

**EUROPEAN WATER ASSOCIATION  
REPORT OF WORKSHOP 22-23 JANUARY 2002  
ON THE EUROPEAN COMMISSION DRAFT OF  
A NEW DIRECTIVE ON BATHING WATERS  
HELD AT KNMI DE BILT NETHERLANDS**

**SUMMARY OF THE POINTS OF SPECIAL INTEREST ARISING FROM THE  
WORKSHOP**

These points are summarised in bullet form. More detail is given subsequently in the Report. The bullet points have reference to the more detailed paragraph numbers in the main Report.

General (paras 6-13)

- Existing Directive successful, has almost achieved its goals, needs improvement, but there are questions about the nature and benefits of improvements which must focus on public health protection.
- More epidemiological studies are needed.
- Risk assessment and hazard avoidance are at the heart of the new Directive. It needs a helpful framework of risk assessment to act as a common platform for management and public understanding. The WHO concept of risk assessment should be referred to more explicitly. The difference between hazard and risk needs better understanding and distinction.
- The management of bathing waters has two aspects; the first is related to the long term reduction of risk by investment; the second is the remedial actions related to immediate events. So investment must now be accompanied by management.
- Sustainability and practicability principles must be applied.

Scope and definition (paras 14 - 17)

- Leave the title of the Directive unaltered.
- Focus the Directive on waters where swimming and associated activities are promoted formally. All other waters should have the provision of keeping users informed on quality and risk etc.
- Correlate designation to the surface water categories of the Water Framework Directive.
- There should be distinction between heavily and lightly used bathing waters
- Transpose from current designation, but then de-designate if appropriate.
- Define de-designation criteria carefully to avoid abuse and controversy.

### Standards and monitoring and compliance (paras 18 - 30)

- New criteria should be based on disease- response relationships, which decrease the incidence of illness.
- Compliance should be assessed on a wider basis than just quality data - indeed it should be possible to comply with the Directive and still exceed the quality criteria on the basis of monitoring data.
- The role of monitoring needs more careful thought. There must be a 'level playing field' on sampling programmes for compliance and operational management.
- The nature of the quality criteria was discussed and the faults and benefits of percentiles were of particular interest. The criteria should be statistically based, but expressed in simple robust terms. The meeting agreed that further work is needed urgently on comparing different approaches such as rolling geometric means and 95 percentiles.
- The Directive should be flexible enough to allow for the addition of future parameters, which measured the presence of sewage rather than the presence of indicators per se - e. g. DNA.
- The meeting supported the use of E. Coli and enterococci for the time being.

### Management Plans (paras 31 - 37)

- Beach management is focussed only on water. The meeting was divided on whether reference should be made to the management of other health risks such as beach litter and dogs' faeces. There is no clear idea of the future of award schemes under the Directive.
- Responsibilities in the Beach Management Team should be defined clearly at a local level. The Team must have access to medical advice.
- The Directive should define the principles of actions to be taken under the Plan in a prescriptive but not restrictive way, to ensure a 'level playing field' through-out the Union
- The unique character of natural quality variations, due for, example, to bird populations should be recognised - one way would be by derogation with respect to quality compliance, but not of risk assessment.

### Information (paras 34 - 41)

- Micro- biological monitoring always provides data several days old and is of no real use in posting signs on hazard. It helps short term and long term management and risk assessments.
- Signs must be of a European standard and defined by the overall risk assessment in any swimming season and based on a matrix taking account of the work of the WHO. Short term modification of the signs may be made as a result of on-going risk assessment of events. Any warnings or closure of the waters can only be abated on the basis of monitoring giving the 'all clear'. The meeting recommended that the matrix given in Table 4.8 of the July Report can be improved.

- Management and any audit and assessment may be recorded in Registers and any audit and assessment of compliance reported should be made with criteria defined in the Directive to ensure a 'level playing field' through-out the Union
- Commission to study bathers needs for information.

#### Follow up

- The EWA has set up networks to continue work, particularly on compliance and monitoring and on the development of Beach Management Plans

