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Facing the challenge of the safety of offshore oil and gas activities

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1. OFFSHORE EXPLORATION AND PRODUCTION ACTIVITIES IN EUROPE

Indigenous oil and gas production in Europe

While the European Union (EU) is heavily and increasingly reliant on the imports of both oil and gas, indigenous production still makes an important contribution to our energy consumption. This is particularly true if the production of Norway, a member of the European Economic Area (EEA), is also taken into account. In 2009, oil production in the EU + Norway amounted to 196 million tons, while gas production totalled 269 million tons of oil equivalent. In 2008, the production of oil and natural gas was 220 million tons and 255 million tons of oil equivalent, respectively (see Table 1).

Table 1 - Primary production of oil and gas in Europe

Country	Crude oil and feedstocks (million tons)	Natural gas (million tons of oil equivalent)
BE	0.0	0.0
BG	0.0	0.0
CZ	0.3	0.2
DK	12.9	8.3
DE	4.5	12.2
EE	0.0	0.0
IE	0.0	0.4
EL	0.1	0.0
ES	0.2	0.0
FR	1.0	0.8
IT	5.4	7.4
CY	0.0	0.0
LV	0.0	0.0
LT	0.1	0.0
LU	0.0	0.0
HU	0.9	2.2
MT	0.0	0.0

NL	1.7	63.3
AT	1.0	1.6
PL	0.6	4.1
PT	0.0	0.0
RO	4.5	10.3
SI	0.0	0.0
SK	0.0	0.1
FI	0.0	0.0
SE	0.0	0.0
UK	64.5	59.0
EU-27	97.6	169.9
NO	98.3	98.8
EU-27 + NO	195.9	268.7

Source: Statistical Aspects of the Oil Economy in 2009 (Eurostat), Statistical aspects of the natural gas economy in 2009 (Eurostat)

In the EU + Norway, over 90% of oil and over 60% of gas produced is coming from off-shore operations, mostly in the North Sea and the Norwegian Sea. In the North Sea, there is hydrocarbon production in the Danish, Dutch, German, Norwegian and UK sections. At a much lower scale, off-shore production is also taking place in the Mediterranean (mainly in Italian waters) and the Black Sea (mainly in Romanian waters).

Number of off-shore installations

The offshore oil and gas industry uses various types of installations. Some of these are fixed to the seabed (e.g. platforms), others are mobile (e.g. rigs, drilling vessels). In Europe, mobile units are usually but not exclusively used for drilling new wells. Many of the installations are located fully under sea level (subsea installations).

As there is no universally accepted definition for off-shore installations, it is difficult to find comparable statistics across the world and even across Europe. Mobile units can be easily moved from one country or region to another, making it difficult to find up-to-date figures. Nevertheless, the available figures clearly reflect the predominance of the North Sea in European oil production.

The database of the OSPAR Commission¹ lists 1,340 offshore installations operating in the North-East Atlantic region; from these, 1,170 are indicated as operational.

According to data from national regulators, there are 486 off-shore installations in the UK, 345 in Norway, 181 in the Netherlands, 61 in Denmark, 2 in Germany, 2 in Ireland. The majority of installations in the North Sea are fixed platforms or subsea installations; less than 8% of them are mobile (see Table 2).

Table 2 - Existing installations in the North Sea and surroundings

Installations	Denmark	Faroes	Germany	Netherlands	Norway	UK	Total
Fixed	55	0	2	154	66	270	547
Mobile	3	0	0	7	31	43	84
Subsea	3	0	0	20	248	173	444
Total	61	0	2	181	345	486	1 075

Source: national authorities

In addition, a further 96 installations are planned; most of these are subsea installations (see Table 3).

Table 3 - Planned installations in the North Sea and surroundings

Installations	Denmark	Faroes	Germany	Netherlands	Norway	UK	Total
Fixed	5	0	0	0	3	1	9
Mobile	4	1	0	0	3	3	11
Subsea	0	0	0	0	57	19	76
Total	9	1	0	0	63	23	96

Source: national authorities

In the Mediterranean, Italy has the most off-shore installations, 123. These are located in the Adriatic Sea, in the Ionian Sea and in the Sicily Channel. The majority of these produce gas. Spain has 2 installations in the Mediterranean, one of which is currently under construction. (Spain has another 2 installations in the Atlantic Ocean.) There are 2 installations in Greek waters, in the North Aegean Sea, close to the island of Thassos. No operating installations are reported in the Cypriot, French, Maltese and Slovenian sectors but some of these countries had drilling activities in the past (France) or plan to start drilling activities in the near future (Cyprus and Malta).

¹ <http://www.ospar.org/zip/SZ20100902-124151-6993/download.zip>

Off-shore activities are also taking place in the Mediterranean in the waters of non-Member States, including Croatia, Egypt, Israel, Libya and Tunisia. However, it is difficult to find comprehensive data on the installations located in these waters. Production in the waters of these countries is modest but there is significant exploration activity, particularly in Egypt and Libya. A number of European and US companies, including BG Group, BP, ENI, ExxonMobil, GDF Suez, RWE Dea, Shell, Statoil and Total are active in this region. BP's plans to drill five wells in Libyan waters has received much publicity recently; according to press reports the company decided to delay the start of the work (originally planned for the summer of 2010) to later this year in order to make sure all precautionary measures are in place.

