

MARINE POLLUTION & WATER QUALITY TOPIC AREA PAPER

GENERAL OVERVIEW

The quality of Wales' coastal environment is generally very high. This high quality is reflected in the high quality and wide diversity of the ecosystems and species found in and around the coastal waters, rivers and estuaries. A range of Agency's, in particular the Environment Agency Wales and its predecessor organisation, the National Rivers Authority, have conducted extensive monitoring and have worked closely with industrial and agricultural interests, water and sewage authorities and others to improve the situation on all fronts. This work is continuing..

Pollution on land, in coastal waters and in the open sea – through for example, dumping, spillage, discharge, leaching and littering – can significantly impact on terrestrial and marine habitats and species and on the quality of human life. Freshwater quality significantly affects wildlife and human health, as does air quality, and it should be remembered that the final destination of pollutants carried by both air and freshwater is ultimately the sea. Polluting substances affecting local inshore waters may therefore have an origin remote from where the effect is experienced.

Light pollution, the unnatural illumination of the night sky by artificial lighting, is an increasing source of nuisance to many people who look for the wild experience of the county as well as having an impact on some forms of wildlife. Noise and smell can also be a type of pollution in that they interfere with the natural world and the enjoyment of it by people and wildlife.

Polluting substances may be solid, liquid or gaseous. They may be released intentionally, negligently, accidentally or unwittingly and their effects may be well known, partially unknown, largely unrecognised or not recognised at all. They can range from balloons and plastic cups to radioactive substances and highly toxic chemicals. They can be from local or from remote sources, carried on air, river or sea currents for considerable distances. Pollution in the environment can be highly complex with direct and indirect effects on the ecosystem. Individual pollutants can have short, medium and long term effects. Highly persistent toxic substances such as organochlorines (that

degrade very slowly) and heavy metals (that do not degrade at all) can remain a problem for decades or centuries after they were released into the environment. Equally, highly persistent, chemically benign substances deposited as litter such as plastics can present a hazard to marine species and environments.

In 2002, 100% of the 75 Welsh designated bathing beaches met the Mandatory Standards water quality standards set by the EU and 62 (82.7%) achieved the higher Guideline Standard. These figures maintain a trend of improving water quality on Welsh beaches in recent years although weather and rainfall patterns might have an impact on the results.

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WHAT DO WE HAVE IN PEMBROKESHIRE?

The Pembrokeshire coastal areas and their environmental quality are important to the majority of Pembrokeshire's residents and visitors. In the Pembrokeshire Residents Opinion Survey 2002 conducted by Beaufort Research on behalf of Pembrokeshire County Council, 55% of respondents agreed strongly that living near the coast was very important to them and 98% expressed the view that a clean, healthy and safe environment was either important or very important. 38% were of the opinion that litter / fly tipping / dog fouling was the environmental issue that caused them most concern and 24% that it was air/water pollution.

Pembrokeshire's reliance on tourism and the focus of Pembrokeshire's tourist industry on the coast and in particular the beaches makes sea water quality and beach cleanliness of paramount importance. Pembrokeshire has more Seaside Awards than any other County with nine Blue Flag beaches and 9 Green Coast award beaches (2003). Blue Flag and Green Coast beaches need to meet the standards set by the EC Bathing Water Directive and 28 or 12 other land-based criteria, respectively. Blue Flag beaches are at Poppit Sands, White Sands, Newgale, Lydstep Haven, Tenby South Beach, Tenby North Beach, Tenby Castle Beach, Saundersfoot and Amroth. This shows an improvement on 2000 when 7 Blue Flag beaches were designated in the County. These beaches have all been graded A (excellent performance in most categories) by the environmental charity 'Encams' which runs the Keep Britain Tidy campaign. For

other facilities including beach cleanliness, water safety and amenities the beaches scored a total of 45 A's, 13 'B's and only 3 'C's. Pembrokeshire's nine beaches which have been granted the Green Coast Award for rural beaches that are of high quality are Barafundle, Manorbier, Marloes, Caerfai, Broadhaven South, Martins Haven, St. Brides, Aberiddy and West Dale. These awards make Pembrokeshire more attractive as a tourist destination, as well as indicating a clean, healthy and valued environment.

Whilst the trend appears to be towards cleaner beaches and higher compliance with the requirements of the EC Bathing Waters Directive, the Bathing Waters Report Wales 2000 prepared by the Environment Agency Wales identified a number of beaches in Pembrokeshire which carried an unacceptably high future risk of non-compliance based on historical non-compliance data. These included the following (% risk of non-compliance in parentheses) : -

- Risk of non-compliance of EC Bathing Waters with the "Imperative" standards of the Directive
Coppett Hall (11.79%); Newport North (10.15%); Broadhaven Central (9.99%); Amroth Central (7.49%); Poppit West (7.43%).
- Risk of non-compliance of EC Bathing Waters with the "Guideline" standards of the Directive
Coppett Hall (99.98%); Newport North (78.47%); Dale (77.73%); Saundersfoot (76.25%); Broadhaven Central (73.62); West Angle (72.74%); Poppit West (56.20%); Amroth Central (50.92%); Freshwater East (27.52%); Castle Beach Tenby (26.44%); Tenby North (18.6%); Newgale Central (14.5%); Whitesands Central (12.84%); Caerfai Bay (11.37%); Barafundle Bay (9.81%); Lydstep North Beach (4.32%); Manorbier Beach (3.73%); Broadhaven South (3.01%); Tenby South (1.30%); Marloes Sands (0.19%).
- Risk of non-compliance of non-EC Bathing Waters with the "Imperative" standards of the Directive
Nolton Haven (55.8%); Pwllgwaelod (51.32%); Wiseman's Bridge (35.5%); Little Haven (15.71%); Cwm yr Eglwys (11.05%); Penally (8.82%); Druidston Haven (8.82%); Sandy Haven (5.99%).
- Risk of non-compliance of non-EC Bathing Waters with the "Guidelines" standards of the Directive