### **BACKGROUND**

1. The European Water Association (EWA) is an independent non-governmental and non-profit making organisation dealing with the management and improvement of the water environment. It is one of the major professional associations in Europe that covers the whole water sector, wastewater as well as drinking water and water related waste, providing best practice and best science. With member associations from nearly all Central and Eastern European Countries, it not only includes most of the current European Union member states, Norway, and Switzerland, but also most of the Candidate Countries and Russia. The EWA consists today of nearly 30 European national associations representing professionals and technicians for wastewater and water utilities as well as consultants, and about 10 firms and enterprises as corporate members. The association thus represents about 55,000 professional individuals working in their national associations in a broad field of water management.
2. On this basis, a number of workshops on Proposals for and Drafts of Directives have been organised successfully. There is intense interest in the European water profession since a decision was taken to review the current bathing water Directive (76/160/EC). Whatever role individuals may have in their jobs, they care about the water environment and some will have responsibility for developing strategies and tactics for the successful implementation of the final new Directive. Furthermore, as experts and being experienced in the front-line delivery of service to the public, the professionals are stakeholders in the process and have knowledge to contribute. As a result of various discussions, the EWA decided in mid 2001 to organise a workshop in De Bilt, Netherlands. The basis of the workshop was the draft proposal document of July 2001. The date was set finally in January 2002 to allow the Commission to attend Unfortunately, no-one from the Commission was able to attend, but there were individuals familiar with the discussion processes in the development of the Draft. The objective was to provide an immediate input into the Directive discussions and to establish a network of experts to take forward more detailed examination of key points.

3. 38 delegates attended from 13 countries (see Appendix 5). The workshop lasted one and a half days; at the conclusion editors volunteered to work under the auspices of the EWA to assist it in preparing this Report (see Appendix 4). There were five presentations given to set the scene and these were discussed. The available contents of the presentations are available on the EWA website, but much was done verbally. These were followed by workshops focussed on :

- scope and definition
- standards and monitoring and compliance
- management plans
- public information

4 The discussions were structured with the general headings

Current Directive

- What did it intend to achieve?
- What did it actually achieve?
- Why was there a difference?
- What lessons did we learn?
- Was it the right thing to have done?

The Draft Directive

- What should it be doing ?
- What will the Directive actually do?
- Why is there a difference ?
- What lessons are we using ?
- What changes would we like to see ?
- What can the EWA network do to help development and implementation?

5 The results of the working groups were fed back to a plenary discussion session. In this and, indeed in the discussions following the presentations, the issues were debated in a lively manner, in many instances repeating the debates of the working groups. It would be wrong to report that all points were agreed completely, but there were a number of generic concern and interest and these form the basis of this summary report. It is prepared for submission to the Commission's meeting on 8<sup>th</sup> February and subsequent discussions.

**SOME OVERALL THOUGHTS ON THE DRAFT**

6 The current Directive, for all its faults, was recognised as successful in achieving improvements in bathing waters. However, it has become a Directive with an out-of-date way of focussing solely on standards. These standards have become scientifically out of date and the quality parameters do not give any sound insight into bathing water quality anymore.

7 In preparing this report a point was emphasised to the editors. The purpose of the draft Directive is not clear to everyone. Is the real purpose environmental protection or objec-

tive comparison of bathing waters for trade within the Union or ensuring the most effective public health protection as effective as possible. It must be the latter and if this is so, bathing population size at risk is important. The lack of sufficient and relevant data about the link between water quality and infectious risk should now obligate each Member State to conduct epidemiological studies. Different monitoring regimes would be needed for the alternative objectives listed above. It was observed that the workshop did not allow sufficient time to explore these issues in depth, but then it was suggested that neither had the Commission's programme so far.

8 A future Directive must be based on public health and managing risks to bathers. There is a need to have a 'level playing field' in terms of risk assessment (which includes conventional concepts of compliance), because comparisons are made for various purposes. It is wrong that a community should claim low risk status for its bathing waters if the assessment is based on biased methods. Whilst risk assessment is at the heart of the Draft, there is very little which could act as a common platform, or provide useful advice, to competent authorities. Nevertheless the meeting recognised that the Directive would draw on the WHO work and this needs to be defined more explicitly.

9 There should be a clear understanding of the difference between hazard and risk (i. e the difference between pollution of a water and a chance that pollution will occur) and the difference between managed and unmanaged risks (i. e the difference between the chance of an event occurring and the reduced chances when control measures are installed). This is demonstrated by the differences between the hazard of a bathing water in which a sewer has overflowed, the high risks of that sewer overflowing, the reduction of risk by management by the provision of storage facilities and telemetry alarms, and the re-routing of the sewer to remove risk. Perhaps some lessons should be drawn from health and safety legislation and operational practices.

10 The impact of the existing Directive on public health, a central aim of the legislation, was perceived to have been positive. The Draft rightly maintains focus in this area. Nonetheless, the benefit to public health of increasing standards remains unquantified despite related epidemiological studies. This quantification should be provided and related to the costs of achieving these standards in order to assess cost and benefit. In this context the risks of infection from bathing waters need to be compared to risks from other sources in communities and it should be established whether or not other disease control strategies can play a role alongside bathing water management.

11 The point was made by some delegates that the time has passed for massive investment programmes alone to be the solution to the problem; in future, management actions will be equally if not more important.