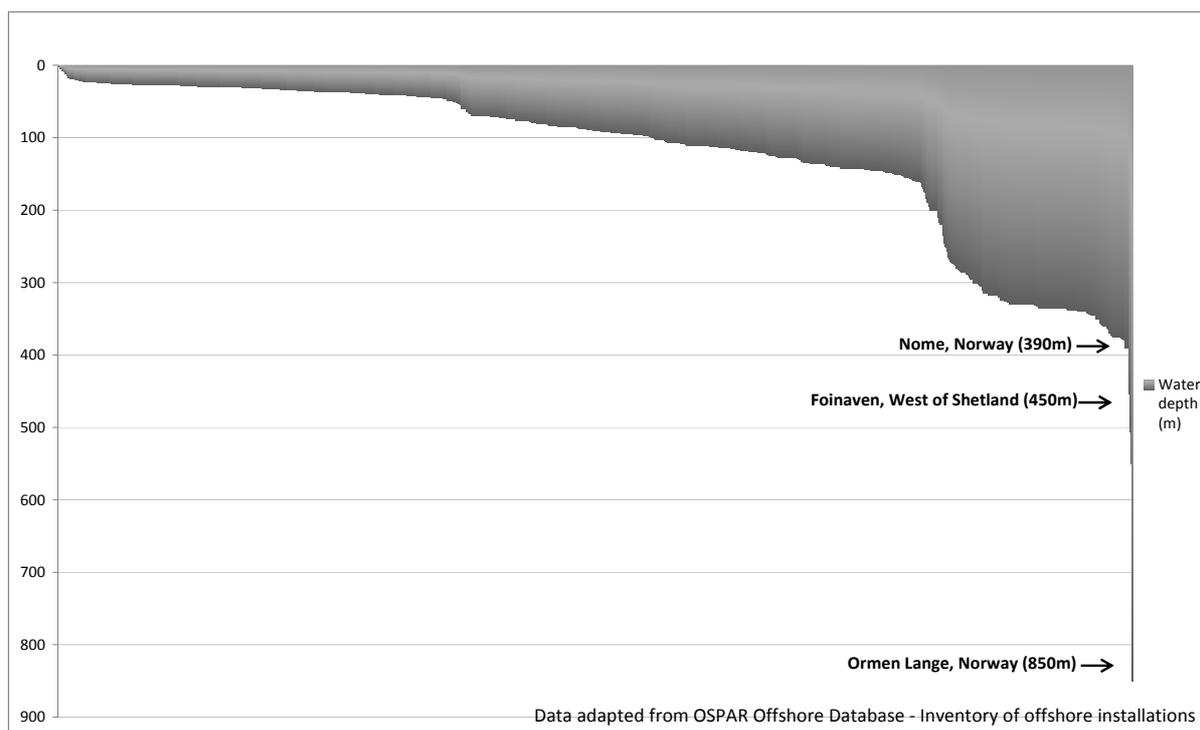
In the Black Sea, exploration and production activities have been conducted for more than 30 years. At present, Romania is the only sizable producer. In this country, OMV Petrom operates 7 platforms and from time to time contracts a drilling rig. Recently, other companies have been also awarded licenses in Romanian waters. Exploration is also planned or carried out in Bulgarian, Georgian, Russian, Turkish and Ukrainian waters. Companies active in the region include ExxonMobil, Lukoil and Petrobras. The Bulgarian government has recently opened the tender for granting a license for exploration and production in the "Silistar" bloc.

Depth of operations

There is no direct correlation between the sea depth and the risk of drilling; the latter is also influenced inter alia by the temperature and the pressure in the reservoir. Nevertheless, it is certainly true that the deeper the sea is, the more difficult it becomes to intervene in case of a critical event like a blow-out. While in relatively shallow waters human intervention is feasible (divers can operate safely in a maximum depth of 200-250 metres), in deeper waters the operators have to resort to remotely operated underwater vehicles. In shallow waters it is also possible to fix the installations to the sea bottom, thereby eliminating the risk of sinking. In contrast, deepwater installations like the ill-fated Deepwater Horizon rig are typically floating.

Most off-shore operations in European waters take place at relatively small sea depth, especially when comparing with the Gulf of Mexico. According to the OSPAR database, in the North-East Atlantic region, which includes the North Sea and the Norwegian Sea, over half of the wells (including all wells in the Danish, Dutch and German sections of the North Sea) are at a water depth of less than 100 metres and over 80% of them are at sea depth of less than 200 metres. Orman Lange (in Norway) is the well operating in the largest sea depth, at 850 meters (see Figure 1).

Figure 1 - **Water depth of wells in the North-East Atlantic** (in metres)



Source: OGP

From the 1 075 installations reported by national authorities in and around the North Sea, 191 are located in water depth exceeding 250 metres, mostly in Norway where over half of the facilities operate in such depth (see Table 4). According to data from the Norwegian regulator, offshore activities are taking place in water depths of up to 1,300 metres. In Denmark, Germany and the Netherlands the maximum attainable sea depth is 50-70 metres.

Table 4 - Water depth of existing installations in the North Sea and surroundings

Water depth	Denmark	Faroes	Germany	Netherlands	Norway	UK	Total
< 250 m	61	0	2	181	161	479	884
250 m +	0	0	0	0	184	7	191
Total	61	0	2	181	345	486	1 075

Source: national authorities

From the 96 planned installations, 56 are to be located in water depth exceeding 250 metres (see Table 5).

Table 5 - Water depth of planned installations in the North Sea and surroundings

Installations	Denmark	Faroes	Germany	Netherlands	Norway	UK	Total
< 250 m	9	0	0	0	10	21	40
250 m +	0	1	0	0	53	2	56

Total	9	1	0	0	63	23	96
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Source: national authorities

While in most of the North Sea the water is shallow, the environment is considered hostile with frequent storms and high waves. In addition, there is a tendency in this region to move to deeper waters. For example, exploration activities are planned in the UK, west of Shetlands at sea depths of up to 1,600 metres, near the Faroe Islands at sea depths of 1,100 metres and in Norway at up to 1,700 metres.

In the Mediterranean, existing operations in Italy and Spain take place at sea depth of less than 200 metres. However, there had been drillings in deeper waters. The Aquila oil field in the Otranto Channel, in Italy, is located under about 800 meters of sea level, but operations are currently suspended. In Spain, two new wells were drilled in 2009 at a depth of about 600-700 metres but these are not yet operational. In France, two wells were drilled in the 1980s at water depths of 1,700 and 1,250 metres, respectively.

Exploration activities are planned in several areas with higher water depths. For example, drilling is planned in waters of up to 400 metres in Maltese waters. In the countries of North Africa, exploration is taking place and planned in both shallow and deep waters. In Libya, ExxonMobil drilled two wells over the past 12 months at 1,488 and 1,934 metres, respectively, while BP's planned operations would take place in water depths of 300 to 2,200 metres. In Egypt, operations are planned in even deeper waters: for example, Statoil plans to drill a well in about 2,700 metres water depth.

In the Black Sea, off-shore activities (mostly in Romania) have traditionally been conducted in water depths of less than 100 meters but in recent years exploration was extended to deepwater areas. In Romania, a licence has been awarded to a consortium for exploration in water depth of 1,000 metres but no drilling activity is planned in the next 18 month in this sector. In the Turkish section of the Black Sea, the first deep-sea well was drilled in 2005 at 1,500 metres and licenses were awarded in blocks with over 2,000 metres water depth.

While activities in the Mediterranean, the Black Sea and the Baltic Sea are at a relatively low scale and conditions in these regions – at least in terms of weather – are not as harsh as in the North Sea, for geographical reasons these seas are considered more vulnerable to a potential spill (closed seas with limited natural change of water). Moreover, exploration in these areas is on the rise, particularly in waters of non-Member States.

Age of installations

The North Sea is a mature production area which is reflected in the age of installations. In Norway, roughly half of the offshore structures have already exceeded their original design life² while in the UK more than half of the fixed platforms have exceeded their original design life or will do shortly³. This raises concerns regarding, on the one hand, about the safety of operations of these installations and, on the other hand, about the environmentally acceptable way of their decommissioning.

