. In the sea and in coastal areas, oil causes damage to all species from plankton to seals and humans.

Its low salinity, small volume, northern location and restricted water exchange make the Baltic Sea a sensitive sea area. In combination with the cold conditions and oxygen deficiency, these factors slow down the natural degradation of oil. The Baltic Sea is a small, enclosed sea area, where any oil spilled in the sea will quickly be washed to the littoral zone. In winter, the ice cover makes the recovery of oil more difficult. After an accident, the harmful effects of oil remain in the Baltic Sea for a long time.

The most obvious consequence of an oil accident is the oil floating on the surface of the sea and staining the shore. A thick layer of oil can smother bottom-dwelling organisms and vegetation. If the vegetation disappears, the animals have no food and

suitable habitats diminish. It may take years for species to recover, especially those that are long-lived and few in number.

Oil contamination is often fatal. An oil stain as small as a coin can reduce the heat insulation capacity of the bird's plumage to a degree that will cause the bird to freeze to death. Moreover, oil on a bird's plumage reduces its ability to swim, dive and fly, which may result in the bird starving to death. When cleaning

their plumage, birds swallow

the oil, which poisons them. Oil contamination also a problem for marine mammals: for instance, seal pups cannot endure oil on their fur well.

However, as serious as these forms of short-term impact are, the long-term consequences resulting from the toxic properties of the oil may pose a greater threat. The toxic constituents of oil may cause poisoning if inhaled, swallowed (as such or via nutrition) or through long-term skin contact. The poisoning may cause chemical pneumonitis, cell damage, nervous symptoms, developmental disorders and reproductive problems. For example, benzene, a constituent of oil, is carcinogenic, which means it may cause cancer, but the results may not be visible until after a long time. Some of the harmful compounds in oil are fat-soluble, which means they are accumulated in the bodies of organisms. Through the food web, the toxins may become concentrated and move forward, all the way to humans.

**APPROXIMATELY
170,000,000 TONS OF OIL
WERE TRANSPORTED IN
THE GULF OF FINLAND IN
2017. THE LARGEST TANKERS
TRAVELLING IN THE
GULF OF FINLAND CAN BE
USED TO TRANSPORT
OVER 100,000 TONS OF
OIL AT ONCE.**

3. DETECTING OIL

There are different types of oil that behave very differently in nature. From the lightest to the heaviest, different types of oil include liquefied gases, petrol oil, diesel oil, light fuel oil, heavy fuel oil and bitumen.

In addition to processed products, large quantities of crude oil, which is similar to heavy fuel oil in terms of properties, is transported by sea. Everyone participating in oil spill response should have good basic knowledge of the different properties of various types of oil.

THE PROPERTIES OF OIL

Oil and most oil-based products are lighter than water, insoluble in water and liquid at room temperature. Only the heaviest of oil-based products, such as pitch and bitumen, are solid at room temperature. In colder conditions, crude oil and heavy fuel oil may be in solid form.

When oil is spilled into water, it starts to weather, and as a result, its form begins to change. Weathering refers to a process undergone by the oil, involving spreading, evaporation, emulsification, oxidation, dissolution, sedimentation, dispersion and biodegradation.

Liquid oil is fluid, so when it enters water, it will spread and form a thin layer on the surface of the water. Most types of oil require only a few hours to form a large slick only a fraction of a millimetre thick. Light oils are more fluid than heavy oils, so they spread faster and over a larger area than heavy oils. Light oils also form a thinner slick.

Of all the above-mentioned factors affecting the state of oil, evaporation is the most significant. When a lighter type of oil enters water, as much as 75 per cent of the oil may evaporate during the first days. This is why there is often not

enough time to recover the lightest types of oil from water. As a result of evaporation, the lightest compounds, which are also the most toxic and inflammable, are the first to leave the oil. Only the heaviest and toughest compounds are left behind. The evaporating constituents may also be dissolved in water, particularly if wind and the waves have caused the oil to break up the oil into drops and disperse in the water.

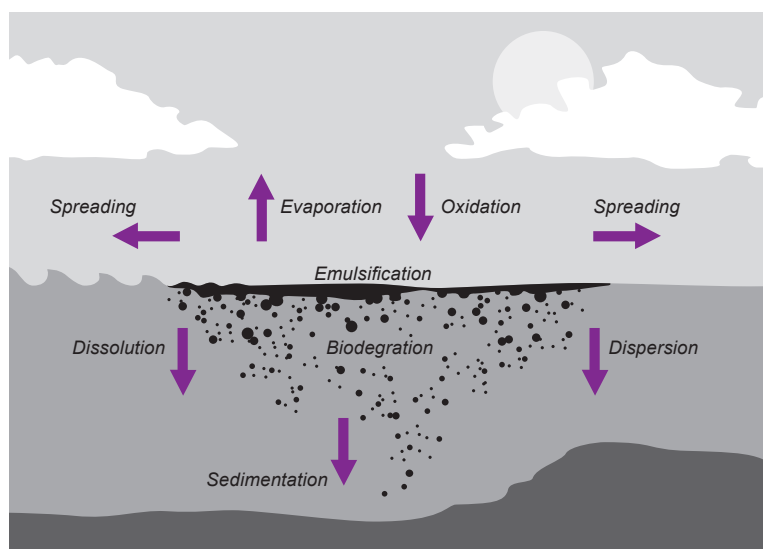
Due to strong winds and waves, drops of water could also be mixed with the oil, causing emulsification. As a result, the volume of the oil-water mixture increases.