12 The future Directive must be based on sound science to understand the public health implications. and it will be better to wait for this rather than just have a new Directive for the sake of it. It is important that research on the key issues of outstanding concern is completed as quickly as possible. The new Directive should have the provision to incor-

porate research by stimulation of a Scientific Committee established under the Directive. However the Directive could not be changed too often as this would be too unstable as a basis for investment and management.

13 The new Directive must take account of the principles of sustainability. The consumption of natural resources and economic impact in providing recreational benefits must be taken into account. If for example all waters were fit to be used for recreation which involved immersion, the capital costs and consumption of energy for utilities and consequences for agriculture would outweigh the benefits to human society in terms of sustainability

### **SOME THOUGHTS ON THE DRAFT**

#### SCOPE AND DEFINITION (*Workshop report Appendix 1*)

14 The title of the Directive should remain the same but there is some concern over the use of the definition of bathing. The nub of the discussion was swimming in environmental waters and that is the thrust of the Draft. The designation of waters should be restricted to where bathing is promoted. The notion of designation for *waters which are regularly visited by local or visiting people* is too open-ended. Promotion should not be at the instigation of entrepreneurs but by the competent authority. It must always be remembered that designation can have serious economic consequences for the rest of the community. The promotion should be in line with the planning procedures, in which, the designating competent authority would be a statutory consultee or even decisive, according to local administrative arrangements.

15 Formal identification and designation of a bathing water should be restricted to swimming and associated activities like unassisted diving and generally 'splashing around' - and a description is needed, which does not include other water uses. For example by modifying the current definition to '*exercising water activities in which whole body contact is the deliberate and prime focus and during which there is significant risk of swallowing water*'. Member States must ensure that there are mechanisms in place, which provide data and information on the risks of recreational uses of non-designated waters involving body contact including non-promoted swimming, so that potential users could make their own assessment of hazard from the risks in the waters. Such mechanisms do not have to be statutory but could be a voluntary arrangement between competent authorities and users associations. Member States may choose to designate waters used for other recreational purposes than swimming, but this would be a matter of Subsidiarity and not obligation. Such choices and decisions would be made on local or regional economic-political criteria - for example if it was desired to promote a water skiing area with EU bathing water status as a tourism asset. Such an approach was considered by the meeting to represent the best balance between public health protection and compli-

ance costs, and will provide a database of information which can be used to assess the impacts of widening the definition on a statutory basis, if this is required in future.

16 It was observed during the discussions, although not formally concluded, that there should be correlation with the categories of surface water defined under the Water Framework Directive - quite apart from any classification like that proposed in Table 4.8 of the July document (this matrix will be discussed later). But it would ease administration if there was correlation. For instance, a natural water with no human influence will only have natural risks, such as those from bird populations, but a heavily modified water is likely to have substantial anthropogenic risks, (which may be very well controlled). Another relevant factor in this context is that there should be some distinction between heavily used and lightly used waters, which will certainly be relevant in risk assessment. There will many other risks in using waters for bathing apart from those from faecal infection - such as drowning, toxic cyanobacteria and other human pathogens.

17 As a starting point, the majority of existing bathing waters should be transposed automatically to be designated under the new Directive, leaving new waters to be designated at Member States discretion. This will only be relevant if the scope of the Directive remains more or less the same. This will ensure that there will be many waters controlled by the terms of the new Directive. However some may then be de-designated. The terms of de-designation will need to be very clear to satisfy the wider community. Whilst it was not discussed in detail, in preparing this report, the EWA was asked to give an example for clarity. One such reason is that a transposed water is not of promoted status. Another element can be that it has been designated for non-bathing purposes and functions. In these cases, there could be an information status in the non-bathing area. De-designation could be controversial and must not be open to abuse.

### STANDARDS, MONITORING AND COMPLIANCE (*Workshop report Appendix 2*)

18 These must be kept in harmony; too often the process underlying the derivation of standards, the basis of the standards, the monitoring and the assessment of compliance are disconnected processes. The meeting had reported to it the example of the nitrate standard in drinking water in the 1980 Directive. In this, the drinking water limit was based on the WHO's lifetime exposure values, but was expressed in the Directive as an instantaneous value for the purpose of compliance.

19 The meeting was unanimous that we learned more about the dose- response relationships. If there is to be a more stringent set of quality criteria, the communities should know that there will be health benefit. The new values should decrease the incidence of illness.