Pwllgwaelod (100.00%); Wisemans Bridge (98.55%); Little Haven (97.23%); Gelliswick (94.49%); Nolton Haven (92.44%); Cwm yr Eglwys (90.87%); Sandy Haven (69.81%); St. Brides Haven (48.7%); Penally (47.98%); Druidstone Haven (46.47%); Mewslade East (24.72%); Abermawr (16.1%); Monkstone Beach (7.55%); Martins Haven (7.37%); Abereidid 3.30%); Freshwater West (3.07%);

Bathing Waters Report Wales 2000, Environment Agency Wales

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Pembrokeshire, with its high levels of agricultural and seasonal tourism activity, its industrial and shipping activity particularly centred on the Milford Haven Waterway and its westerly facing aspect washed by the Gulf Stream make it prone to many of the polluting inputs from both the land and the sea.

Pembrokeshire's oil industry based in the Milford Haven area carries a risk of causing pollution through the release of oil either through accident or general activities both on land or at sea. Two major incidents involving pollution of the Pembrokeshire coast by oil following tanker accidents in local waters have raised the profile of the impact of pollution on the marine environment in the minds of the public. The first in 1978 involved the loss of 2,400 tonnes of Iranian crude oil when the "Christos Bitas" ran aground on the Hats and Barrels reef 12 miles off the coast. At the time this was the largest oil spill to affect the coast of Wales. More recently, in 1996, the grounding of the "Sea Empress" just outside the entrance to the Milford Haven Waterway resulted in the loss into the sea of 72,000 tonnes of light crude oil and 480 tonnes of heavy fuel oil and the subsequent deposition of oil over 200 km of coastline. These major incidents mask the background, routine problems associated with the accidental and occasional intentional discharge of oil into the marine environment from tanker and other vessel traffic in the Irish Sea and Bristol Channel.

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Beach Litter

The Pembrokeshire Residents Opinion Survey 2002 identified litter and other detritus as being the environmental issue of greatest concern to the residents of Pembrokeshire.

As well as its unsightliness and its risk to public health and welfare, litter can be a significant hazard to marine and terrestrial wildlife.

Litter within the coastal zone can be derived from 3 source areas, namely the land, the sea or from within the coastal zone itself. Some land generated litter can reach the sea and hence beaches via fresh water streams and rivers. The Marine Conservation Society in its Beachwatch 2002 Survey Report defines marine and coastal litter as being any item that appears on beaches or at sea as a result of man's activity. It includes items which have been deposited directly by tourists and other beach users and items which have been deposited on beaches from adjacent land or waterways. It also includes items washing up on beaches after entering the marine environment at another location within the UK or abroad, or from marine vessels, offshore installations or sewage outfalls.

Marine and coastal litter is an increasing global problem and the visible elements which are deposited on the shoreline are only a small percentage of the total volume. Of the estimated 20,000 tonnes of waste discarded annually into the North Sea, 15% remains within the water column, 70% is on the seabed and 15% is washed onto the shore (Marine Pollution Monitoring Management Group, 2000). Most of the litter recorded by most of the marine and coastal surveys carried out comprises plastics in some form or another (Ocean Conservancy, 2002).

The MCS Beachwatch Survey 2002 report records the following breakdown of litter found on Welsh beaches : - Beach Visitor related - 641 items / km (38.2% of total); Fishing related – 257 items/km (15.3%); Sewage related debris (SRD) – 82.6 items/km (4.9%); Shipping related – 38.9 items/km (2.3%); Non-sourced 641 items/km (38.2%). It should be noted that this report makes the assumption that all food, drink and general 'family' and recreational related rubbish is generated by beach visitors which is not necessarily the case.

A further survey of UK beaches carried out in 2001 by Posford Haskoning Ltd. on behalf of the Environment Agency is reported in the EA's Technical Report E1-117/TR entitled "*Application of the Environment Agency's Aesthetic Assessment Protocol – Beach Survey*". The Aesthetic Quality grades of 474 UK beaches were identified into 4

categories, namely very good (A), good (B), fair(C) and poor(D) based on the lowest grade allocated to 7 categories of contaminant for each beach. The results for the 20 Pembrokeshire beaches were as follows : -

Poppit Sands (B), Newport (A), Whitesands (A), Caerfai (B), Newgale (B), Broadhaven (A), Marloes (B), Dale (B), West Angle (B), Broadhaven South (A), Barafundle (B), Freshwater East (B), Manorbier (C), Lydstep (B), Tenby South (B), Castle Beach, Tenby (B), Tenby North (B), Saundersfoot (B), Coppet Hall (B), Amroth (B).

An interesting finding of the Survey was that the public perception as recorded during the survey was that the beaches were of a higher aesthetic quality than the scientific assessment suggested. Of the 75 beaches assessed in Wales, the assessments found the following %age grading : - A – 9%, B – 63%, C – 19%, D – 9% whereas analysis of the public perception gave the following results : - A – 40%, B – 30%, C – 27%, D – 3%.