² Source: <http://www.ptil.no/ageing-and-life-extension/category626.html>

³ Source: http://www.offshore-mag.com/index/article-display/9114015229/articles/offshore/equipment-engineering/north-sea-northwest-europe/2010/08/hse-launches_uk_platform.html

In the questionnaire submitted to the industry the Commission raised the issue and asked whether the age of installations poses particular kinds of risks. In their reply, companies stressed their full commitment to safety, regardless of the location and the age of installations and reported on large investments made in the North Sea area in recent years to maintain the integrity of the mature assets.

This issue of asset integrity is of equally major concern to regulators. Some national authorities have already been taking concrete steps in this area. In the UK a three year "Ageing & Life Extension Inspection Programme" has been recently launched to review company policies in relation to old installations. The issue of decommissioning is also addressed in the OSPAR Convention (see Section 2).

Safety record

Offshore oil and gas operations (extraction of volatile substances sometimes under extreme pressure and in a hostile environment) naturally entail risks. Yet, the European offshore industry boasts an improving safety record which is comparable e.g. to agriculture or the construction industry.

In the past, the European offshore industry has seen some serious accidents. In July 1988, 167 people died when Occidental Petroleum's Piper Alpha offshore production platform, on the Piper field in the UK sector of the North Sea, exploded after a gas leak. This incident led to major changes of the UK offshore safety policy and had repercussions in other countries as well.

Continuous efforts to effectively manage the risks resulted in a significant reduction of the number of incidents. According to the survey of the International Association of Oil and Gas Producers (OGP), 99 fatalities were recorded globally in the exploration and production sector in 2009 (compared to 103 in 2008). The Fatal Accident Rate was the same offshore and onshore: 2.8 deaths per 100 million hours worked. 22 of the fatalities occurred in the offshore sector (2 of which in Europe); the most common single cause was related to air transport (8 fatalities)⁴. Serious incidents in the industry (resulting in fatalities and/or environmental or other material damage) are usually not related to rigs/platforms but rather to tankers and pipelines.

For example, in the UK no fatalities were reported in the last 3 years (2007/2008, 2008/2009 and 2009/10). 50 major injuries were reported in 2009/2010 which is slightly more than the average over the previous five years. Most major injuries were related to slips/trips/falls. The combined fatal and major injury rate was 187.0 per 100,000 workers in 2009/2010 compared to 177.4 over the previous five years. In 2009/2010, 85 major and significant hydrocarbon releases were reported; this compares to an annual average of 73 over the previous five years⁵.

In the Norwegian Continental Shelf, one fatality was reported in 2009. 329 cases of injury were registered; this corresponds to an injury frequency of 8.5 per million man-hours. For

⁴ Source: Safety performance indicators – 2009 data, OGP Report No. 439 (<http://www.ogp.org.uk/pubs/439.pdf>)

⁵ Source: HSE Offshore safety statistics bulletin 2009/10 (<http://www.hse.gov.uk/offshore/statistics/stat0910.htm>)

serious injuries the frequency is 0.77 per million men-hours; this is significantly lower than the average for the preceding ten-year period⁶.

2. REGULATORY ENVIRONMENT

Offshore oil and gas operations in European waters are regulated by a complex regulatory framework. In addition to EU legislation and the national legislation of individual Member States, the United Nations Convention on the Law of the Sea and other international conventions also play an important role. Most EU legislation in the field is in the form of directives which have to be transposed into the national legislation of Member States.

2.1. EU legislation

In addition to describing the relevant primary and secondary legislation, this section also investigates to what extent the EU legislation is applicable to the offshore oil and gas industry and what improvements seem desirable in order to ensure a high level of safety in European waters.

EU treaties

The *Treaty on the Functioning of the European Union* (TFEU) establishes a new provision on energy policy⁷. The Treaty contains provisions for the protection of workers' safety and health, allowing the adoption of minimum requirements in this field⁸ and for the protection of the environment, including the precautionary principle and the polluter pays principle⁹.

EU legislation on the authorization of offshore activities

In line with the provision of the TFEU about Member States' right to determine the conditions for exploiting their energy resources, their choice between different energy sources and the general structure of their energy supply, it is up to each Member State to issue licences and other approvals necessary for the exploration and production of hydrocarbon resources within its territory and in waters falling under its jurisdiction. Each Member States sets its own conditions and requirements to be met for license awards. *Directive 94/22/EC of the European Parliament and of the Council of 30 May 1994 on the conditions for granting and using authorizations for the prospection, exploration and production of hydrocarbons*¹⁰ deals only with competitive aspects of Member States' licensing procedures, ensuring equal access to national bidding rounds for entities from all of the EU.

At the same time, it is clear that decisions of individual Member States in approving activities off their shores can have a direct and significant impact on other Member States. First, it is clear that oil spills resulting from offshore accidents do not recognize political or geographical borders and can equally affect the shores of more than one state. Second, and perhaps even

⁶ Source: PSA Summary Report 2009 – Norwegian Continental Shelf – Trends in risk level in the petroleum activity (<http://www.ptil.no/getfile.php/PDF/RNNP%202009/Trends%20in%20risk%20levels%20-%20Summary%20Report%202009.pdf>)

⁷ Article 194(2).

⁸ Article 153(1) and (2).

⁹ Article 191(2), first indent.

¹⁰ References to the EU legislation mentioned in this document can be found in the Annex.

more importantly, the experience from the recent events in the Gulf of Mexico shows that offshore accidents can affect more than just coastal areas and their local economies.

Major accidents resulting in massive oil spills can bring not only environmental but also economic and social damage. They risk putting in doubt the very public acceptance of the offshore hydrocarbon industry, something no developed country today can afford without serious implications for its energy security and ultimately its economic and social situation. In addition, the proper functioning of the internal market may require setting licensing conditions to ensure that safety, health or environment are not compromised.

Although most investigations of the causes of the accident in the Gulf of Mexico are still ongoing, some early lessons can already be drawn. First, each offshore operation in the oil and gas industry should be carried out only if its conditions and the capacities of the operator allow for effective and quick intervention in case of a critical event in any part of the operation.

Second, it is equally important that the operators have the financial capability to handle the consequences of unexpected events. The accident in the Gulf of Mexico has demonstrated how extensive the financial consequences can be in case of really serious accidents. The EU has to ensure that all operators active in its waters could assume their potential financial obligations. On the other hand, EU waters should not remain open only to a handful of the largest global companies. Appropriate instruments or regulatory provisions may be needed to ensure that European offshore remains an area of vibrant competition and at the same time guarantees the unequivocal responsibility of operators.