20 The crucial point is that compliance with the new Directive will be much more than just statistical working of monitoring data. The European commission must be clear how Member States can comply with the terms of the new directive. Taking action in the most extensive interpretation could, for example, be a possible way of compliance. For exam-

ple, if the quality of a normally good water is affected temporarily and adversely by a waste water discharge, it should be subject to a temporary warning notice, or even closure according to local practice, until the hazards pass. Under these circumstances, the risks to bathers would not be changed, the Directive has been complied with, but the micro-biological quality will have failed the Directive criteria for a certain period of time. Of course, if the water has warnings too often this may well be judged as unacceptable under the Directive. In this case, de-designation and cessation of promotion might be an option. There should be a clear difference between long and short term actions. Some new approach is needed and the EWA has set up a working group to continue on this work.

21 The usefulness of micro-biological monitoring was discussed in its own right and it is clear that there are many points of view - work will continue in the EWA on this. At its simplest level, monitoring is no use in terms of real time hazard assessment. The results are at best a few days old. On the other hand, if the water is one in which quality can vary substantially from day to day, it should be given a high risk rating. Monitoring data will be useful in normal waters, where an exceptional incident has caused a micro-biological hazard and the waters have been closed or warning signs posted. The data will give the final 'all clear' to back the re-opening of the water. They will also be useful in guiding investment, picking up unforeseen insidious problems, such as fractured sewers in the ongoing risk assessments and understanding the dynamics of the waters.

22 The criteria for monitoring need to be defined in such a way that they provide a 'level playing field', yet they allow local circumstances to be taken into account. For example, it is known that different compliance assessments, i. e. different qualities, can be obtained by taking samples at the same time of day as compared to those taken from the same state of tide (e. g. taking samples always at high tide). There are numerous other examples of quality variations from different approaches to sampling. Again the EWA will include this in their work programmes.

23 The issue of the numerical standard and its statistical content was debated. It is clear that there are many views. The Draft addresses the concept of a statistical standard. Under normal circumstances, this would be 95 percentile, i. e. if the numerical value is complied with for 95 percent of time (or samples and this is a separate statistical debate), then the water is suitable for the prescribed use. It may be necessary to define an absolute upper value to avoid the possibility of perceived abuse - the Urban Wastewater Treatment Directive is a very good example of this concept. There is not an opportunity to of pollute in up to 5 percent of samples (or more precisely - time). In such case a exceedance of an individual sample is not a breach of the limit, provided that the statistical envelope is complied with. However, the meeting heard that the hazard in bathing water arose from short term exposure. So there is a challenge in trying to relate this hazard to the percentile concept - yet another indictment of the use of quality data for short term, real-time management.

24 The meeting concluded that the percentile approach as proposed in the Draft is too simple, because this did not reveal the variability of measurements. All available data should be used to assess a bathing water. There was a strong plea using a rolling geometric mean; this was also proposed for the classification of a location (e. g. related to the standards), whilst the use of individual data could be used as a basis for beach management during the bathing season. There should be an index in terms of relative health risk; this information is available from cohort studies and should be used by the European Commission

25 Whatever criteria are set, they need to be clear on the difference between their status as indicators of pollution and the measurement of a single species (or even genus disease risk). For this reason, it was recommended that the Directive should be flexible enough to allow for the application of biochemical monitoring when reliable methods become available. But it was concluded for now that E. Coli and intestinal enterococci were correct parameters and should have defined quality criteria.

26 The expression of such criteria should be simple and robust. Views were expressed that the assessment of quality compliance should be based on each determinant separately. If percentiles are used, the 'look-table' approach of the UWWTD should be employed.

27 Views were expressed that when a bad sample occurs, re-samples should be taken to provide information to locate the problem and remedy it. There is a very clear and essential need of the re-sample data to manage the quality of the bathing waters. Re-sampling regimes should be defined in the Beach Management Plans. This brings in a number of challenges, bearing in mind the length of time between sampling and results. Experts with individual experience reported practical problems with re-sampling experienced in other areas of water quality management. If the subsequent samples confirm the problem, which may be remedied quickly, the results of compliance may be skewed towards failure and hence the repeat exceedances should be omitted from the compliance assessment at the end of the season. On the other hand if the exceedances continue for a longer period, sufficient of them should be included to be representative. If the re-samples cast doubt on the original exceedances, there has to be a very clear basis for omitting it from the compliance assessment. The workshop delegates agreed that re-samples should not be included in compliance assessment, but used to explain and support short term action. For example lifting bathing restrictions after the re-samples are satisfactory.

28 When an exceedance is known to be likely as a result of a physical event, this event should be recorded in a log or register and samples taken to truly represent the impact of this event, as well as for operational purposes.

29 An events log or public register may be part of the compliance regime. There needs to be a 'level playing field' when the management actions are assessed and audited for compliance. The auditing processes need to be consistent across the Union

30 Views were expressed that the compliance matrix included in the Draft (Table 4.8) should be modified or omitted from the final Directive. However, such a matrix or something similar might be useful tool in the context of Management Plans and details would have to be determined by an independent technical committee under the Directive.

