Incident information sheet of KERCH STRAIT 2007

On 10 and 11 November 2007, a heavy storm hit the Kerch strait, located between Ukraine in the west and Russia in the east and linking the Sea of Azov (in the north) to the Black Sea (in the south). Winds of over 110 km/h caused high waves over 5 metres high in shallow waters, where the depth varies from 7 to 12 metres.

Many vessels ignored the Ukrainian severe weather warning and found themselves in very rare sea and weather conditions for this region.

These conditions caused serious damage to around ten vessels, most of which were anchored. At least 4 sailors are known to have died and 19 others were reported missing.

Location of the Kerch Strait ©Wikipédia

- On 11 November, four vessels sank in the Strait:
- The Russian oil tanker *Volgoneft-139*, which broke in half, while transporting a cargo of 3,500 tonnes of IFO 180. A spill of about 1,300 tonnes came from the tanks of the back part of the tanker and the 1,000 tonnes of oil that remained on board were pumped out before the vessel was towed to Kavkaz Harbour. A slight residual leak was noted on the front of the vessel, which ran aground, where about 1,000 tonnes of oil remained.
- The Russian bulk carrier *Volnogorsk* sank to a depth of 10.6 m with a cargo of 2,500 tonnes of sulphur. No marine fuel leak was noted.
- The Russian bulk carrier *Nahichevan* sank to a depth of 9.5 m with a cargo of 2,400 tonnes of sulphur.
- The Russian bulk carrier *Kovel*, carrying a cargo of 2,100 tonnes of sulphur, drifted towards the Ukrainian coasts and sank to a depth of 9.3 m in the middle of the Strait. Divers assessed the wreck and noted a light fuel spill coming from the damaged engine.

In total, the oil spill is estimated to 1,300 tonnes of heavy fuel oil, 2.3 tonnes of lubricant, 25 tonnes of marine diesel fuel, and 5.5 tonnes of domestic fuel.

Location of the Kerch Strait ©BLACK SEA COMMISSION

Response and impacts

During the days following the incident, the weather conditions remained unfavourable, making spill response operations difficult, especially at sea. The first actions on land mainly consisted of shoreline surveys and manual recovery operations in less exposed areas.

According to the Marine Coordination Emergency and Rescue Center in Kerch, on 21st November, more than 500 people from the Ukrainian Ministry of Emergencies and civilian volunteers were involved in shoreline clean-up, as well as 30 surveillance vessels and 15 vessel cleaning units. The quantity of waste recovered was around 1,700 tonnes in Ukraine and 13,000 tonnes in Russia.

In total, several dozen kilometres of coastline were oiled, both in Russia (Taman Peninsula, Chushka Spit) and in Ukraine (areas of Kerch, Zhukovka, Podmayachnaya, Geroevka, Opasnaya and Tuzla island).

Through response operations, around 200 tonnes of heavy fuel oil was recovered and approximately 70,000 tonnes of oiled waste (sand, oil, debris and vegetation) was removed to be disposed of in Russia and 6,500 in Ukraine.

Significant bird mortality was recorded; the Russian government reported that around 30,000 birds had been killed, although this figure remains to be confirmed.

According to the Russian authorities, the cost of environmental damages could be up to €170 million. This was the largest oil spill the country had ever faced.

European assistance

On 14 November, assistance was offered to the Ukrainian and Russian authorities by the European Commission in response to this pollution in the Sea of Azov. On the 16th, the Ukrainian authorities accepted this offer. As part of the European Community Civil Protection Mechanism, the Monitoring and Information Centre (MIC) appointed a team of 5 European experts, including a representative of CEDRE. On 18th November, the team left for Kiev from Rome in an Italian civil protection plane.

Ten days after events first began, these experts visited several polluted sites in Ukraine. The objectives of the EU team were to assist the Ukrainian authorities in

assessing the environmental impact of the disaster, to observe the development of the pollution and to advise on the most appropriate clean-up methods.

Risks for sulphur pollution

Pollution from oil cargo is, sadly, a usual type of pollution. Response methods are well-known and depend on the specific characteristics of the products spilled. It is also noted that the amount spilled here (around 1,300 tonnes) is significantly higher than the amount of the spill from the Cosco Busan container ship in the Bay of San Francisco on 7 November; it is also significantly lower than the amount of past spills such as the Erika (20,000 t), the Prestige (64,000 t) and the Amoco Cadiz (227,000 t).

Pollution by sulphur was not well-known at the time. The reference for an incident involving a sulphur tanker was the modified SS *Marine Sulphur Queen* oil tanker, which sank without warning between the 3 and 6 February 1963 off Florida, in the infamous Bermuda Triangle. An unidentified wreck, which could be the *Marine Sulphur Queen,* was filmed by a crew of divers in 2001. They observed the presence of a luxurious flora. No impact study was carried out following this pollution incident. Aware of the risks linked to sulphur export from the Lacq reservoir, leaving from the port of Bayonne, a synthetic operational guide was written in 1989 on how to respond to a spill of sulphur. It contained essential information on the behaviour of sulphur in water as well as risks for man and for the environment.

You'll find some extracts below:

Essential information on sulphur

Sulphur is transported as a solid (powder) or liquid (ambient pressure and minimum temperature of 136°C). Although it is not volatile, the dust present in the air can, when exposed to a flame or to heat, create explosive and flammable mixtures.
Sulphur is flammable and its flames are almost invisible. It produces a highly toxic gas: sulphur dioxide (SO_2).
In the event of a fire, responders must then wear protection equipment, respiratory equipment and carry explosimeters.
When released in water, liquid sulphur creates a paste that sinks without dissolving and creates a localised pollution on the sea floor.
Solid sulphur stored in bulk naturally produces a small amount of sulphured hydrogen (200 to 300 ppm), which varies depending on the origin of the production and the production method. This process is however very slow.

Immediate effects on the environment

A spill very rarely leads to the presence of free colloidal sulphur which can have a negative impact on aquatic biocoenosis (noticeable effects between 1.6 and 10 g/l).
The biocidal properties of sulphur on plant parasites is confirmed (particularly on vines).

Persistence in the environment

In water, sulphur can slowly oxidise as sulphates through microbes.
In soil, it is more rapidly biotransformed by micro-organisms.

Response for spills at sea

solid or melted sulphur sinks. In shallow waters, it can be recovers by suction or dredging. It is then placed in retention tanks before treatment.

Waste treatment/disposal

The collected sulphur must never be directly rejected in surface waters of in sewer systems.
It is usually not advised to burn it since doing so would produce sulphur dioxide (SO_2). Sulphur can be covered or mixed with calcium carbonate ($CaCO_3$) (three volumes of $CaCO_3$ for one volume of sulphur), then buried in a HNS specific dump.

It is highly recommended to contract a specialised recovery company.