The types of oil that are especially heavy often form a solid, heavy mass, which may be heavier than water, causing sedimentation. Evaporation, sunlight and oxidation may affect heavier oil, causing it to form tar-like blobs.

In cold conditions, weathering happens more slowly than in summer thanks to reduced evaporation and disintegration; thus, the state of the oil changes more slowly in winter than in summer. The natural biodegradation of oil happens due to microbes and is dependent on the temperature of the water and the availability of nutrients. Microbes that degrade oil are most numerous in areas where oil naturally seeps through the seabed.



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SOURCE: ITOFF (INTERNATIONAL TANKER OWNERS POLLUTION FEDERATION LIMITED)

IDENTIFYING OIL

Oil found in the sea or on the shore comes in various forms. It depends on factors such as the amount of oil that has entered a given body of water, its quality, age and level of weathering. The easiest and most reliable way to identify oil is by visual perception. If there are large amounts of oil or the spill is fresh, it is also possible to smell the oil.

Oil can be identified by its tendency to form a film on the surface of water. The oily film is of a different colour than the surrounding water. If the film is very thin, it will appear silver, grey or take on a rainbow-like, multi-coloured appearance. Thicker films have a darker shade and may even be black. Wind and currents may cause an oil layer of several centimetres to be accumulated by the shore or at the head of a bay. The surface of a coating this thick is pitch black.

In addition to its colour, oil can be identified by the fact that on the surface of the sea, it will reduce the formation of waves and slow down their movement. Thus, an oily part of the sea appears more calm and even than the surrounding clean water. An oil slick several centimetres thick can only be permeated by the largest waves.

The oil forms a slick on the surface of the water and drifts away. A massive oil slick may look solid, but winds and currents and the coastal landforms break its shape. Wind and currents carry the oil in long, thin trails. This is particularly likely to happen when winds are high.

The oil may also be carried as an emulsion. Emulsion is a brown or orange mixture of water and oil that resembles chocolate pudding. The foam is nearly solid and tough. Normally, an emulsion is only some millimetres thick, but it may form a layer as thick as several centimetres. Emulsification primarily occurs locally.

Weathered, heavy oil is black, tar-like, tough and capable of staining. Emulsion is nearly solid, even somewhat asphalt-like, and it may drift to the shore in one large layer or as individual blobs and lumps. Tar balls and lumps come in different sizes, and they may reach the shore individually or in larger numbers.

As it becomes more solid, the weathered, heavy oil may sink under the surface of the water. It may sink all the way to the bottom, or drift around with sea currents, only reaching the shore after months or years.

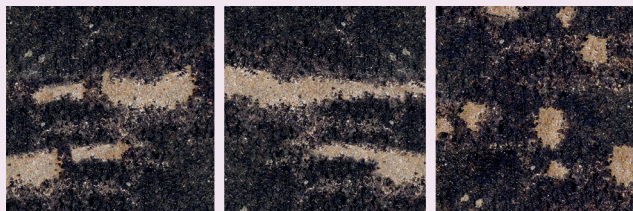
REPORTING OIL OBSERVATIONS

If you notice oil on land, in the sea or in an inland water area, report it by phone as an emergency by calling 112. All observations must be reported. The oil observations may enable the authorities to make an estimate of the location of the spill's source. You should also report any observation of oiled birds. The birds may have left the area of the oil spill after becoming contaminated.

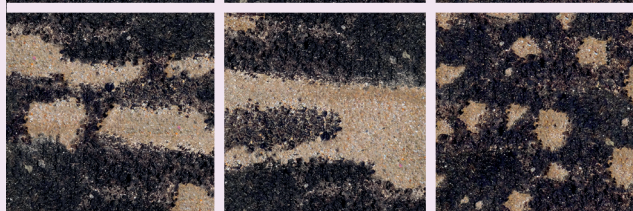
When reporting the observation, please provide your contact information, along with information on the location and extent of the observation (i.e., the width and length of the oil-contaminated area), the coverage of the oil, and the shape of the observation. Please also mention the colour of the detected oil. If the oil is black, try to provide an estimate of the thickness of the oil layer. If possible, try to provide an estimate of the direction of the wind and the current to allow prediction of the direction to which the oil slick will move.