### MANAGEMENT PLANS (Workshop report Appendix 3)

31 The meeting did not have an opportunity to make any detailed recommendations on the content of such plans, but the EWA will be continuing work on this aspect.

32 The concept of Beach Management Plans is really a misnomer - the Draft is really about the management of bathing waters. It was recognised that beach cleanliness is as of much interest to bathers as that of bathing waters. It does seem a waste of the Member States' resources if large sums of money are spent, for example on the treatment of sewage and the rerouting of public sewers and the control of storm waters, and then large quantities of infectious organisms are deposited on the beach in faecal matter be it from humans or animals, particularly dogs. Whilst this was recognised, the meeting was divided on whether no mention should be made of the control of such matters in the Beach Plan, or whether reference should be made in it to correlation of the management of the land area of a beach (i. e. beach cleaning) by the appropriate authorities or enterprises, or whether there should be provision in the Plan to ban dogs and to provide toilets in the context of beaches with 'promoted waters'. To some extent correlation this could be covered by explicit mention of these issues in the criterion for risk assessment, leaving to Members States to decide on whether to include them in the Plans as a matter of Subsidiarity. It is, no doubt a sensitive topic, and is covered by award schemes, particularly the 'Blue Flag Scheme' and there were questions about the fate of the Scheme when the Directive is implemented fully.

33 The matter of Competence was discussed. It was recognised that different States have different administration procedures and the Directive should allow for this through Subsidiarity. It must be clearly understood who identifies, designates, monitors, reports and who has the responsibility for establishing the Plan, mobilising remedial action and takes the decision to close a water. Medical opinion should be sought in the Management Team and the onus of closure should be on people with real responsibility for all the consequences of their decisions. The criteria for reopening a closed beach will be very important in converting a real hazard back into a managed risk. The experience of colleagues in water supply and in health and safety should be sought.

34 The management of bathing waters has two aspects. The first is related to the long term reduction of risk by investment; the second is the remedial actions related to immediate events. Whilst the Management Team will have an important role to play as a

stakeholder in the former, its main focus will be in the latter. The investing stakeholders will be part of the Management Team - particularly representatives from the utilities and environmental protection bodies.

35 So, the criteria for when action is required and the steps to be taken will need to be defined very carefully - being prescriptive, but not restrictive.

36 The trigger for action will more often than not, be the report of a real-time physical event, such as an overflowing sewer, rather than retrospective monitoring data and so communication will be very important. As mentioned earlier, all such events and, indeed, all monitoring data should be available in a public register.

37 In the workshop debates and in the preparation of this report, it was clear that there is a clear distinction between exceedance of the quality values due to natural, as opposed to anthropogenic, reasons. An example of the former would be failure caused by bird colonies. In preparing this report the EWA Secretariat suggests that there are a number of underlying issues - such as the question of whether bathing waters should be promoted in such areas, but recognises that this may be unavoidable, particularly in existing waters. It is important that the risks of bathing in these waters should be notified to the public and that monitoring should continue, but it may well be that there could be derogation from quality compliance and the need to take remedial action when these values are exceeded. It is hoped that the number of these water will be limited, but the matter needs closer attention than is indicated by the detail of the text of the Draft.

#### PUBLIC INFORMATION (*Workshop report Appendix 4*)

38 The workshop delegates thought that what the public wants, is information on the risks of bathing in a particular water. However, it agreed that there is an information deficit. there is no substantial evidence on what bathers, throughout the Union, want. The delegates recommended that the Commission be asked to gather information, or to initiate exchange, or start research on what the actual need for information is to satisfy bathers. In practice, any signs on the beach should relate to the overall risks in the water. They should placed alongside those relating to safety risks and those relating to the banning of dogs on the beach (if this is required by local law). They should be simple accessible and be of a common European standard. These signs may be supplemented by temporary Beach Management warning signs arising from short term events, warning the bathers of a temporary change of status or even closure (can bathing be prohibited under the Human Rights legislation ?). Information relating directly to recent monitoring cannot play a very positive role in signs, but as discussed earlier, will be very helpful in identifying the temporary increase in risks or some insidious change of circumstances.

39 This should suffice for most people, but for more discerning users of beaches, information could be available in the form of public registers. These should be available electronically on the Internet, although this should be encouraged and not made mandatory. The information should always refer to the risks rather than just monitoring data and

should include management action. The initial risk assessment should be included. Monitoring should include physical inspection as well as analysis of samples.

40 In this context, the information available on recreational uses of non designated waters water is part of the services to the public. However, careful thought needs to be given on how understandable that information is to the lay public in making these risk assessments and, as alluded to earlier, such services may be through a variety of partnerships involving user organisations.