The Keep Wales Tidy Arfordir Glan / Clean Coasts initiative encourages community participation in the care of local beaches through the establishment and operational management of voluntary Coastcare Groups. 20 Coastcare Groups currently operate in the County as follows : - Aberbach & Pwll Gwylog; Broad Haven North; Broad Haven South; Burton; Castle Pill; Druidston; Freshwater East; Freshwater West; Kilpaison; Goodwick; Lower Fishguard; Llanreath; Manorbier; Marloes, Martin's Haven & Caerbwdi; Newgale; Newport & Parrog; Nolton; Saundersfoot; St Ishmaels; West Angle.

Under Section 87 of the Environmental Protection Act 1990, it is an offence to drop litter in any public place, including beaches. The Act also places duties on, and gives powers to, the local authority to keep its beaches clear of litter according to the Code of Practice. In 2000, a revised Code of Practice extended the requirements from amenity beaches only to all beaches.

Dog fouling on beaches is an issue of concern to many in Pembrokeshire both from a nuisance and a public health viewpoint. The Dogs (Fouling of Land) Act 1996 allows local authorities to designate land upon which it is an offence not to clean up after your dog. Byelaws can also be made by local authorities to impose dog bans, make dog fouling an offence and insist that dogs be kept on leads. Local Authority Byelaws made under Sections 82 and 83 of the Public Health Acts Amendment Act 1907 and Section

235 of the Local Government Act 1972 restricting dog access exist for Poppit Sands; Whitesands; Newgale; North, South and Harbour Beaches, Tenby; Amroth; and Lydstep.

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Waste Management

Much of the incidence of litter and of polluting agricultural and industrial run-off is a question of waste management or rather the failure of the waste management processes. A helpful review of waste management in England and Wales, its management, legislative framework and future direction is given in Waste Strategy 2000 – England and Wales Parts 1 and 2 produced by the DETR in May 2000. The Strategy identifies that England and Wales produce over 100 million tonnes of waste annually of which the majority is dumped as landfill. Of the total quantity of household waste, which is growing by 3% pre annum, only 9% is recycled and a further 8% has energy recovered from it.

Within Pembrokeshire in 1999/2000, the total domestic waste collected amounted to 59,300 tonnes ie. 0.517 tonnes per person. This is lower than the Welsh average of 0.549 tonnes per person but higher than the figure for Liverpool, for instance, at 0.45 tonnes per person. Over the same period, approximately 64,100 tonnes of waste was generated in the county of which 54,000 tonnes was landfilled within the county, 3,700 tonnes was landfilled outside the county, 5,700 tonnes was recycled and 719 tonnes was mulched / composted. This represents a recovery and recycling rate of 10% which is comparable to the Welsh national average of 10.4% and higher than the UK average of 9%. (Source : - Text for a Sustainable Futures presentation 2001 – Clive Morgan)

In June 2002 the Welsh Assembly Government launched the National Waste Strategy for Wales – “*Wise About Waste*” which sets many targets and challenges for local authorities. During 2002 Pembrokeshire County Council conducted a public consultation exercise on municipal waste management and produced a summary report entitled “*The Future of Municipal Waste Management in Pembrokeshire*” in November 2002. The County Council is currently considering the appropriate way of taking forward its waste management policy in the light of these two reports.

Pembrokeshire's waste gas emissions are also significant. Clive Morgan (2001) records annual carbon dioxide (a "greenhouse" gas) emissions in Pembrokeshire as totalling nearly 3.8 million tonnes of which nearly 3 million tonnes is discharged to air by the refineries. Energy use and landfill / incineration of waste makes up the balance.

As regards radioactive waste, the UK Government is conducting a public consultation, a review and a research programme in order to establish a new policy for the UK. More than 10,000 tonnes of radioactive waste are stored in the UK with that figure due to increase by 500,000 tonnes as a result of decommissioning and cleaning up existing facilities over the next 100 years. A document "*Managing Radioactive Waste Safely – Proposals for developing a policy for managing solid radioactive waste in the UK*" was published by DEFRA in 2001 for public consultation during 2001 – 02. A decision on the outcome will not be made until at least 2007. Government is advised by the Radioactive Waste Management Advisory Committee.

In Wales, most of the functions previously exercised by the Secretary of State under the Radioactive Substances Act 1993 transferred to the National Assembly on 1 July 1999. It will, therefore, be for the Assembly to develop policy on managing radioactive waste and to issue appropriate guidance to the Environment Agency in respect of its activities in Wales. Responsibility for nuclear energy and nuclear installations, including nuclear safety, security, safeguards and liability for nuclear occurrences, have not been devolved to the National Assembly.

What is known?

Arguably, more is known about the environmental status of the Milford Haven Waterway than any other area of the Pembrokeshire coast and associated sea. This is in part because of its intrinsic interest in environmental / ecological terms, but also because of its locally high level of associated residential, industrial and dockside concentrations and its high recreational value and use.

Considerable impetus was given to the environmental investigation and evaluation of the Haven Waterway by the establishment in January 1992 of the Milford Haven Waterway Environmental Monitoring Steering Group (MHWEMSG), since renamed the Milford Haven Waterway Environmental Surveillance Group (MHWESG). The Group comprises

representatives from the Countryside Council for Wales, Elf Oil (UK) Ltd., Environmental Agency (Wales), Milford Haven Port Authority, Pembrokeshire Coast National Park Authority, Pembrokeshire County Council, South Wales Sea Fisheries Committee, Texaco Ltd., the National Assembly of Wales (Environment Division), the Wildlife Trust of South & West Wales, Welsh Water/Dwr Cymru. The Group has commissioned a number of important investigations into the environmental quality and polluting inputs to the Haven. It has also commissioned two Reviews (in 1992 and in 2000) which are of considerable value in pooling known information on the status of the environment and environmental studies within the Milford Haven Waterway. The later Review includes a very useful list of references to reports on relevant research and investigations, recommendations for data handling and information management and prioritised recommendations for future projects and surveillance programmes for inclusion in the Group's programme of work for 2000 – 2010.