EU legislation on equipment

EU product safety legislation has been making already for many years an important contribution to the safety of equipment used in the oil and gas sector. Several product safety directives have a bearing on the sector, namely *Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (Machinery Directive)*, *Directive 97/23/EC of the European Parliament and of the Council of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment (Pressure Equipment Directive)* and *Directive 94/9/EC of the European Parliament and the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres (ATEX Directive)*.

The legislation sets out the essential requirements applicable to the equipment concerned and the conformity assessment procedures to be followed by manufacturers before the equipment is placed on the market and put into service. Detailed technical specifications are provided by harmonized European standards developed by the European Committee for Standardization (CEN) and the European Committee for Electrotechnical Standardization (CENELEC). In addition to general standards, there is currently a harmonized standard for some specific equipment (offshore cranes) and other specific standards are being developed for drill casing elevators and other offshore drilling equipment.

It should be noted that this EU legislation excludes from its scope mobile offshore units and equipment installed thereon. Mobile offshore units are considered as seagoing vessels and their safety is subject to rules established by the International Maritime Organization (IMO) in

the IMO Code for the Construction and Equipment of Mobile Offshore Drilling Units (MODU Code). However, the MODU Code does not cover drilling operations.

Some of the EU and EEA Coastal States consider that it would be useful to apply EU legislation to equipment installed and used on mobile offshore units. The distinction between mobile and fixed units has indeed been overtaken by current technology, since mobile units nowadays frequently remain in place for the lifetime of a well and the equipment of these units is often the same as that used on fixed offshore units.

Further action may be appropriate as regards the standards for well control equipment. Although the causes of the explosion on the Deepwater Horizon rig are not yet fully known, it is clear that the accident involved the failure of its well control equipment, including the blow-out preventer (BOP)¹¹. At present, the Pressure Equipment Directive excludes BOPs from its scope as its provisions are not considered appropriate or adequate for equipment designed for specific applications in particularly severe environments, including undersea wells.

Consequently, the design, construction, use and inspections of well control equipments are currently covered by the national regulations of EU and EEA Coastal States. These regulations are generally performance based, requiring operators to provide proof of safety before drilling or production operations are authorized.

Consultations with competent national authorities of the coastal states of the North Sea indicate that the rules applied by them with respect to well control and blow-out prevention are more stringent than those applied in non-European jurisdictions and may be adequate. However, this needs to be confirmed by further analyses, particularly in the light of the results of inquiries into the causes of the Deepwater Horizon accident; it has to be also confirmed for rules applied by national authorities in other European offshore areas.

EU legislation on the health and safety of workers

As regards the protection of the health and safety of workers in the sector, the Framework Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work is complemented by the sector-specific individual Council Directive 92/91/EEC of 3 November 1992 concerning the minimum requirements for improving the safety and health protection of workers in the mineral-extracting industries through drilling. Specific provisions regarding work equipment used at work are laid down in Directive 2009/104/EC of the European Parliament and of the Council of 16 September 2009 concerning the minimum safety and health requirements for the use of work equipment by workers at work. Other specific directives are also relevant to workers in the off-shore extraction industry such as those addressing noise, vibration, electromagnetic fields, manual handling of loads, safety signs, personal protective equipment etc. This comprehensive and vast regulatory framework was drawn up to provide assurances that the workers, inter alia those working on offshore installations, have optimal conditions for ensuring safe operations of oil production facilities. The directives in the field of health

¹¹ A blowout preventer is a large, specialized valve used to seal, control and monitor oil and gas wells. It has to cope with extreme erratic pressures and uncontrolled flow emanating from a well reservoir during drilling.

and safety at work contain minimum requirements and Member States are allowed to adopt or maintain more stringent protective measures.

A review on the implementation of Directive 92/91/EEC last year concluded that there was no need for changes at that time¹². Once the causes of the Deepwater Horizon accident are known, a further review will be undertaken to confirm if the conclusions of the implementation report are still valid and these conclusions will be submitted to the tripartite Advisory Committee on Safety and Health.

It is also noted that competent national authorities in some Member States and EEA countries have been taking initiative within the North Sea Offshore Authorities Forum (NSOAF)¹³ to explore the need for amendments to Directive 92/91/EEC in light of any new information. A dedicated working group has been set up within NSOAF and intends to identify by April 2011 the common areas where NSOAF members agree improvements are necessary, while reflecting on the Commission's report on the practical implementation of Directive 92/91/EC.

EU legislation on environmental protection

Although technical or working condition standards are important for minimizing operating risks a strong, comprehensive and clear environmental legislation also reinforces, including through economic incentives, the compliance of operators with applicable technical rules. Clear provisions on the responsibility for clean-up operations and on the ultimate liability for any caused damage discourage the operators from underestimating the risks or compromising on safety measures. Sustainability criteria and environmental protection obligations can limit the risks to manageable levels.

There is at present a whole system of legislative measures within the EU environmental legislation aimed at pollution prevention. Built on the precautionary principle enshrined in the primary legislation, it consists of *Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control (IPPC Directive)* and *Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment (Environmental Impact Assessment Directive)*, as amended by Directive 97/11/EC, 2003/35/EC and 2009/31/EC.

The IPPC Directive requires industrial and agricultural activities with a high pollution potential to have a permit. This permit can only be issued if certain environmental conditions are met, so that the companies themselves bear responsibility for preventing and reducing the pollution they may cause through their industrial operations. Under the Environmental Impact Assessment Directive, proposed projects' likely significant effects on the environment have to be assessed and the necessary measures to prevent, reduce and – where possible – offset any significant adverse effects identified prior to authorisation. The extraction of petroleum and natural gas falls under the scope of the directive. The EMAS Regulation implements EMAS (Eco-Management and Audit Scheme) which is a voluntary environmental management

¹² Report from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions on the practical implementation of Health and Safety at Work Directives 92/91/EEC (mineral extraction through drilling) and 92/104/EEC (surface and underground mineral extraction) - COM(2009) 449.

¹³ NSOAF brings together the competent regulatory and supervisory authorities of North Sea coastal states dealing with offshore oil and gas operations.

system, under which companies and other public organisations evaluate, manage and continuously improve their environmental performance.

In addition, *Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy* (Marine Strategy Framework Directive) establishes a process through which Member States have to develop strategies to reach the objective of Good Environmental Status in 2020. The assessment of the present situation by each Member State is required in 2012; the necessary measures for reaching the objective must be in place by 2015. Measures are expected to address the cumulative impacts of specific sectors offshore (including fisheries, shipping, dredging, offshore renewables, bio-prospecting) and land-based (agriculture, industry, waste management, wastewater treatment) that may have an impact on the marine environment.