### ***FINAL CONTRIBUTIONS***

41 There was not sufficient time to consider all the details necessary for a successful Directive and work is going to continue. This report is an attempt to capture the essence of all the discussions. To record all the pros and cons of the arguments on all the points would obscure this essence, but where there was marked diversity, this is recorded.

42 All in all, the meeting agreed that the management of bathing waters has two aspects. The first is related to the long term reduction of risk by investment; the second is the remedial actions related to immediate events. If it was necessary to have another Directive, it should be clearly focussed on

- public health protection
- risk identification and management
- a focus on immersion activities with provision to support other activities with information
- a clear difference between exceedance in a sample, breach of the numerical standards and compliance with the Directive
- a 'level playing field' in all aspects, such as sampling regimes, management actions and assessment and audit of compliance
- practicability and sustainability principles
- management and not just investment is an important tool

43 Any further queries on this report can be addressed to the EWA offices in Hennef.

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### **DISCLAIMER**

The report has been prepared to represent the overall discussions and thoughts on the Draft. It does not necessarily represent the views of all the participants.

## **APPENDICES WORKING GROUP REPORTS DISCUSSED IN THE PLENARY**

### **APPENDIX 1 SCOPE AND DEFINITION**

The group generally agrees with the scope of the proposed revision of the Directive and acknowledges the fact that risk assessment is allowed to be considered.

There was a vivid discussion about the definition of bathing water including "exercising water activities" that may be recreational uses. It was concluded that the name of the Directive should remain the same, i. e. "Directive on the quality of bathing water".

The current definition of "Water identified as a bathing water" seems to include many other "immersion" activities, including the following: windsurfing, white-water/slalom canoeing, water skiing, jet-skiing, parascending, diving.

These need to be distinguished from "incidental contact" activities, where whole body immersion is not deliberate or unavoidable, and would therefore not come under the definition, even though immersion may occur accidentally. These include: sailing, rowing, placid water canoeing or kayaking (no deliberate capsizes or "eskimo rolls"), powered boating, angling.

Even if the latter activities are excluded, the new definition could result in a large increase in the number of bathing waters identified. This could lead to a considerable increase in monitoring and compliance costs. Monitoring would, in many cases, be more costly, because the wider area of water covered by such activities would require more sampling points; access to sampling points would often need to be by boat.

The principle compliance cost would be improvements to sewage infrastructure, such as disinfection, and improvements to combined sewer overflows.

People carrying out "immersion" activities are exposed to micro-biological health hazards through water ingestion to at least as great an extent as bathers. However, as with other "extreme sports", they are often practiced by people who accept risks to a greater extent than do bathers. Water quality risks are usually much smaller than other risks such as drowning and physical injury.

The group was, therefore, not convinced that the costs resulting from a wider definition would be exceeded by the benefits derived from greater public health protection. It did believe, however, that there is a need to provide information to people carrying out such immersion activities. It recommended that they are excluded from the definition of bathing, but that Member States are obliged to provide information to such people (either when requested, or when deemed necessary by the competent authority). This could include the setting up of a monitoring programme, producing a beach profile, and carrying

out of risks assessments, as specified in the proposed revised Directive. Such an approach would have the additional benefit of providing a database of information, which could be used to assess the costs and benefits of widening the definition in perhaps 5 or 10 years time.

The definition of "Water identified as a bathing water" requires the additional definition of the concept concerning "promotion for bathing", in the sense that promotion shall be done by the competent authorities and not by commercial entrepreneurs.

The identification process should be based on the principle of sustainability in order to ensure that no deleterious impact would be caused by such that identification.

Clear criteria for de-identification of bathing waters are necessary.

## APPENDIX 2 STANDARDS AND COMPLIANCE

### Current Directive

*What did it intend to achieve?*

The purpose of the 1976 Directive was a combination of protection of human health and improvement in water quality and the environment. It was also required to harmonise a variety of approaches to bathing water management throughout Europe and provide quality assurance. This dual purpose was demonstrated by the wide range of parameters listed in the Directive (eg. microorganisms and turbidity).

*What did it actually achieve?*

There has been a significant improvement in water quality and better wastewater treatment (in combination with the Urban Waste Water Treatment Directive). The improved water quality had additional benefits for drinking water supplies.

Improvements in food hygiene have also led to reduced incidence of GI, with bathing water activity contributing a relatively reduced incidence. The reduction in gross wastewater faecal contamination as a result of Directive implementation is also likely to have reduced the incidence of more severe infectious diseases (eg typhoid?).

However, there is no clear picture of the actual benefits because these have never been monitored constantly. A recommendation for the revision is that a procedure for monitoring the effects/benefits should be considered.