The "Sea Empress" oil spill incident in 1996 also focussed investigations and research on the coastal areas of Pembrokeshire through the establishment of the Sea Empress Environmental Evaluation Committee (SEEEC) which resulted in an upsurge in the amount of data known about the area. Many of the investigation references listed in the MHWESG Review 1992 – 2000 arose from the SEEEC initiative.

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HOW IS IT MANAGED IN PEMBROKESHIRE?

Activities which are capable of affecting the natural environment through the input to the environment of human generated chemicals and waste are regulated and managed by a raft of international, national, regional and local legal and other measures. The overarching framework is set by the EU in the form of Directives, Regulations and Guidance documents from which many national and regional legislative measures arise.

Amongst the principal EU Directives relevant to this Topic Area are the following.

London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Convention)

Came into force in 1975 and further strengthened by the 1996 Protocol. The London Convention is a global convention controlling the dumping of wastes at sea by licensing and currently has 75 signatories worldwide. Annex 1 prohibits signatories from dumping persistent plastics and other non-biodegradable materials, *inter alia*, into the sea from ships and other man-made structures.

International Convention for the Prevention of Pollution from Ships 1973 (MARPOL 73/78) Annex V

Laid down as international law in 1973 and subsequently modified by the Protocol on 1978, MARPOL 73/78 aims to control pollution of the sea by oil, chemical and other harmful substances that might be discharged during the course of a ship's operations or when a ship is damaged. Signatories to the convention are required to inspect ships in port and at sea, trace and prosecute polluting ships and ensure there are adequate port facilities for receiving waste from ships. It has five annexes covering different types of pollution as follows : -

Annex I – Oil; Annex II – Noxious liquid substances by bulk; Annex III - Harmful substances carried by sea in packaged form or freight containers, portable tanks, or road and rail tank wagons; Annex IV – Sewage; Annex V – Garbage. Annex V, *inter alia*, prohibits the disposal of all plastics throughout the world's oceans by any member country.

With 88 countries having now ratified Annex IV of MARPOL 73/78 resulting in an acceptance by 51% of the world's merchant fleet (by tonnage), the Annex will enter into force in September 2003. Specifically, Annex IV prohibits the discharge of sewage within 4 nautical miles of land, unless the ship has an approved treatment plant in operation, and between 4 and 12 miles sewage must be comminuted and disinfected before discharge. In addition, the Annex requires ports to provide reception facilities for sewage.

The UK's interpretation of Annex V of MARPOL 73/78 is via the Merchant Shipping (Prevention of Pollution by Garbage) Regulations 1998 and the Merchant Shipping (Port Waste Reception Facilities) Regulations 1997.

EC Bathing Water Directive (76/160/EEC)

Sets mandatory minimum standards for the quality of sea water (including levels of coliform and faecal coliform bacteria) at designated bathing sites. Member States are also obliged to strive towards achieving a Guideline Standard which is about 20 times stricter and contains standards for faecal streptococci. The maximum levels of bacteria permitted per 100 ml sample of sea water for Total Coliforms, Faecal Coliforms and Faecal Streptococci are, respectively : - Mandatory Standard - <10,000, <2,000 and n/a; Guideline Standard - <500, <100 and <10.

It is likely that a revised Bathing Waters Directive will be developed and adopted during the next few years.

Shellfish Waters Directive (79/923/EEC)

The EC Shellfish Waters Directive 1979 sets standards for waters designated for shellfish and aims to ensure a suitable environment for their growth. As in several other directives, there are Imperative and Guide Standards. The UK must meet the Imperative Standards, but there is discretion on how quickly to move towards the Guide Standards in places where they are not already being met.

The International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 (the OPRC Convention)

Requires signatories to inspect ships, maintain a national contingency plan for responding to oil pollution incidents and provide technical assistance to other signatories in the event of such incidents. Ports and harbours, ships and offshore installations must have their own approved oil pollution contingency plans and to report oil pollution incidents when they occur.

The Hazardous Waste Directive (91/689/EEC)

The Hazardous Waste Directive forms the framework on which hazardous or special wastes, substances which pose particular risks to health and the environment, are defined and ensures that special wastes are tracked from the moment they arise through a consignment note system until they are recovered or disposed. The Directive is implemented in the UK through The Special Wastes Regulations 1996 (SI 1996 No. 972, as amended by SI 1996 No 2019).

The Nitrates Directive (91/676/EEC)

The Nitrates Directive 1991 is an environmental measure designed to reduce nitrate pollution from agricultural sources to the water environment, and to prevent it in the future. Nitrate pollution is of concern because it can make water unfit for drinking and can damage the aquatic environment.

EC Urban Waste Water Treatment Directive (91/27/EEC) 1991

This Directive requires that, by 31st December 2005, all sewage discharges serving populations over 10,000 in coastal areas and 2,000 in estuarine areas must receive secondary (biological) treatment prior to discharge. Discharges to waters that are 'sensitive' were required to have tertiary treatment including nutrient removal by the end of 1998. Subsequently, the UK government has committed water companies to exceeding these requirements such that all UK sewage discharges serving more than 2,000 people will receive secondary treatment by 2005. As a result, the only coastal and estuarine outfalls from where raw sewage containing solids and used sanitary protection may still be discharged will be those serving populations of 2,000 or less.