EU legislation on waste and on environmental liability

As regards the responsibility for the clean-up of any oil spill and the liability for damages caused by it, EU legislation is based on the "polluter pays" principle¹⁴. This principle is reflected in secondary legislation that may apply to offshore accidents, mainly in *Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste* (the Waste Framework Directive) which is replaced by *Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives*, to be transposed by 12 December 2010, and in *Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage* (Environmental Liability Directive).

The Waste Framework Directive provides that EU waste legislation applies fully to offshore rigs and platforms operating not only within the territorial waters of any Member State but also their Exclusive Economic Zones (EEZ)¹⁵ and, where appropriate, to the continental shelf as coastal states have jurisdiction on installations located on the continental shelf. Directive 2008/98 does not modify this legal situation. Furthermore, oil escaping from an offshore installation is covered by the EU definition of waste and the qualification of oil spilled into sea as waste suffices for imposing the obligation to the polluter of cleaning up (Article 15 of the Directive). No demonstration of fault is needed; the mere fact that oil has been released into the marine environment may lead to imposing obligations on the producer of the waste. In case of oil escaping from offshore installations, the operator would be regarded as the producer or holder of waste and would, in accordance with the polluter pays principle, bear

¹⁴ The "polluter pays" principle is spelled out in Article 191(2) of the TFEU stating that "Community policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Community. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay." An obligation to apply the principle directly in individual cases without intermediate secondary EU legislation implementing it cannot be derived from the Treaty. Cf. ECJ judgement of 9 March 2010 in the case C-378/08, *Augusta roadstead* (paragraphs 45, 46).

¹⁵ While its territorial waters extend to maximum 12 nautical miles from the coast of a Member State, the Exclusive Economic Zone covers the area of up to 200 nautical miles. To the extent that a Member State claims such zone, it is obliged to apply in it all EU legislation unless it is specified otherwise in individual cases.

the costs of waste management. The clean-up obligation follows clearly from European Court of Justice (ECJ) case law¹⁶. The legal qualification of "producer of waste or holder of waste" also relates to mother companies: in this legal framework, subcontracting would not constitute a mean to escape liability¹⁷.

Besides the obligations of waste management, including the clean-up of oil spills, EU environmental legislation also addresses the issue of liability for damages to the environment that can result from an accident or other critical events in offshore activities. The basic legal instrument governing environmental liability at EU level is the Environmental Liability Directive.

The main objective of the Environmental Liability Directive is the prevention and remediation of environmental damage. As such, it aims at restoring the environmental damage to the baseline conditions which would have existed had the damage to the environment not occurred. The scope of environmental damage under the directive is defined as (a) damage to protected species and natural habitats (under the Habitat and Bird Directives), (b) damage to water (under the Water Framework Directive), and (c) damage to land.

The Environmental Liability Directive contains a scope of strict liability for operators who carry out specific activities (listed in Annex III of the directive) and a scope of fault-based liability (i.e. requiring a proof of intent or negligence) for damage caused to protected species and natural habitats (but not for damage to water or to land) by any other occupational activity. The regime which will apply to offshore hydrocarbon installations and rigs in case of an accident is the strict liability regime, i.e. without the need of the proof of fault.

Strict liability for offshore oil drilling operators is derived from Annex III.7 of the Environmental Liability Directive referring to the "Manufacture (...) of dangerous substances"¹⁸.

Furthermore, while the Environmental Liability Directive applies to all the marine waters under the jurisdiction of Member States for the specific purpose of environmental damage to the "protected species and natural habitats" under *Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds* (Birds Directive) and *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora* (Habitats Directive), its coverage of the damage to water only applies to the waters in the coastal strip covered by *Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy* (Water Framework Directive). This gap in the

¹⁶ ECJ case C-188/07 (Commune de Mesquer v Total France SA and Total International Ltd.) provides important jurisprudence. The ECJ in the abovementioned case concerning maritime transport (Erika tanker accident) came to the conclusion that oil accidentally spilled at sea following a shipwreck, mixed with water and sediment and drifting along or being washed at the coast of a Member States constitutes waste within the meaning of the Waste Framework Directive.

¹⁷ See for instance the Van de Walle case (C-1/03) with Texaco being considered as holder of waste or Mesquer case (C-187/03) with Total being potential holder of waste.

¹⁸ As regards the provisions on "Manufacture of dangerous substances" (Annex III.7), reference needs to be made to Regulation 1272/2008 on classification, packaging and labelling of substances and mixtures, which contains definitions of "substance" and "manufacture" which can be principally applied from 1 December 2010 also to oil spills through drilling activities at offshore facilities. The Regulation includes in addition "oil" in several index numbers in its Annex VI.

applicability in the Environmental Liability Directive as regards damage to water is worrying in light of the recent experience in the Gulf of Mexico, where environmental damage to marine waters was clearly not limited to the coastal strip and the territorial sea. The gap should hence be closed to address all the marine waters as defined in the Marine Strategy Framework Directive.

EU legislation on emergency intervention

The EU disposes of various instruments to complement the emergency response/civil protection mechanisms of Member States and industry. The Community Civil Protection Mechanism was established by *Council Decision 2001/792/EC of 23 October 2001 establishing a Community mechanism to facilitate reinforced cooperation in civil protection assistance interventions*. It provides support, on request, in the event of a major emergency and facilitates improved co-ordination of assistance intervention. It covers both civil protection and marine pollution and allows responding to any major disaster inside and outside the EU.

The Civil Protection Mechanism's Monitoring and Information Centre (MIC) is operated by the European Commission and is available on a 24/7 basis. The MIC has 24/7 contact points in both the civil protection and the marine pollution authorities in all the Participating States and coordinates requests and offers for assistance from 31 Participating States: the EU 27, Croatia and the three European Economic Area (EEA) countries - Norway, Iceland and Liechtenstein¹⁹.

The Mechanism has been activated for important marine pollution emergencies in third countries such as in Lebanon (2006), Ukraine, South Korea (2007), and also in EU waters, as in Spain and Ireland in early 2009. During such emergencies the MIC coordinates national marine pollution and civil protection authorities and cooperates with the European Maritime Safety Agency (EMSA).

The European Maritime Safety Agency (EMSA) was established in the aftermath of the Erika (1999) and Prestige (2002) tanker disasters by *Regulation 1406/2002/EC of the European Parliament and of the Council of 27 June 2002 establishing a European Maritime Safety Agency for the purpose of ensuring a high, uniform and effective level of maritime safety, maritime security, prevention of pollution and response to pollution by ships*.