Examples of coverage in an oil observation

Completely covered in oil
(91–100 %)



Mostly covered in oil
(51–90 %)



Clearly contaminated
(11–50 %)



Slightly contaminated
(1–10 %)



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SOURCE: EMERGENCY PREVENTION, PREPAREDNESS AND RESPONSE (EPPR), 1998, PP.

4. OIL SPILL RESPONSE

If an accident occurs, the aim is to gain control of the oil spill already inside the vessel or in its immediate vicinity. If oil reaches the shore, the contaminated areas need to be cleaned. The work may take months.

RESPONSIBILITY FOR OIL SPILL RESPONSE

The primary responsibility for oil spill response activities on the coast and inland belongs to the regional rescue departments. In Finland, there are (in 2013) 22 rescue departments, 11 of which are located on the coast. Each rescue department has its own regional oil spill response contingency plan, which has been prepared in cooperation with the ELY centre (Centres for Economic Development, Transport and the Environment). The rescue departments also have their own oil spill response equipment.

Oil spill response activities taking place in open sea falls under the responsibility of the Finnish Environmental Institute (SYKE), which also controls Finland's oil spill response vessels. SYKE may also assume responsibility for coastal oil spill response if the situation is serious enough. This could be the case in a situation such as a grand-scale accident, where hundreds or thousands of tons of oil spill into the water system, reaching several municipalities. SYKE also has the principal responsibility for organising treatment for animals oiled as a result of an accident.

In case of an accident, other authorities, such as the Finnish Border Guard, the police, the Finnish Defence Forces, the Finnish Transport Agency, the Finnish Transport Safety Agency and the Finnish Meteorological Institute provide executive assistance for the rescue departments and SYKE. The Finnish Border Guard monitors oil spills in Finnish waters and the country's economic zone. If necessary, the municipality takes care of further restoration in its area.

THE WWF OIL SPILL RESPONSE ORGANISATION

If the oil spill is large and the cleaning operation takes a long time, the human resources of authorities are not enough to clean the shores. This is when the authorities call for volunteers to help. For this purpose, the WWF has established a voluntary oil spill response team. If an accident occurs, the WWF teams cooperate with and assist the authorities.

If an accident occurs, the WWF publishes a disaster page on its website, providing further information on the accident and how to join the team of volunteers. The WWF will also use SMS and e-mail to directly contact those who have signed up for the oil spill response troops.

If volunteers are required for the clean-up operation or the treatment of oiled animals, the WWF will mention the need separately in its case-specific instructions. These instructions contain more specific information on how to prepare for oil spill response activities and how to reach

the location. However, you should not worry if you are not contacted immediately after an accident has occurred. After an accident, it may take as long as several days for the oil to reach the shore. After this, the authorities must ensure that the coastal areas to be cleaned are safe, and that the risk of them being contaminated again no longer exists. Assistance teams are called in at different stages, as the clean-up effort can take weeks or even months. One volunteer may work for 2 to 3 consecutive days.

An extensive oil accident may contaminate several hundreds of kilometres of the coastline. If this occurs, several dozens of WWF volunteers could be working simultaneously, making it essential that the work is properly organised. This is why all individual volunteers work in small groups, under the command of a group leader. The group leader reports to the team leader, who, in turn, acts as the contact person for the representative of the WWF.

The small group led by a **group leader** consists of approximately ten members. The group leader guides the group's activities, instructs the members in occupational safety and the use of personal protective equipment, and distributes tasks. The group leader does not participate in the cleaning; instead, they monitor the work and instruct the group members. If the group leaders are properly trained, the authorities do not have to spend resources on guiding and instructing each volunteer individually.

The team leader is in charge of the work of several groups and acts as a contact person between the volunteers and the authority responsible for the operation. This makes the work of the groups more efficient and allows information to be passed on quickly. The team leader is also responsible for ensuring that catering and equipment maintenance function properly.

The WWF organises basic courses in oil spill response annually to train its volunteers. After the basic course, the volunteers may deepen their skills through a group leader course. Information concerning the training sessions is distributed through the WWF website and sent to everyone participating in the oil spill response team through an electronic mailing list.



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OCCUPATIONAL SAFETY

Oil is a dangerous substance, which means that cleaning oily shores can be dangerous work, and questions concerning responsibility and occupational safety should not be taken lightly.

Oil spill response is difficult and risky outdoor work, so everyone participating in oil spill response activities should be particularly familiar with occupational safety, safety regulations and equipment. Instructions and orders provided by the authorities must be followed.

Always carefully protect yourself from the oil. Longterm skin contact and respiratory exposure should be avoided, because oil dries the skin and causes irritation, and it could damage the eyes and mucous membranes. Oil is poisonous if it enters the body. This is why you should always wear appropriate equipment for oil spill response activities.