The EC Packaging and Packaging Waste Directive (94/62/EC)

This Directive is implemented in the UK through the Producer Responsibility Obligations (Packaging Waste) Regulations 1997 and the Packaging (Essential Requirements) Regulations 1998. Authority for enforcement of these Regulations is vested in Trading Standards Officers.

EC Integrated Pollution Prevention and Control (IPPC) Directive 96/61/EEC, 1999

This Directive has been transposed into domestic UK law through the Environmental Protection Act 1990 and the Pollution Prevention and Control Regulations 2000, SI 1973. Part I of the EPA 1990 will be progressively replaced by regulations under the Pollution Prevention and Control (PPC) Act 1999.

EC Directive on port reception facilities for ship-generated waste and cargo residues (2000/59/EC)

The aim of the Directive is to reduce the illicit discharge of waste and other pollutants to a minimum.

The Water Framework Directive 2000 Directive 2000/60/EC

The Directive establishes a framework for Community action in the field of water policy. It provides a new, integrated approach to the protection, improvement and sustainable use of Europe's rivers, lakes, estuaries, coastal waters and groundwaters. The UK, in common with other Member States, has until December 2003 to transpose the Directive into domestic law.

An EC Directive is proposed which will set limit values for noise and exhaust emissions from pleasure boats. The object of the proposal, which was originally published in 2000, is to extend the scope of a 1994 Directive (94/25/EC) on the design and construction of pleasure boats to include noise and emission standards, which are not currently addressed. The proposal sets limit values for noise, which vary by engine power, and carbon monoxide, hydrocarbons, oxides of nitrogen and particulates. The details are with the full Council and Parliament and the provisions are to be applied from the beginning of 2005.

Other relevant Directives and Conventions include the following : -

EC Dangerous Substances Directive (76/464/EEC)

International Convention on Oil Pollution Preparedness, Response and Co-operation, 1991, (The OPRC Convention)

The Urban Waste Water Treatment Directive (97/27/EEC), 1991

Landfill of Waste Directive (1999/31/EC)

A useful list of selected European Decisions and Directives which direct or influence waste policy in England and Wales together with description of the national and international legal framework for waste management is given in Chapter 6 of Part 2 of the Draft Waste Strategy for England and Wales produced by DEFRA in 1999.

The UK has introduced its own legislation, in part independently of Brussels and in part in order to implement EU policy and Directives. The principal elements of that legislation include : -

The Merchant Shipping and Maritime Security Act 1997

The 1997 Act, which amended The Merchant Shipping Act 1995, brought in enabling powers for the Secretary of State for Environment, Transport and the Regions to require mandatory provision and use of port waste reception facilities, port waste management plans and garbage record books.

The Merchant Shipping (Prevention of Pollution by Garbage) Regulations 1998

Replaced the 1988 regulations of the same name and apply to all UK ships wherever they may be and to foreign ships in UK waters. The Regulations apply to small craft and yachts, fishing vessels, passenger and cargo ferries, offshore platforms and Royal Fleet Auxiliaries. They prohibit the disposal of plastics and oily wastes anywhere in UK waters and prohibit the disposal of other types of pollutant within specific distances from nearest land. Within 3 nautical miles of nearest land, no waste or rubbish of any kind may be thrown overboard.

The Merchant Shipping (Port Waste Reception Facilities) Regulations 1997

Replaced the Merchant Shipping (Reception Facilities for Garbage) Regulations 1988 and required all ports and terminals in the UK to provide adequate reception facilities for waste, including dry waste and oil and to prepare a waste management plan to be approved by the Secretary of State.

Merchant Shipping (Prevention of Pollution)(Limits) Regulations 1996

Created a 'pollution zone' extending out to 200 nautical miles from the UK coast, whereby any foreign ship suspected of committing a pollution offence within the 'pollution zone' will be liable to prosecution if it calls at a UK port.

A number of legislative provisions exist to regulate the discharge of waste products in the marine environment.

The Control of Pollution (Anti-fouling Paints and Treatments) Regulations 1987

SI1987/783

Prohibits the use of Tributyltin (TBT) and Triphenyltin (TPT) anti-foulants on private vessels of less than 25 metres. Operations involving larger vessels and TBT or TPT require authorisation from the Environment Agency. There are Chief Inspectors

Guidance Notes to Inspectors on the application or removal of TBT or TPT coatings at shipyards or boatyards published by the HMSO.

Environmental Protection Act 1990

Part 1 of the EPA 1990 established two pollution control systems, a local air pollution control (LAPC) system enforced by local authorities in England and Wales and an integrated pollution control (IPC) system enforced by the Environment Agency in England and Wales. LAPC came into force in Wales in 1991 and superseded the powers given to local authorities (county, district and county borough councils and port health authorities) under the Clean Air Acts 1956 and 1968 (now consolidated into the Clean Air Act 1993) and their statutory nuisance powers under Part III of the EPA in relation to prescribed processes. In many respects the EPA has been superseded by the Pollution Prevention and Control (PPC) Act 1999 and the Pollution Prevention and Control Regulations 2000, SI 1973.

The Water Industry Act 1991

The principal instrument for regulating the activities of the water industry, the water undertakers, is the Water Industry Act 1991. The Act, *inter alia*, places duties on the water undertakers and, in some respects, local authorities as regards their water supply and sewage / waste disposal functions, as regards the environment and recreation, and as regards abstraction discharge and trade effluents.

The Water Resources Act 1991

The WRA 1991 is the main piece of Statute. Relevant Secretary of State functions under the Act have mainly been transferred to the Assembly on a Wales basis.