EMSA focuses on marine pollution and emergency preparedness activities related to vessels. EMSA can already meaningfully intervene in case of oil spills from offshore oil facilities as its capacities can cope with an oil spill irrespective of its source.

EMSA operates a state-of-the-art maritime transport monitoring centre around the clock. The agency's CleanSeaNet service is a satellite based monitoring system for marine oil spill detection and surveillance in European waters. EMSA has also built a network of stand-by oil pollution response vessels that covers the whole of the European coastline.

¹⁹ When, following a marine pollution incident, a request for assistance is received from an affected country, the MIC can quickly mobilise the oil recovery capacity from the Participating States and the European Maritime Safety Agency (EMSA) and facilitate coordination of the deployment of those assets.

Some of EMSA's pollution response capabilities are applicable to the offshore industry without major adjustments (such as the response vessels or the satellite systems). However, operating response vessels close to platforms with spills of oil and gas mixture require additional safety conditions for crew and equipment. The location of response vessels in Europe may have to be reconsidered or extended in view of reaching the location of offshore installations in time for response operations. Other activities would necessitate significant changes for EMSA as they would require a new legal basis as well as additional staff, expertise, procedures and equipment. These increased requirements concern especially any potential expansion of EMSA's preventive activities to offshore oil and gas activities.

2.2. International conventions

International conventions are formal multilateral treaties. Once adopted, the international conventions are enforced by the individual nations which are signatories. Some conventions are also signed by the EU in which case the convention is implemented through EU legislation.

The *United Nations Convention on the Law of the Sea* (UNCLOS) of 1982 gives coastal states "sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources" in their exclusive economic zone (EEZ), i.e. within 200 nautical miles from the coast. It also imposes the obligation to take necessary measures to "ensure effective protection for the marine environment", with "particular attention being paid to the need for protection from harmful effects of such activities as drilling". Oil platforms as "artificial islands, installations and structures" are under the jurisdiction of the coastal state according to article 60 (Exclusive Economic Area) and article 80 (continental shelf) of UNCLOS.

The *OSPAR Convention*²⁰ concerns the protection of the marine environment in the North-East Atlantic. This convention, signed in 1992, has 16 contracting parties: Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the EU.

According to the OSPAR Convention, the Contracting Parties shall "take all possible steps to prevent and eliminate pollution and shall take the necessary measures to protect the maritime area against the adverse effects of human activities so as to safeguard human health and to conserve marine ecosystems and, when practicable, restore marine areas which have been adversely affected." It also states that the Contracting Parties shall apply the precautionary principle and the polluter pays principle and use best available techniques and best environmental practice. Further to Article 5 of the Convention, Annex III imposes further specific obligations related to the prevention and elimination of pollution from offshore sources, including the way of decommissioning of offshore installations.

The EU became a contracting party to the OSPAR Convention through *Council Decision 98/249/EC of 7 October 1997 on the conclusion of the Convention for the protection of the marine environment of the north-east Atlantic*.

The *Barcelona Convention*²¹ concerns the protection of the marine environment in the Mediterranean Sea. The original convention was signed in 1976 and it has 22 parties: Albania,

²⁰ Full name: Convention for the Protection of the marine Environment of the North-East Atlantic.

²¹ Full name: Convention for the Protection of the Mediterranean Sea Against Pollution.

Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Morocco, Serbia and Montenegro, Slovenia, Spain, Syria, Tunisia, Turkey and the EU.

According to the Barcelona Convention, the Contracting Parties shall take all appropriate measures "to prevent, abate and combat pollution of the Mediterranean Sea area and to protect and enhance the marine environment in that area." More explicitly, Article 7 requires that the "Contracting Parties shall take all appropriate measures to prevent, abate and combat pollution of the Mediterranean Sea area resulting from exploration and exploitation of the continental shelf and the seabed and its subsoil."

The EU became a contracting party to the Barcelona Convention through *Council Decision 77/585/EEC of 25 July 1977 concluding the Convention for the protection of the Mediterranean Sea against pollution and the Protocol for the prevention of the pollution of the Mediterranean Sea by dumping from ships and aircraft.*

The Barcelona Convention has a number of Protocols. The *Protocol setting out provisions for protecting the Mediterranean from pollution resulting from exploration and exploitation of the continental shelf and the seabed and subsoil* (also known as the Offshore Protocol) specifies that the Parties shall take "all appropriate measures to prevent, abate, combat and control pollution in the Protocol Area resulting from activities [concerning exploration and/or exploitation of the resources], inter alia by ensuring that the best available techniques, environmentally effective and economically appropriate, are used for this purpose" and they "ensure that all necessary measures are taken so that activities [concerning exploration and/or exploitation of the resources] do not cause pollution". This protocol was adopted in 1994 but still needs to be ratified by one further contracting party to enter into force. So far it has been ratified by Albania, Libya, Morocco, Tunisia and a single EU Member State, Cyprus. France, Greece, Italy, Malta, Slovenia and Spain have not yet ratified the protocol. The EU did not sign the protocol before the closing date in 1995.

The HELCOM (also known as Helsinki) Convention²² concerns the protection of the marine environment in the Baltic Sea. It was originally signed in 1974; a new, revised text was signed in 1992. The present contracting parties are Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, the Russian Federation, Sweden and the EU.

According to the HELCOM convention, the Contracting Parties shall "take all appropriate legislative, administrative or other relevant measures to prevent and eliminate pollution in order to promote the ecological restoration of the Baltic Sea Area and the preservation of its ecological balance". It also embraces the precautionary principle, the polluter pays principle and the promotion of the use of Best Environmental Practice and Best Available Technology. Annex VI of the convention specifically deals with the prevention of pollution from offshore activities. Inter alia, it requires that an environmental impact assessment shall be made before an offshore activity is permitted to start and that each offshore unit shall have a pollution emergency plan.

The EU became a contracting party to the revised HELCOM Convention through *Council Decision 94/157/EC of 21 February 1994 on the conclusion, on behalf of the Community, of the Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention as revised in 1992).*

²² Full name: Convention on the Protection of the Marine Environment of the Baltic Sea Area.

The Bucharest Convention²³ concerns the protection of the marine environment in the Black Sea. It was signed in 1992 by all six Black Sea nations: Bulgaria, Georgia, Romania, the Russian Federation, Turkey and Ukraine.

According to the Bucharest Convention, contracting parties "shall take individually or jointly, as appropriate, all necessary measures consistent with international law and in accordance with the provisions of this Convention to prevent, reduce and control pollution thereof in order to protect and preserve the marine environment of the Black Sea". It also requires them to "adopt laws and regulations and take measures to prevent, reduce and control pollution of the marine environment of the Black Sea caused by or connected with activities on its continental shelf, including the exploration and exploitation of the natural resources of the continental shelf". Its *Protocol on cooperation in combating pollution of the Black Sea Marine Environment by oil and other harmful substances in emergency situations* covers pollution due to oil spills and other accidental discharges of hazardous substances; it requires members to the convention to establish guidelines to responding to such emergencies.