The lowest layer of a volunteer's clothes should consist of their normal clothing chosen according to the weather conditions. Layered clothing is recommended. A layer of PVC waterproofs is needed to protect the volunteer from water, oil and cold. The outermost layer of clothing should

consist of disposable overalls. Wear oil-proof rubber boots. Pull legs of the waterproof clothing and disposable overalls over the legs of the boots. Fasten the legs of the trousers to the boots using duct tape. Protect your hands with light cotton gloves and oil-proof rubber gloves with roughened palms. The

gloves are pulled over the sleeves of the disposable overalls and fastened with duct tape to keep the oil from entering the clothes. Wear safety goggles to protect your eyes from oil splatter. If necessary, protect your nose and mouth with a respirator mask or a half mask respirator with a gas filter.

Oil releases harmful gases that irritate the airways and cause nervous symptoms, such as headache, dizziness and nausea. Thus, continuous exposure to the gases evaporating from the oil should be avoided. If you feel nauseous, inform your team leader, stop the work and find fresh air.

When an accident occurs:

1. The WWF monitors the situation through the authorities.
2. If necessary, the WWF sets up a disaster page on its website, providing further information to the members of the oil spill response troops. The members will receive a notification if a disaster page is set up.
3. If the authorities call for assistance, the WWF sends an alert to the members of the troops. When you receive the message, follow the instructions provided within.

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In addition to health risks, the gases may cause a fire hazard. This is why smoking and lighting an open flame is forbidden everywhere except at specified locations.

Working at the shore may also involve other risks. In summer, the work conditions may be hot and sweaty. Dehydration and overexposure to sun should be avoided by wearing the right kind of clothing, drinking plenty of water and, for instance, wearing

a hat and sunscreen. Similarly, windy winter days on the shores may be very cold, and it is necessary to wear layers of warmer clothing underneath the protective clothing.

The shoreline of sea shores, especially bedrock and rocky shores, can be slippery. The oil on the shore, and ice in winter, make them even more slippery. Caution is thus always recommended when moving around the shore. The work always includes the risk of tripping, bruising and spraining as well as falling into the oily water. In challenging conditions, safety vests and industrial helmets can be used, but taking unnecessary should be avoided. Shores are only cleaned during daylight, as darkness makes the work more dangerous and increases the risk of accidents. You should also keep the correct working posture in mind when working. For the most part, the work consists of shoveling, hoeing, brushing and carrying things; in other words, it involves plenty of squatting and stooping. It is important to remember to keep your back straight and let your legs do the work.

Cleaning an oil-contaminated shore may take a long time. As the work is both physically and mentally taxing, you should avoid overexerting yourself on the first day. When you get tired, you become more careless and the risk of accidents increases. During the day, the team leader and each individual volunteer must make sure that everyone takes a lunch break as well as shorter breaks regularly and with sufficient frequency. Everyone working as a WWF volunteer is insured against accident.

EQUIPMENT

Oil spill response activities require various pieces of protective clothing and equipment. The bodies responsible for oil spill response are responsible for providing suitable equipment for the volunteers invited to participate in the response work. The WWF can offer its volunteers basic equipment.

You can find a list of oil spill response equipment on page 10. The WWF does not require that volunteers buy their own equipment, however, to work at the scene of an accident, everyone must bring their own personal items, such as a change of clothes and personal hygiene items.



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EQUIPMENT USED FOR OIL SPILL RECOVERY ACTIVITIES

Dressing up in protective clothes is easier if you form pairs.

- 1) The first layer of clothing consists of the volunteer's own clothes that are suitable for the weather.



- 2) The next layer consists of waterproof clothing that protects the wearer from oil.



- 3) Disposable overalls should be worn over the waterproof clothes.



- 4) Rubber boots are suitable footwear. The legs of the waterproof layer and the overalls should be pulled over the leg of the rubber boot. The legs of the overalls are taped to the boots.



- 5) Wear cotton gloves and oilproof rubber gloves. Pull the gloves over your sleeves. The gloves are taped to the sleeves of the overalls using duct tape. Be careful not to make the tape too tight.



- 6) Finally, wear safety goggles and, if necessary, a respiratory mask. In addition, everyone should have their first name written on their chest and their back. Those with first aid skills are marked with red tape around the sleeve of their overalls.