The use of two standards (Mandatory and Guideline) has resulted in most MS trying to achieve the more stringent Guideline standard, mostly as a result of public pressure (eg blue flag).

*What lessons did we learn?*

Large-scale infrastructure often did not get immediate success. Often the continuous waste water sources were masking smaller but significant sources.

There is some evidence that bathing waters have been de-designated as a result of water quality problems. The new directive should give opportunities for de-select inappropriate bathing waters.

There is some evidence to suggest that different applications of water quality sampling by the MS may have lead to a different status of bathing zones. A recommendation was sug-

gested that the revised monitoring protocol should be defined that gives comparable results that can be easily audited.

*Was it the right thing to have done?*

Yes.

### Draft Directive

#### *Parameters*

Parameters used should have a demonstrated relationship with known health effects. No direct causal link has been demonstrated at this time between the actual pathogens and bathing induced illness. The use of indicators identified in the draft directive is therefore accepted.

For coastal and fresh waters it was recognised that intestinal enterococci is the most appropriate indicator as links with health effects have been established. However some participants wanted to keep E. Coli as an indicator to maintain a historic record or to provide additional information safeguards.

The new directive should be open to the application of new parameters and/or indicators (e. g. F + phages, DNA, aminopropanones etc.). Several of these techniques are already suitable for use in risk assessments and finding sources. Any new parameters are likely to take a long time to incorporate.

Methods of analysis should be specified by citing the appropriate CEN/ISO standards. The possibility of using other methods that are shown to give equivalent results should be included.

#### *Monitoring*

Recognition of a risk-based approach to monitoring is recommended, e. g. less sampling is required for consistently good quality bathing waters. How about bad quality waters – could these also have fewer samples?

#### *Human health benefits*

Any new or more stringent standards (which may include beach management actions) should have a demonstrable health benefit.

The relative effect of changes to the standards in terms of health benefit should be calculated prior to the choice of the standard which has to be left over to the politicians. They can then make an informed choice.

Work by Wiedenmann et al. presented at the EWA-workshop corroborates the previous health effects work of David Kay et al. This is important as the further health effects, if any, would appear to be achieved at relatively stringent microbiological water quality.

Initial data analysis would suggest that the thresholds of indicator (IE) for health effects are similar for both fresh and coastal waters.

The work recognises that there is an endemic baseline of GI which is about the same for both studies (3% for Wiedenmann in a one week interval and 10% for Kay in a three week interval) and that a proportion of the trialists had already been infected from other non-bathing sources. US EPA uses 10<sup>-4</sup> as a maximum limit for an annual infectious risk rate beyond which actions to reduce infection risk should be taken. This was primarily related to drinking water standards. However, the workshop thought that such a limit should be explored for the revision, noting that the epidemiological studies show infectious risk rates higher than this even at relatively low levels of microorganisms.

#### *Thresholds / standards*

No consensus was achieved on standards, as it is recognised as a decision for politicians. However, if the stated aim is to achieve health benefits a tight microbiological threshold may be required (see Wiedenmann and Kay studies) and/or the use of beach management actions to prevent human contact during contamination periods (particularly during and immediately after wet weather events).

At the levels proposed in the draft directive many member states may have significantly reduced compliance rates, especially for enterococci. Beach management and discounting are likely to be required for micro- biological standards to provide appropriate adequate health protection.

The choice of thresholds/standards should have a balance of scientific, social and political dimensions.

#### *Statistics*

Several statistical approaches are available. The “old directive approach” of percent of samples was thought to be inappropriate if used on its own or when few data are available.

The draft Directive has a percentile based approach. Further investigation of this statistical basis was recommended. Many participants thought this statistic on its own would not be optimal.

The benefits of using the geometric mean to provide a better description of bathing water quality over time were discussed and agreed. Its use for compliance was discussed and additional studies recommended to evaluate the use of geometric mean as a compliance tool.

A data control graph (time series microbiology with thresholds overlaid?) should be provided for each bathing water.

### *Timescale*

Further debate is needed on the use of 1, 3 or 5 year datasets. The advantage of longer datasets was recognised for damping out single or small numbers of high microbial values.

### *Discounting*

It is likely that some form of discounting would be needed when applying a more stringent microbiological standard.

A new category of discounted bathing water (eg like mandatory, guideline) that is compliant will be needed. There would then be three categories: pass; pass (discounted); fail.

All Directive monitoring data should be available to the public.

## APPENDIX 3 MANAGEMENT PLANS

### Balance of the Current Directive

The existing Bathing Water Directive (76/160/EEC) had driven management actions not because it was a requirement but a secondary action in order to be capable of reaching compliance with the Directive. The lessons we learnt were that on single failure, which may be merely accidental, compromised the compliance of a bathing area and that this approach seemed to be not scientifically correct. The Directive had an important impact on public health, confidence and recreational opportunity and raised people concern and expectations.