Parties to the *International Convention on Oil Pollution Preparedness, Response and Cooperation* (the OPRC Convention), adopted in 1990, are required to establish measures for dealing with pollution incidents, either nationally or in co-operation with other countries. The Convention is designed to facilitate international co-operation and mutual assistance in preparing for and responding to a major oil pollution incident and to encourage States to develop and maintain an adequate capability to deal with oil pollution emergencies. The Convention became international law in May 1995. The EU is not a signatory to this Convention, which was developed in the framework of the IMO, but the majority of its Member States are contracting parties to the Convention and most of its protocols.

The *Convention on Environmental Impact Assessment in a Transboundary Context* (the Espoo Convention) is a United Nations Economic Commission for Europe (UNECE) convention signed in 1991 that entered into force in 1997. The Convention sets out the obligations of Parties to carry out an environmental impact assessment of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries. Offshore hydrocarbon production is one of the activities explicitly mentioned in the convention. The EU is a contracting party to the Espoo Convention through *Council Decision 2008/871/EC of 20 October 2008 on the approval, on behalf of the European Community, of the Protocol on Strategic Environmental Assessment to the 1991 UN/ECE Espoo Convention on Environmental Impact Assessment in a Transboundary Context*.

3. SUMMARY OF THE REPLIES TO THE QUESTIONNAIRE CIRCULATED TO COMPANIES ON 11 MAY 2010

Shortly after the accident in the Gulf of Mexico, Commissioner Oettinger convened a meeting with the largest oil and gas companies active in European waters, asking them to provide assurances that risks are assessed and managed on continuous and complete basis. In this high-level meeting on 11 May 2010, where Commissioner Georgieva was also present, a questionnaire was circulated requesting more detailed information on the industry's view on certain key questions related to offshore operations in Europe. In addition to the reply

²³ Full name: Convention on the Protection of the Black Sea Against Pollution.

provided by OGP on behalf of its members, a number of companies (Chevron, ConocoPhillips, DONG, ENI, ExxonMobil, GDF Suez Maersk Oil, Nexen, Petrom, RWE Dea, Shell, Statoil, Suncor and Wintershall) submitted individual replies. Some other companies (including BG Group, BP and Total) also provided useful information on their offshore activities and the actions taken in the wake of the accident in the US.

In their submissions, companies stressed their full commitment to safety and claimed that the industry already follows the highest standards and what is currently accepted as best practice, based on the latest technology and experience. A strong safety culture focusing on prevention is present in the companies, with protection of the employees as a top priority, regardless of the location and the age of the installations. Risk management is seen as a continuous improvement process and many companies have as a goal to exceed standards and regulations rather than just meet them.

It was highlighted that the risk management in the industry is closely related and adapted to each individual installation and focuses on the prevention of major accidents. Operators are required to identify and assess the major risks case by case and demonstrate to the national authorities how these risks would be managed. This approach, which is applied in the main producing countries of Europe, is referred to goal-setting or performance-based regulation. The goal-setting approach places the responsibility for safe and environmentally sound operations on the operator, while allowing flexibility and adaptability. On the other hand, it is complemented by regular audits and inspections. In some national jurisdictions there is an additional requirement for an independent review of contingency plans.

One of the questions raised the possibility of a repository of contingency plans that is being considered by the Commission. In their reply, OGP and individual companies expressed no fundamental reservation, provided that any commercially sensitive data are removed. As concerns operations in Norway, the industry has developed common contingency plans and works together through the Norwegian Clean Sea Association for Operating Companies (NOFO) which publishes the regional contingency plans on its website.

When answering a specific question on aging installations, companies stressed their full commitment to safety regardless of the age of installations and reported on regular maintenance and large investments made in the North Sea area in recent years to maintain the integrity of the mature assets. OGP referred to the industry's activity to develop a set of criteria for assessing the state of offshore installation that are approaching the end of their designed life time.

Several companies highlighted the role of national regulators which were characterized as competent and technically knowledgeable. Therefore, it is important to involve them in reflections on possible improvements to risk levels in European operations. The important role of regional cooperation both at the regulators' level (International Regulators Forum, NSOAF) and at industry level (OGP, International Petroleum Industry Environmental Conservation Association, Oil Spill Response Ltd, etc.) was also highlighted. The industry expressed readiness to cooperate closely with EMSA, e.g. through exercises, if the agency's mandate is extended to offshore oil and gas operations.

Companies reported on extensive training programmes for their personnel and regular emergency response exercises, testing the response to a potential oil spill.

It was also emphasized that operations in the EU significantly differ from those in the Gulf of Mexico, mainly in terms of operating depths, but also because most activities in the EU relate to production, not drilling. On the other hand, despite lower operational depths in Europe, the risks are often comparable as a number of reservoirs are characterized by high pressure/high temperature conditions.

Companies fully accept their legal responsibility under the relevant national and EU legislation and the licenses in case of environmental or other damage resulting from their operations. To complement the liability of individual companies, the industry established the voluntary Offshore Pollution Liability Association Limited (OPOL) which deals with compensation claims arising from offshore oil pollution incidents. Some companies reported on additional, comprehensive insurance coverage for accidents, including oil spills, placed on the international insurance market.

It is the general view of the industry that the current legislative framework covering the sector is robust and sound and the focus should be on the efficient implementation of existing rules. Nevertheless, one respondent proposed concrete areas for improving the EU regulatory framework, such as standards for blow-out preventers or rules for well abandonment. The idea of a harmonization of any new regulations across jurisdictions was also promoted; this requires close cooperation among regulators.

Several companies reiterated that the cause of the accident is not yet known, that lessons from the accident and any regulatory response should come only with the knowledge of what went wrong. Nevertheless, any relevant lessons will be incorporated into their risk management processes and policies.