PICTURES: SUSANNA MANU / WWF

EQUIPMENT PROVIDED BY THE WWF OR THE AUTHORITIES

Protective equipment

- Disposable overalls
- Water-proof clothing
- Rubber boots
- Oil-proof rubber gloves
- Cotton gloves
- Safety goggles
- Respiratory mask
- Half mask respirator with gas filter
- Life vest, industrial helmet

Tools

- Buckets, sizes 12 liters and 40–65 liters
- Plastic bags, sizes 30 liters and 150 liters
- Cable ties and duct tape
- Shovels and brushes of various sizes
- Bailers and trowels

EQUIPMENT THE VOLUNTEER SHOULD BRING

- Change of clothes (suitable for current season and weather)
- Headwear
- Woolly socks (for the rubber boots)
- A sleeping mat and bag
- Toiletries and a towel
- Personal hygiene products
- Food, cutlery and a water bottle
- A general-purpose tool or a pocket knife
- A torch
- A day backpack

If necessary:

- Personal medication
- Glasses (wearing contact lenses is not recommended, for safety reasons)
- Sunscreen

In oil spill recovery activities, it is essential that you follow official orders and use common sense, keep safety in mind and avoid unnecessary risks! Everyone participating in the work is responsible for their own safety.

COVERING THE COSTS

According to Finnish legislation, the compensation for the costs resulting from an oil accident is managed on the basis of the “polluter pays” principle. In vessel traffic accidents, the liability for damage falls on the owner of the vessel, even if neither the owner nor anyone acting under the owner’s responsibility has directly caused the damage. Thus, in an oil accident, the primary liability falls on the party responsible for the accident, the owner of the oil-transporting vessel or the insurance companies of these parties. In some cases, the International Oil Pollution Compensation Fund or the Finnish Oil Pollution Compensation Fund may act as the secondary payer of the compensation. This occurs if the losses exceed the vessel owner’s risk limit, if it is not possible to clarify the party responsible for the damage, or if the party is incapable of covering the resulting losses.

Principally, the WWF oil spill response volunteers are not required to cover any costs resulting from the response operations, provided that they act according to instructions provided by the WWF. If it is known that a person participating in oil spill response activities will be subject to expenses (such as traveling expenses), they will be notified of this in advance.

The volunteers are provided with accommodation and catering, but these services cannot be guaranteed on the first days. The first volunteers to arrive are instructed to bring their own provisions and come prepared to sleep in tents. The WWF informs the volunteers of the catering and accommodation arrangements in advance; the WWF’s aim is to primarily employ local volunteers who can sleep at home.

It is also possible to apply for compensation for any expenses resulting from the oil spill response activities. However, the applications are not made individually; they are the responsibility of the authority in charge of the oil spill response operation. Because of this, it is important that any equipment you have brought with you, as well as your travel expenses, are recorded in accordance with instructions provided by the WWF at the scene of the accident. The applications for compensation undergo case-specific assessment, with attention paid to whether the application is justified, proportional, relevant and consistent with common rates.



5. CLEANING OILED SHORES

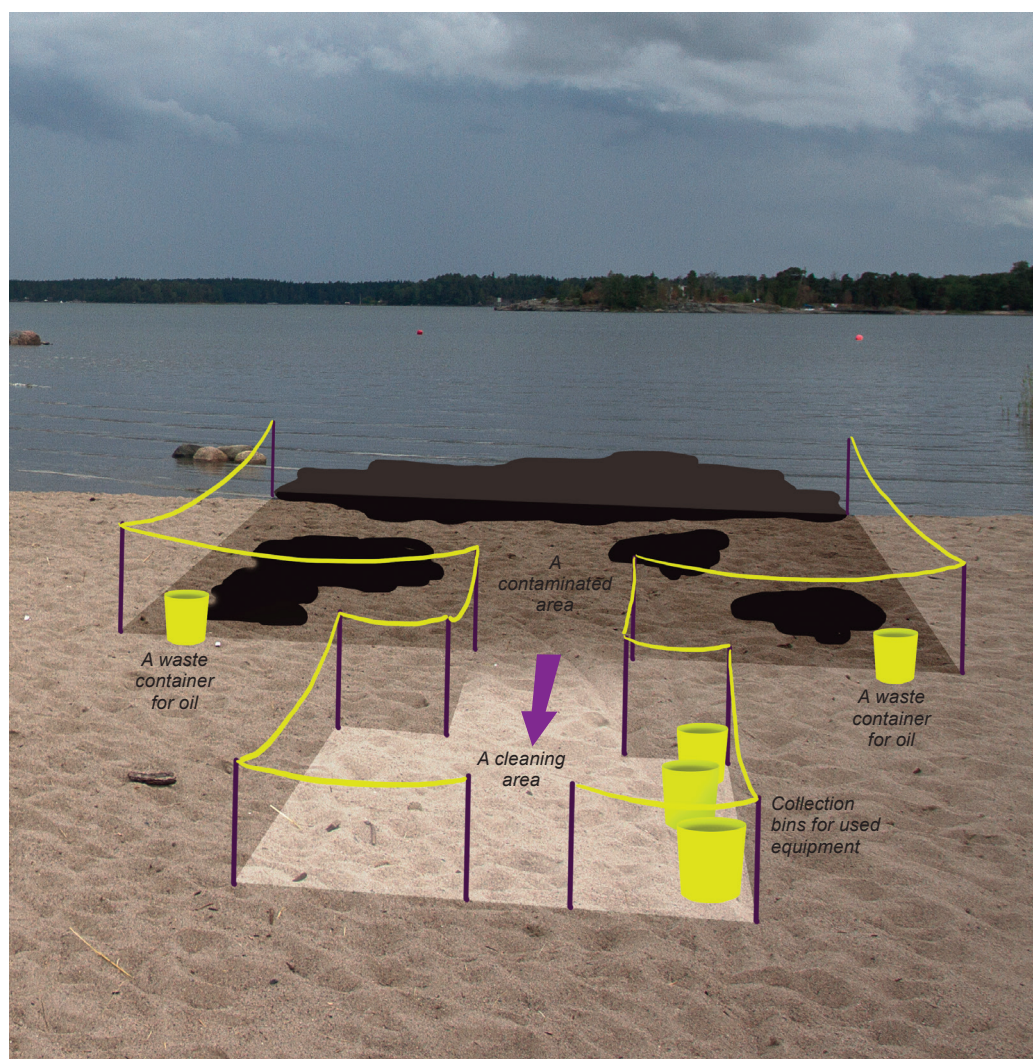
The aim of the clean-up operation is to restore the area to the state it was in before the accident. In practice, it is impossible to recover all of the oil from nature, but the oil must be recovered and any oiled materials must be cleaned as carefully as possible.