In terms of pollution control functions, the Act applies to coastal waters (including estuaries) and to territorial waters which extend seawards for three nautical miles from the baselines from which the breadth of the territorial sea adjacent to Wales is measured. Under the Act, the pollution of such waters is an offence. The Act also empowers the Environment Agency Wales to set consents permitting discharges of effluent: the Assembly has intervention powers and an appellate role in the process. Secondary legislation made under the Act enables the Assembly to make various designations arising from EU Directives, including the Bathing and Shellfish Waters Directives. Such designated waters must meet the quality requirements of the

respective Directives. This is achieved mainly through a system of discharge consenting. A revised Bathing Waters Directive is likely to be adopted during the next few years.

The Pollution Prevention and Control (PPC) Act 1999

This Act and the Pollution Prevention and Control Regulations 2000, SI 1973 transpose the European Union Directive 96/61 on integrated pollution prevention and control (IPPC) into domestic law. The Regulations enable improvements to be made in pollution control generally and provide a single coherent regulatory framework for IPPC and LAPC (local air pollution control) and will extend integrated control covering air, land and water to some 6,000 installations compared to the 2000 regulated under the IPC regime. The LAPC regime will be replaced by Local Air Pollution Prevention and Control (LAPPC) which is similar to IPPC in procedures but will still regulate emissions to air only. LAPPC will continue to be managed by local authorities and is being introduced over a transitional period which started in April 2002. A raft of General, Process and Technical Guidance Notes have been, and continue to be, produced. Details of these and of the LAPC regime as a whole together with its Regulations and Orders are available in a briefing note which can be accessed through the Environment Agency's website.

Also relevant is the Urban Waste Water Treatment Directive. Under the transposing Regulations, the Assembly has powers to make designations in Wales requiring a higher or lesser level of treatment to be given to effluent discharges than is generally the norm under the Directive. The Directive's standards are enforced through the discharge consenting system.

The Assembly is also empowered to make designations under the Nitrates Directive: those who farm land which drains into designated Zones have to adopt certain practices to minimise nitrates pollution.

In the near future, the implementation of the EC Water Framework Directive will have a major impact as it establishes a common approach to protecting and setting environmental objectives. Its scope will include estuaries and coastal waters up to 1 mile from the shore. The Directive is to be phased in over coming years and will lead to the repeal of some older water-related Directives. The Directive has yet to be

transposed into National legislation – the deadline for doing so is December 2003 – and until it is the extent of the Assembly’s powers will not become clear.

(NB. The Marine Conservation Society’s Beachwatch 2002 Report, from which much of the above was abridged, should be consulted if a fuller description is required.)

On the general front, the Maritime and Coastguard Agency, an executive agency of the Department for Transport, Local Government and the Regions (DTLR), is responsible, *inter alia*, for minimising the risk of pollution of the marine environment from ships and, where pollution occurs, minimising its impact on UK waters, coastlines and economic interests. The Agency works closely with the Department of Trade and Industry (DTI) which is responsible for regulating and licensing offshore installations, including minimising the risk of pollution. The Agency has put in place a National Contingency Plan for dealing with oil pollution incidents. This Plan sets out a framework for dealing with major oil or chemical pollution incidents that threaten UK interests, and the roles and responsibilities of a wide range of national and local bodies in responding to an incident. DEFRA and the MCA tend to take the lead in dealing with oil pollution incidents with CCW, EAW and PCNPA assisting and advising on environmental pollution and nature conservation issues. The Welsh Assembly Government’s role is of information gatherer and provider to these bodies. The WAG has powers and responsibilities relating to clean up operations but these are enacted through the EAW, CCW and Local Authorities who will be responsible for co-ordinating the clean-up operations with DEFRA.

Within the Milford Haven, the Milford Haven Port Authority has a comprehensive Oil Pollution Contingency Plan, June 2000, to prevent pollution and to guide operations in the aftermath of an oil pollution incident within its area of responsibility. Similar contingency plans are in place in principal ports and harbours in the county.

Land based and freshwater pollution can impact on the coastal zone both directly through local terrestrial activity and also indirectly through transport of pollutants via air currents or freshwater flows. Industrial, agricultural and sewage/dirty water run off or discharges into watercourses which then flow into coastal waters can bring pollutants, contaminants, litter and pathogens onto beaches and into coastal environments. Control and prevention of such run-offs and discharges is principally the responsibility of the

Environment Agency, but local authorities also have a role. The Environment Agency has a range of action plans called Local Contributions to deal with catchment specific problems. These will draw on much of the information and actions contained in the previous Local Environment Agency Plans (LEAPs).

At a local authority level, the Community Plan for Pembrokeshire 2003 – 2008 produced by the Pembrokeshire Community Planning & Leadership Partnership identifies the following key targets relating to the promotion of a clean, healthy and valued environment : -

- To increase the percentage of municipal waste being recycled and composted from 15.62% to at least 25% by 2006/7 and 40% by 2009/10 with a consequent reduction in the amount disposed of by landfill from 86% to 75% by 2006/7 and 60% by 2009/10.
- To increase the percentage of monitored rivers in the “good” quality class from 95% to 99%
- To increase the number of Blue Flag beaches from 9 to 11

The Joint Unitary Development Plan for Pembrokeshire 2000 – 2016 prepared jointly by Pembrokeshire County Council and the Pembrokeshire Coast National Park Authority has no specific proposals or policies relating to the prevention and management of pollution and polluting substances except in the context of waste management and the development of renewable energy facilities.