It was considered that the Directive promoted improvement of bathing water quality.

### Draft Directive

The suggested improvement to the draft were the following:

It should be emphasised that each Member State should, in view of the context of national systems fix who is responsible of the management team and of the management actions. Guidelines are needed to carry out the risk assessment, but these should be prepared by a technical committee, but only general guidance should be included in the Directive.

It was considered that the table 4.8 of the classification matrix for recreational-water environments should be deleted. If any details in that sense have to be derived from the Directive this should be developed by a technical committee.

It is important to indicate that analytical “Results” obtained from any risk assessment should not be considered part of the compliance reporting. These results should only be a tool in management actions. The beach management actions should take into account the size of the exposed population.

There should be reference in the new Directive for the need to engage management actions in cases of cyanobacteria blooms, outbreak or epidemics events

It should be recognised in the Directive that the introduction of management actions involving disinfection by chlorine in order to comply with the new standards may have some other consequences for the environment.

In addition the indicators, e. g. (E. Coli and enterococci) will not be valid to evaluate the presence of certain other pathogens i. e. viruses, cryptosporidia, giardia., particularly where discharges have been disinfected or the presence of algal toxins.

## APPENDIX 4 PUBLIC INFORMATION

Currently there is a reasonable quantity of historical information available in the European Commission, with a colour-coded system to indicate annual compliance of bathing waters.

Member States provide details on bathing waters with the Internet being popular channel of communication. Some member states provide the most recent results of individual samples, making them available on the website within a week of the sample being taken.

There are two basic levels of information provision – the first is an overview which could include a summary of historical bathing water quality (already available on the EC website). This could prove to be of interest to people planning ahead for a holiday.

The next level of information will be that provided at the beach. A strong consensus was reached that a standard system of signs is needed to avoid confusion, and this should build on existing systems. It is important not to confuse people on the beach – for instance if a flag is raised to say swimming is dangerous because of strong currents, a flag should not also be raised saying it is safe to swim in terms of microbiological quality. This would only confuse the public. The blue flag system was cited as a potential model to help a standard system of signs.

It was noted by people from different Member States that bathing water quality is only one small part of the information sought by people visiting a beach. The cleanliness of the beach, the safety in terms of strong currents and the suitability for families were all listed as significant. However it was not felt appropriate for the Directive to be extended to include this type of information.

The generation of real-time bathing water quality data is not yet a reality. The current time lag between taking a sample and producing a result is between 2 and 4 days. Therefore it will not be possible to say with any certainty what the quality of the water will be at any moment in time. The EU-funded research may help to speed up analysis but there will always be a significant time-lag.

Rapid analysis could be of benefit after a pollution incident. It would help the beach management team know when bathing water quality was back within acceptable limits and therefore enable warning signs to be removed without an unnecessary delay.

Water quality monitoring under the Directive against the proposed criteria will not highlight public health risks which may arise from toxic algae blooms - but it is not advocated that extra criteria should be added. Rather, such events should be taken into account in on-going risk assessments and the actions taken to provide warnings to the public. There are places already in the EU where such notices are already displayed.

Provision of background information (such as the beach profile) could be useful. However there was a note of caution as inputs identified as ‘high risk’ may cause unnecessary public concern. A combined sewer overflow is only a potential risk when it discharges.

The time and effort put into the generation and provision of information at beaches needs to take into account the number of people using the bathing waters. Remote rural beaches visited by a limited number of people would not be expected to have the same level of information provided as a busy urban beach. Sign-posts at some remote beaches would be a visual nuisance.

In the USA permanent signs are put up to indicate whether there is a risk that bathing water quality is compromised after e. g. heavy rainfall events. There was agreement that such signs could be useful but they would need to be supported by additional warnings to indicate exactly when the last heavy rainfall event had occurred.

Trying to provide information for different types of recreational activities could lead to confusion. The revised directive should focus on public information aimed primarily at bathers. It would be for local authorities to decide whether information provision needs to be extended to include other users.

#### In summary

It was recognised that there are a wide range of different ways to communicate with the public, such as posters, leaflets, newspapers etc. All of these communication channels can be explored but the Internet and information directly on the beach are likely to be the two most significant methods.

It will be important to identify the owner of the information, as well as the who is responsible for displaying the information. The beach management team will have the most important role in information management.

The information needs to be kept simple, be consistent throughout Europe (in terms of signs) and should be readily accessible.

Real-time quality data is not a reality at present.

Market-research needs to be conducted to establish what the public wants to know, and how they want to get their information on bathing water quality. Let’s not assume we know what they want to know.

APPENDIX 5  
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