GENERAL INSTRUCTIONS

Cleaning the shore after an oil accident is arduous and time-consuming. Thus, the work should be conducted in a systematic manner. Contaminated areas are cleaned in accordance with a plan prepared by the authorities. The plans are based on observations made when surveying the shoreline. Before starting the clean-up operation, authorities must specify the locations of routes as well as waste collection and service points.

When cleaning shores, it is important to ensure that clean areas are not contaminated in the process. In the areas to be cleaned, the workers move as one front. Oiled, clean and cleaned areas are clearly separated from each other using marking tape or flag line. Only use marked routes and paths when wearing oily equipment. When moving from a clean area to a contaminated one or the other way round, always pass through a **cleaning point**. This means you must never exit a contaminated area without first taking off your dirty equipment. If possible, routes should be covered with absorbent mats or tarpaulin or another suitable material.

Along with the group leader, all shore cleaning groups include at least two clean members. The clean members never enter the contaminated area, but provide assistance for working in the contaminated area from the clean area. They offer drinks, change the plastic bags in the collection bins and carry the waste containers on the border of the clean and contaminated areas to the waste collection point. Oiled areas are cleaned properly and carefully and all at once.



© PAULINA HEINÄNEN / WWF

RECOVERING THE OIL

Below, you will find work instructions for collecting the oil on the shore. The instructions are valid for all types of shores where large volumes of oil has washed up.

1. Place two 30-litre plastic bags inside each other and into a 12-litre bucket. Pull the mouths of the bags far over the sides of the bucket. This will keep the bucket from becoming stained.
2. Use bailers or shovels to scrape or shovel the oil into the plastic bags. The bucket should be filled halfway.
3. Close the bags tightly using cable ties.
4. Place two 150-litre plastic bags inside each other and into a bucket of 40 to 65 litres. Pull the mouths of the bags far over the sides of the bucket. Place the filled 30-litre plastic bags into the larger bags until the larger bucket is half full.
5. Close the mouths of the large bags tightly with knots or cable ties and carry the bags to the intermediate storage in the large bucket. One bucket should always be carried by two people.



© ALEXANDRA ANTELL / WWF

If the volume of oil on the shore is great, it may be collected directly into the larger bucket:

1. Place two 150-litre plastic bags inside each other and into a bucket of 40 to 65 litres. Pull the mouths of the bags far over the sides of the bucket. This will prevent the bucket from becoming stained.
2. Use a snow shovel, a spade or a similar tool to shovel the oil into the plastic bags. The bucket should be filled halfway.
3. Close the bags tightly using cable ties.
4. Carry the bags to the intermediate storage in the large bucket. A bucket should always be carried by two people.

Note.: Never overfill the plastic bags. They must be light enough to be easily and safely lifted and carried by a single person, even in a rocky and slippery environment. To prevent the bags from breaking, they must be carried to the intermediate storage in buckets. Never pull or drag the bags along the ground!