EU legislation applicable to offshore oil and gas operations

<i>Authorization</i>	
Title	Directive 94/22/EC of the European Parliament and of the Council of 30 May 1994 on the conditions for granting and using authorizations for the prospection, exploration and production of hydrocarbons
Reference	OJ L 164, 30.6.1994, p. 3–8
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31994L0022:EN:HTML
<i>Equipment</i>	
Title	Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (Machinery Directive)
Reference	OJ L 157, 9.6.2006, p. 24–86
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:157:0024:0086:EN:PDF
Title	Directive 97/23/EC of the European Parliament and of the Council of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment (Pressure Equipment Directive)
Reference	OJ L 181, 9.7.1997, p. 1–55
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31997L0023:EN:HTML
Title	Directive 94/9/EC of the European Parliament and the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres (ATEX Directive)
Reference	OJ L 100, 19.4.1994, p. 1–29
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31994L0009:EN:HTML
<i>Safety and health of workers</i>	
Title	Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work as amended by Directive 2007/30/EC

Reference	OJ L 183, 29.6.1989, p. 1–8
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31989L0391:EN:HTML
Title	Council Directive 92/91/EEC of 3 November 1992 concerning the minimum requirements for improving the safety and health protection of workers in the mineral-extracting industries through drilling
Reference	OJ L 348, 28.11.1992, p. 9–24
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31992L0091:EN:HTML
Title	Directive 2009/104/EC of the European Parliament and of the Council of 16 September 2009 concerning the minimum safety and health requirements for the use of work equipment by workers at work
Reference	OJ L 260, 3.10.2009, p. 5–19
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:260:0005:0019:EN:PDF
Title	Council Directive 89/656/EEC of 30 November 1989 on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace
Reference	OJ L 393, 30.12.1989, p. 18–28
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31989L0656:EN:HTML
Title	Council Directive 90/269/EEC of 29 May 1990 on the minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers
Reference	OJ L 156, 21.6.1990, p. 9–13
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31990L0269:EN:HTML
Title	Council Directive 90/270/EEC of 29 May 1990 on the minimum safety and health requirements for work with display screen equipment
Reference	OJ L 156, 21.6.1990, p. 14–18
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31990L0270:EN:HTML
Title	Directive 2004/37/EC of the European Parliament and of the Council of 29 April 2004 on the protection of workers from the risks related to exposure to

	carcinogens or mutagens at work
Reference	OJ L 158, 30.4.2004, p. 50–76
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:158:0050:0076:EN:PDF
Title	Directive 2000/54/EC of the European Parliament and of the Council of 18 September 2000 on the protection of workers from risks related to exposure to biological agents at work
Reference	OJ L 262, 17.10.2000, p. 21–45
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:262:0021:0045:EN:PDF
Title	Council Directive 92/58/EEC of 24 June 1992 on the minimum requirements for the provision of safety and/or health signs at work
Reference	OJ L 245, 26.8.1992, p. 23–42
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31992L0058:EN:HTML
Title	Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work
Reference	OJ L 131, 5.5.1998, p. 11–23
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1998:131:0011:0023:EN:PDF
Title	Commission Directive 91/322/EEC of 29 May 1991 on establishing indicative limit values by implementing Council Directive 80/1107/EEC on the protection of workers from the risks related to exposure to chemical, physical and biological agents at work
Reference	OJ L 177, 5.7.1991, p. 22–24
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31991L0322:EN:HTML
Title	Commission Directive 2000/39/EC of 8 June 2000 establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work
Reference	OJ L 142, 16.6.2000, p. 47–50
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:142:0047:0050:EN:PDF

Title	Commission Directive 2006/15/EC of 7 February 2006 establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC
Reference	OJ L 38, 9.2.2006, p. 36–39 (ES, CS, DA, DE, ET, EL, EN, FR, IT, LV, LT, HU, NL, PL, PT, SK, SL, FI, SV), OJ L 330M, 28.11.2006, p. 158–161 (MT)
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:038:0036:0039:EN:PDF
Title	Commission Directive 2009/161/EU of 17 December 2009 establishing a third list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Commission Directive 2000/39/EC
Reference	OJ L 338, 19.12.2009, p. 87–89
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:338:0087:0089:EN:PDF
Title	Directive 2002/44/EC of the European Parliament and of the Council of 25 June 2002 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (vibration)
Reference	OJ L 177, 6.7.2002, p. 13–20
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:177:0013:0019:EN:PDF
Title	Directive 2003/10/EC of the European Parliament and of the Council of 6 February 2003 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (noise)
Reference	OJ L 42, 15.2.2003, p. 38–44
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:042:0038:0044:EN:PDF
Title	Directive 2004/40/EC of the European Parliament and of the Council of 29 April 2004 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields)
Reference	OJ L 159, 30.4.2004, p. 1–26
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:159:0001:0026:EN:PDF
Title	Directive 2006/25/EC of the European Parliament and of the Council of 5 April 2006 on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical

	radiation)
Reference	OJ L 114, 27.4.2006, p. 38–59
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:114:0038:0059:EN:PDF
Title	Directive 2009/148/EC of the European Parliament and of the Council of 30 November 2009 on the protection of workers from the risks related to exposure to asbestos at work
Reference	OJ L 330, 16.12.2009, p. 28–36
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:330:0028:0036:EN:PDF
<i>Environment</i>	
Title	Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control (IPPC Directive)
Reference	OJ L 24, 29.1.2008, p. 8–29
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:024:0008:0029:EN:PDF
Title	Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment (Environmental Impact Assessment Directive) as amended by Directive 97/11/EC, 2003/35/EC and 2009/31/EC
Reference	OJ L 175, 5.7.1985, p. 40–48
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31985L0337:EN:HTML
Title	Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)
Reference	OJ L 164, 25.6.2008, p. 19–40
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:164:0019:0040:EN:PDF
Title	Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste (the Waste Framework Directive)
Reference	OJ L 114, 27.4.2006, p. 9–21

Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:114:0009:0021:EN:PDF
Title	Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives
Reference	OJ L 312, 22.11.2008, p. 3–30
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:EN:PDF
Title	Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage (Environmental Liability Directive)
Reference	OJ L 143, 30.4.2004, p. 56–75
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:143:0056:0075:EN:PDF
Title	Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (Water Framework Directive)
Reference	OJ L 327, 22.12.2000, p. 1–73
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:327:0001:0072:EN:PDF
<i>Emergency intervention</i>	
Title	Council Decision 2001/792/EC of 23 October 2001 establishing a Community mechanism to facilitate reinforced cooperation in civil protection assistance interventions
Reference	OJ L 297, 15.11.2001, p. 7–11
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2001:297:0007:0011:EN:PDF
Title	Regulation 1406/2002/EC of the European Parliament and of the Council of 27 June 2002 establishing a European Maritime Safety Agency as amended
Reference	OJ L 208, 5.8.2002, p. 1–9
Website	Consolidated version: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2002R1406:20061231:EN:PDF
Title	Regulation 1891/2006/EC of the European Parliament and of the Council of 18 December 2006 on multiannual funding for the action of the European

	Maritime Safety Agency in the field of response to pollution caused by ships and amending Regulation 1406/2002/EC
Reference	OJ L 394, 30.12.2006, p. 1–4
Website	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:394:0001:0004:EN:PDF