Much of the work to improve the quality of air, land and water and prevent pollution and litter is through education and advice rather than enforcement and regulation. The Environment Agency publishes Pollution Prevention Guidelines on a number of subjects including PPG2 Above Ground Oil Storage Tanks, PPG4 Disposal of Sewage where no Mains Drainage is Available, PPG8 Safe Storage and Disposal of Used Oils, PPG14 Marinas and Craft, as well as publications on Oil Care on Your Boat and Water Wisdom and a number of guidance booklets on agricultural waste and water handling and advisory booklets are produced by a number of organisations including the CCW, MCA and DEFRA.

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ORGANISATIONS AND OTHER INTERESTS INVOLVED

Environment Agency Wales; Milford Haven Port Authority / Milford Docks Company; Pembrokeshire County Council; Department of Trade & Industry; Welsh Assembly Government; The British Oil Spill Control Association; D.V. Howells Ltd.; Pembrokeshire College; South Wales Sea Fisheries Committee; CORDAH; International Tanker Owners' Pollution Federation; International Maritime Organisation; Surfers Against Sewage; Marine Conservation Society; National Aquatic Litter Group; Keep Wales Tidy; Arfon Glan / Coast Care; Marine Pollution Monitoring Management Group; West Wales Oil Pollution Advisory Group; West Wales Environment Group; Maritime & Coastguard Agency; Centre for Research into Environment and Health; the Darwin Centre; Welsh Water / Dwr Cymru; Marine and Coastguard Agency; Pembrokeshire Coast National Park Authority; Countryside Council for Wales; Department of the Environment, Food & Rural Affairs; Radioactive Waste Management Advisory Committee.

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WHAT DO MARINE POLLUTION AND WATER QUALITY MEAN FOR PEMBROKESHIRE'S COASTAL ZONE?

The importance of high quality environments for the well-being of Pembrokeshire's coastal areas cannot be over-emphasised. All the principal business sectors in the county such as tourism and eco-tourism, activity holidays, agriculture, and fishing depend on it as do the diversity of fauna and flora for which Pembrokeshire is justly recognised. The fact that the quality of the coastal environment is at better than average levels is evidenced by the continuing diversity and wealth of the wildlife and the constant flow of visitors drawn to Pembrokeshire's beaches and cliff tops. However, the "Sea Empress" tanker incident in 1996 was a reminder of the fragility of the situation and although the recovery of both the environment and the economy are believed to have been complete, the perception and the fear still lingers.

Blue Flag beaches and clean, clear air attracts and delights visitors and residents, but the very large seasonal increase in the County's population and car traffic, the presence of industrial and agricultural activity in the area, together with the constant traffic of boats big and small to, from and past Pembrokeshire's ports and harbours all pose potential

threats to the natural purity of the air, land and water. Any toxic or polluting chemicals or rubbish on the land which ends up in a watercourse will be carried to the estuary and hence to the coastal waters. Materials and chemicals in the open Atlantic Ocean which drift to the Gulf Stream will be carried up to Pembrokeshire's coastline and deposited on beaches. Passing ships can lose cargo, discharge litter and deck/tank washings and create "greenhouse" gases through burning fuels. Bacteria and nutrient laden waters from sewage and storm water outfalls, yard and parlour washings, intensively grazed stock and slurry spread on fields can all impact on estuarial and coastal water quality causing or contributing to the down grading of shellfish waters, the failure of Blue Flag designations, human and animal health problems, algal blooms, biodiversity and other environmental changes, and ultimately the loss of visitors and the income they bring. Fishing vessels can lose or discard gear that can trap and kill wildlife and disable other vessels; ferries, cruise liners and pleasure boats can lose and discard rubbish which litters beaches causing nuisance and risk to people and kills wildlife through snaring or ingestion; dogs foul beaches causing health and nuisance problems; sediment plumes from dredging or excavation can suffocate benthic communities.

Light pollution from industrial establishments, street lights and urban areas can have a significant impact on the environment through distracting migratory birds, attracting night flying insects and in human terms preventing the experience of the natural darkness of night, the view of stars and the sense of wildness and isolation that many want. Noise, too, can be an irritant to people and to wildlife, causing disturbance and preventing the peaceful experience of the natural world. The smell arising from refineries chimneys, from rubbish and from sewage, etc. can also be a source of nuisance and irritation to people.

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ISSUES

1. WATER QUALITY PROBLEMS ASSOCIATED WITH A LAND SOURCE

- 1.1. Recycling of sewage should be used as a means of reducing problems and raising revenue for further improvements

- 1.2. Poor quality discharges from Steynton Road/Lilac Pumping Stations and from the Rath, Milford Haven
- 1.3. Poor quality discharges from Crundale Pumping Station, Merlin's Bridge STW, Haverfordwest sewage system, Hook STW and into Skrinkle Pill
- 1.4. There is inadequate provision for sewage treatment in South Pembrokeshire villages, e.g. Amroth, Llanteg, Stepside and Pleasant Valley
- 1.5. Combined effects of multiple effluent discharges, e.g. into Milford Haven / Daugleddau
- 1.6. Run off from agricultural land and holdings is perceived to have a significant detrimental impact on water quality and bacterial / viral loadings in estuarial and coastal waters
- 1.7. Run off from urban and industrial sites is perceived to have adverse environmental effects in estuarial / coastal areas
- 1.8. Poor water quality (brown water and foam) between Newport and Cwm yr Eglwys after heavy rain
- 1.9. The stream at Freshwater East shows indications of pollution
- 1.10. Sewage related litter is found on beaches, e.g. Newport and Parrog beaches and cause a public health risk and aesthetic degradation
- 1.11. The use of toxic anti-foulants on vessels results in environmental damage
- 1.12. Lost / discarded commercial and recreational fishing gear creates a hazard for humans and wildlife and is aesthetically intrusive