When recovering oily waste, it is important to ensure that the volume of the waste collected is kept as small as possible, as transporting and disposing of it is expensive and harmful to the environment. **Only collect oiled material and avoid mixing clean sand, rocks and vegetation with oily waste.**



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LEAVING THE CONTAMINATED AREA

It can be difficult to take off the oily equipment safely and without spreading any oil around the shore. All workers leave the contaminated area through the cleaning point. First, clean your gloves with cleaning wipes. After this, clean your own equipment as thoroughly as possible to allow them to be collected for later use. After this, remove the tape on your legs and sleeves. Clean people help you take off your gloves, the protective overalls and, lastly, your boots. Use the disposable overalls to wipe your boots when you take them off. You may remove your own waterproofs if they are not covered in oil. The disposable overalls and the tapes are disposed of with the mixed oily waste, but all other equipment is sorted by type into a group of collection bins for cleaning, and will be reused the next day. After you have taken off the waterproof clothing, clean people will hand you your own shoes; after putting on your shoes, you are ready to move to the clean area. Clean people help everyone exiting the contaminated area to take off their equipment; after this, they help each other. The group leader is the last to take off their protective clothing.

DISPOSING OF OILY MATERIALS

The oily material collected on the shore must always be delivered to a hazardous waste collection site, and the authorities are always responsible for its transportation. In the collection stage, waste on the shore is collected in buckets and sorted by type into a group of waste collection bins in accordance with official instructions, before being transported to the waste reception point, which is also known as the intermediate storage. In its most simple form, the sorting only involves two separate containers, one for oily waste and one for everything else. The manner in which the waste is sorted always depends on the case. For instance, mixed oily waste (protective equipment) are likely to be collected separately from oiled, organic materials.

The location of the intermediate storage is determined by the authorities, but in order to avoid spills, all volunteers should be aware of the basic procedures related to intermediate storage. The intermediate storage points must be set up in locations where even storm waves cannot reach them and wash the oil bags into the sea. However, the location should be close to the oiled beach to avoid having to carry the bags unnecessarily far.

The floor of the intermediate storage must be level. If possible, the floor can be covered with a plastic or absorbent mat. The intermediate storage should be banked in case some of the bags are broken. Remember to check that there are no ditches leading from the intermediate storage to the surrounding nature. After the clean-up procedure following an oil accident has been completed, the intermediate storage and its surroundings must be cleaned carefully.

The authorities are responsible for taking care of the oily waste, and they should organize the equipment required for transporting the waste. When loading and transporting the waste, pay attention to avoid any oil leaks.

CLEANING DIFFERENT TYPES OF SHORES

Particular care is recommended when cleaning up shores to prevent the work from causing more harm than good. Disturbing the natural environment should be avoided. Shores should not be modified during the cleaning process unless absolutely necessary. Removing soil and vegetation from the shore causes erosion, deteriorating the living conditions of various species. Erosion may also be caused by trampling on the undergrowth. You should be particularly careful when cleaning sensitive coastal habitats. It is important that the detailed instructions provided by environment and rescue authorities concerning the suitable methods for cleaning specific types of shores are always followed. Caution, good organisation and care are also necessary to guarantee your own safety.

Bedrock and rocky shores

Waves and currents wash the oil off bedrock shores fairly easily. On bedrock shores, oil is primarily collected in crevices, cracks and holes, which is a factor that can be exploited during the cleaning process. Rounded tools, such as spades or floral shovels, are good for digging oil out of cracks and holes. On bedrock shores, oil may remain above water level, out of the reach of waves. Flatbottomed tools, such as snow shovels, bailers, children's plastic shovels or trowels are best for cleaning a smooth bedrock shore.

On rocky shores, the oil is not washed off as easily as on bedrock shores. Oil is likely to get stuck between and under stones. It may be necessary to get the oil out from between the stones during the finishing stage. It is a good idea to lift and move the stones to allow cleaning under them. Any stones moved must be returned to their places after cleaning. Excess moving and removing of stones is not recommended, as it causes erosion and modification of the shore.

Thin, rounded tools are the best choice for rocky shores. These tools allow you to access the oil in crevices and cracks. On rocky shores, it is a good idea to take advantage of the possibility of making holes yourself. You may either move the stones or dig a hole yourself and then let the oil flow in, making it easier to recover it.

On bedrock and rocky shores, a pressure washer can also provide a suitable recovery method. If one is used, it



is important that the safe recovery of the oily wash water is also ensured. Stones can be taken away from the shore to be washed in, for example, a concrete mixer..

Sandy beaches

Beaches are often in recreational use, and thus need to be cleaned thoroughly. It is essential that the heavy oil mass on the sand is removed. The best tools for the work are flat-bottomed tools, such as snow shovels, bailers and plastic shovels.

In addition to the oily mass, the oiled sand must also be removed or cleaned. Heavy oils can penetrate into the sand to a maximum depth of 25 centimetres, but lighter oils may go deeper, especially on beaches with large waves and strong movement of the sand. The authorities or contractors are responsible for this task, as cleaning and moving large masses of sand requires heavy equipment.