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2. **WATER QUALITY PROBLEMS ASSOCIATED WITH A SEA SOURCE**

- 2.1. Perception that illegal dumping of effluent and sewage from vessels moored in Milford Haven and St. Brides Bay is occurring
- 2.2. Offshore drilling and other marine fuel and energy exploration operations can cause pollution and reduce water quality
- 2.3. Oil on beaches, particularly Marloes, West Dale, Freshwater West and Broadhaven North, causes environmental damage and is an aesthetic problem and a nuisance
- 2.4. Discharges of ballast and bilge waters from vessels can create environmental damage

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3. **PROBLEMS ARISING FROM MARINE POLLUTION**

- 3.1. Perception of poor water quality and high pollution risk in Milford Haven discourages development of high quality fin fish aquaculture development
- 3.2. Need to identify chemical / biological inputs to water bodies which add to feedstocks rather than to polluting loads
- 3.3. Need to identify causes and solutions relating to high E coli levels in estuaries and coastal waters with reference to shellfish culture and harvesting
- 3.4. Public health restrictions on shellfish gathering in the Milford Haven due to poor water quality prevent the establishment of commercially viable fisheries in the area
- 3.5. Levels of E.coli in the Daugleddau/Milford Haven waterway can pose a health risk to participants in waterborne and submersion sports and to the viability of traditional shellfish fishing businesses
- 3.6. Bathing water quality Guideline Standards are not met in some areas
- 3.7. Many recreational water users use areas that are not designated as bathing beaches yet they still require high water quality
- 3.8. More beaches should be designated as bathing beaches, e.g. Castle Pill and Milford Beach
- 3.9. Rationalisation of mechanisms for resolving insurance claims following major pollution incidents is required
- 3.10. DSP has been identified in shellfish in Milford Haven which has affected the ability of fishermen to establish viable commercial fisheries
- 3.11. Litter on beaches, particularly that composed of inorganic, persistent materials, creates a hazard to humans and wildlife and causes environmental and aesthetic impact
- 3.12. Charity or other balloon release events create persistent litter, environmental impact and a hazard for wildlife

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4. **DOGS / HORSES ON BEACHES**

- 4.1. The provision of dog faeces collection bins is inadequate on many beaches

- 4.2. Zoning for dogs should be introduced on beaches where it is not currently in force in order to reduce deposition of faeces
- 4.3. Dog restrictions at Broadhaven North beach are ineffective and require improved signage and enforcement
- 4.4. Dog wardens should operate outside of office hours in order to improve enforcement of dog zone restrictions
- 4.5. Riding of horses on beaches, e.g. Nolton Haven and in the Milford Haven, are believed by some to cause pollution and habitat disturbance
- 4.6. Dog faeces on beaches, particularly in the vicinity of Newport, Milford Haven Waterway and the Daugleddau, Freshwater East and the Parrog (Goodwick) are a public nuisance and health risk

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5. **AIR POLLUTION**

- 5.1. Airborne pollution from refineries, particularly sulphur compounds can cause smell problems and can contribute to environmental pollution and climate change

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6. **NOISE POLLUTION**

- 6.1. Noise pollution from refineries particularly at night and early morning
- 6.2. Noise pollution from dogs, machinery, powered craft, etc. disturbs tranquillity and public enjoyment
- 6.3. Possible adverse effect of underwater noise pollution on marine life

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7. **LIGHT POLLUTION**

- 7.1. Light pollution from public buildings, refineries, can impact on the tranquil enjoyment of the Pembrokeshire countryside

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8. **LAND POLLUTION**

- 8.1. Environmental damage arising from dumping of silt – Castle Pill
- 8.2. Land based litter and fly-tipping can create a health and aesthetic problem and a risk to wildlife
- 8.3. Restoration of the contaminated land at the former Pembroke Power Station site needs to be completed before the environmental threats are removed and the land can be redeveloped
- 8.4. Dumping of garden waste and Christmas trees in water courses creates pollution and nuisance
- 8.5. Flytipping in coastal / estuarine areas, e.g. Catshole Quarry and Pembroke River

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9. **PROBLEMS RELATED TO TACKLING POLLUTION**

- 9.1. Quantification and identification required re diffuse pollution sources and the production of a strategy for dealing with them
- 9.2. Water pollution inputs and effects inadequately understood and documented in Pembrokeshire
- 9.3. Inadequate research and data on less understood polluting inputs
- 9.4. Inadequate funding to investigate and resolve sewage related problems
- 9.5. The sources, quantities and impacts of agricultural, urban and industrial run-offs / leachates are inadequately known to be tackled effectively
- 9.6. Inadequate storage and treatment provision of sewage in Milford Haven area leading to storm water overflow discharges during rain
- 9.7. There is a need to review and establish best practice for the prevention and management of hydrocarbon spillages on land and at sea
- 9.8. Some recreational water users lack awareness of environmental and H&S issues relevant to their activities
- 9.9. The ability of private individuals and businesses to comply with local and national plans for waste disposal and sewage treatment is becoming increasingly difficult without Local Authority support and funding
- 9.10. There is a need to establish acceptable and reasonable baseline and variation levels in monitoring results

- 9.11. Imbalance of penalties imposed by courts are proportionately more onerous on small polluters than large polluters – oil companies get off lightly
- 9.12. There is a need for improved education of all water users regarding their own personal responsibility and polluting impacts
- 9.13. Public awareness of water quality issues is poor, e.g. identification of true pollution as opposed to natural events (algal/nutrient foam on beaches)
- 9.14. The true impacts of spoil dumping at sea need to be evaluated and properly understood
- 9.15. Improvements are required to oil clean up operations to minimise the environmental damage caused

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