Reed beds and other aquatic vegetation

Cleaning oiled reed beds is difficult, so it is recommended that the reeds are cut down. Only start cutting the vegetation when the surrounding water areas have been cleaned. An oiled reed bed must be surrounded with oil booms to stop the oil from spreading to clean areas when the reeds are being cut. The reeds are cut just below the water's surface. A traditional scythe is a good tool for the task. After the reeds have been cut, the area is inspected and if any oil is detected, it is cleaned.

Oiled reeds are collected in a pile and disposed of in accordance with official instructions, similarly to all other contaminated aquatic vegetation.

DEGREE OF CLEANIN

When is an oiled beach considered clean? There is no simple way to answer this question; the decision to finish the work is always case-specific. Many factors affect the decision, including the amount of oil on the shore, the duration of the cleaning operation, the resources available and the type and resilience of the shore. The decision to finish the oil spill response operation is always made by the authorities.

From the perspective of the objectives of oil spill response, it would be preferable to remove all of the oil from the shore. However, removing the oil entirely may be difficult or even impossible, especially if large volumes of oil have reached the shore. In these cases, the shore is cleaned as thoroughly as possible and to the extent possible with the available resources. If only small, individual oil slicks and tar balls have drifted to the shore, it is recommended

to recover all of the oil on the shore.

Sometimes sufficient resources are not available. It may be necessary to move oil spill response teams from less important cleaning locations to more significant ones, and consequently, the cleaning in the first area may be left unfinished. Sometimes there is not enough time; this could be the case in autumn, as bodies of water and shores are covered by ice and snow.

Sometimes it may be justifiable to leave different types of shores cleaned to different extents. For instance, ecologically significant areas and shores in recreational use, such as boat harbours and beaches, are cleaned with particular care. On the other hand, it may be reasonable to not disturb birds by recovery activities during their nesting season, especially if the level of oil contamination is low. A steep bedrock shore is much more resilient to oil spills than a sheltered cove covered by dense vegetation.

FINISHING

Tools suitable for finishing the cleaning of shores include buckets, plastic bags and different brushes, such as street-sweeping and dishwashing brushes. Oiled surfaces are brushed clean. If the oil does not come off by brushing, eco-labeled dishwashing liquid or another agent can be applied. Strong solvents must not be used, as they are equally harmful and toxic to nature as the oil itself. To stop the brushed-off oil and oily washing water from entering the sea, the area should be restricted with absorption or protective booms.

Oil stuck on shore material can also be removed by rinsing. Normal water hoses or various pressure washers are suitable tools for the rinsing. If the shore is rinsed, oil booms must be used to contain the oil in the area by the shore. Rinsing is generally a suitable method for hard surfaces that have no vegetation. High pressure or excessively high water temperatures may cause the oil to penetrate the soil, damaging vegetation and causing erosion. If the surface of the oil has dried, it may be necessary to scratch it off the rock and stones using a spatula.

Various absorbent materials, such as peat, woodchips, sawdust or industrially manufactured materials, can also be used for finishing the work. The absorbent materials are spread over the oil using a rake or a brush. Once the oil has been absorbed, the material is collected and stored in a similar manner to all other oily waste. However, caution is recommended when using absorbent materials, as material that has absorbed oil and liquid may become heavier than water and sink under the surface. Absorbent materials may also be used to protect clean areas.



6. TREATING OILED ANIMALS

According to the Finnish Animal Welfare Act, all wild animals in distress must be helped.

However, capturing, treating and cleaning oiled animals requires training and experience. These tasks are coordinated by authorities and experts, and the necessary workforce is complemented by volunteers who have received special training.

If you encounter any oiled animals, you are obliged to report the observation to the authorities leading the response activities. When necessary, they will arrange staff specialised in treating oiled animals to be present at the location.

In 2006, the Finnish Oil Pollution Compensation Fund granted the Eastern Uusimaa rescue department the funds to purchase a mobile unit for treating oiled birds. The unit can be quickly transported to accident locations on the coast of Finland or nearby areas. The unit is essential for animal rescue operations. The WWF and

SYKE cooperate to organise the volunteers working at the unit. Those participating in the treatment of animals work as a separate team that is a part of the oil spill response operation. They are provided with applicable training concerning the handling and cleaning of animals. The WWF has also published a guide on the treatment of oiled animals. The guide is available on the WWF website.



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WWF FINLAND OIL SPILL RESPONSE

Oil spill response troops

Established in 2003, the WWF's voluntary oil spill response team provides aid in the recovery work following an oil accident.

Helping the authorities

The voluntary oil spill response team helps the authorities with tasks such as cleaning shores and treating oiled animals.

Training

The WWF organises oil spill response volunteer training in different parts of Finland several times a year.

Join us

Anyone who is between 8 and 69 years old and in good health may join the oil spill response team.



Working to sustain the natural world for the benefit of people and wildlife.

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