

ACHIEVING COMPLIANCE WITH THE EC BATHING WATERS DIRECTIVE

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1. Introduction

Compliance with the EC Bathing Waters Directive in the England and Wales has increased substantially since 1990, when the recent phase of investment associated with privatisation of the Water Industry commenced.

Compliance with Imperative Standards has increased from 78% (318 out of 407) in 1990 to 89% (397 out of 447) in 1997, whilst compliance with Guide Standards has increased from 28% in 1992 to 37% in 1997.

However, in the past few years, compliance rates have levelled off; Imperative Standard compliance rates for 1995, 1996, and 1997 were 89.2%, 89.1%, and 88.8 % respectively, and Guide Standard compliance rates for those years were 41%, 41% and 37% respectively. Whilst there are valid explanations for this (temporary) halt in the move towards full compliance with Imperative Standards (eg. weather, Water Industry investment profile), it is nevertheless somewhat disappointing, and perhaps an indication of the difficult task ahead of us.

Furthermore, the Government has indicated to us in its document 'Raising the Quality' (DETR September 1998) that along with the need to achieve near 100% compliance with Imperative Standards, it also wishes us to target investment at the achievement of Guide Standards, particularly at major holiday resorts. This support from the Government builds on the Agency's own document 'A Price Worth Paying' (May 1998), in which it is proposed that we should "move environmental performance towards Guide Standards wherever we are confident of the effectiveness of the action".

The Agency has recently submitted its proposals for Water Company investment over the period 2000 – 2005 (AMP3 investment) to secure improvements to Bathing Water quality, amongst other objectives. Many of the schemes proposed would be expected to deliver Guide Standard compliance to Bathing Waters currently non-compliant; their final inclusion in the AMP3 programme will be determined following an analysis of costs and benefits.

2. Agency Regulatory Policy

The Agency's policy for consenting discharges to Bathing Waters (Environment Agency 1997) is aimed at securing compliance with the Regulations. The policy sets out the Agency's requirements for different levels of treatment which dischargers must demonstrate in their design of schemes affecting Bathing Waters. It recognises that knowledge is limited regarding the prevalence and environmental behaviour of Enteroviruses and Salmonella, and sets out levels of treatment rules for use pending conclusion of R & D. The policy also refers to existing policies on the use of disinfection techniques for sewage discharges, controlling the impact of CSOs on Bathing waters, and for ensuring 'No Deterioration' of water quality. One of the consequences of this policy is that where secondary treatment is adopted, dischargers will be required to demonstrate that the discharge will result in Guide Standards being met in the Bathing Water, in the absence of other sources of bacterial contamination.

3. The Periodic Review Process

Investment by the companies, and the impact on customer bills, is controlled by OFWAT, and investment cycles (Asset Management Plans (AMP)) are reviewed within 5-year blocks – the Periodic Review. Government and regulators define the targets which must be achieved by each water company, in line with EC and UK legislation and other priorities. OFWAT sets price limits on water companies taking account of the investment implications of the targets.

4. Development of the AMP3 Investment Programme

During the AMP3 period of 2000 – 2005, the Agency will aim to carry forward its policy for control of discharges affecting Bathing waters. In our proposals to Government for AMP3 we are pursuing the following objectives in relation to Bathing Waters:

- Continue to implement achievement of the Imperative Standards;
- Maintain quality where Guide Standards are already achieved;
- Implement achievement of Guide Standards wherever the Agency is confident of the effectiveness of the action, having considered the impact of other sources of microbial pollution, and where justified through an analysis of costs and benefits.

5. Predictions for Future Compliance

In order to develop a strategy for further improving Bathing Water quality, the Agency has carried out a detailed assessment of each Bathing Water which includes:

- the compliance record;
- the factors affecting Bathing Water quality based on local knowledge and the results of investigations;
- the effect of environmental improvements already made; and
- an assessment of the risk of future non-compliance following any future investment to improve water quality.

A system of categories has been developed, based on compliance with both Imperative and Guide standards. These categories will form a useful tool in assessing progress in achieving the Agency's Bathing Water policy, and will allow a more detailed assessment to be carried out on the Bathing Waters at risk of further non-compliance:

Category 1	Complies with Imperative Standards (I) in every season	And	Complies with Guide Standards (G) in every season.
Category 2	Complies with I in every season	And	Complies with G in 4 out of 5 seasons.
Category 3	Complies with I in every season	And	Complies with G in 2 or 3 out of 5 seasons.
Category 4	Complies with I in every season	And	Complies with G in 0 or 1 out of 5 seasons
Category 5	Risk of non-compliance with I less than once in 5 seasons.		
Category 6	Risk of non-compliance with I once in 5 seasons.		
Category 7	Risk of non-compliance with I 2 or 3 times in 5 seasons		
Category 8	Risk of non-compliance with I 4 or 5 times in 5 seasons		

For every Bathing Water identified for the 1997 season, an assessment has been made of the category into which it falls for each of:

- Pre-AMP1/2 – the actual compliance record prior to any AMP1 or AMP2 investment;
- 1997 – the actual compliance record for the 5 years leading up to and including 1997;
- Post-AMP1/2 – based either on actual or predicted compliance, dependent upon timing of the investment;
- Post-AMP3 – predicted compliance at the end of 2005, assuming all the AMP2 and AMP3 schemes identified by the Agency are completed.

The results of this assessment are summarised below:

Category	Description	Pre-AMP1/2	1997	Post-AMP1/2	Post-AMP3
1 to 4	Consistently compliant with I	45.3% (203)	56.7% (254)	85.5% (383)	90.0 % (403)
5 & 6	At low risk of non-compliance with I	27.2% (122)	26.1% (117)	11.4% (51)	9.1% (41)
7 & 8	At high risk of non-compliance with I	27.5% (123)	17.2% (77)	3.2% (14)	0.9% (4)

Furthermore, we have been able to estimate from the above information, using a relatively simple model, the year-on-year percentage compliance with both Imperative and Guide Standards for each of the four periods. The results of this assessment, along with actual compliance records where appropriate, are:

	Pre-AMP1/2	1997	Post-AMP1/2	Post-AMP3
Predicted compliance with Guide Standards	35%	38%	47%	50%
Actual compliance with Guide Standards	1992 28%	37%		
Predicted compliance with Imperative Standards	73%	84%	94-96%	96-98%
Actual compliance with Imperative Standards	1990 78%	89%		

The differences between the predicted and actual compliance rates are understood, and it should be possible to improve the predictions with further work.

6. Other Sources of Microbial Contamination

There are many sources of microbial contamination which can impact on Bathing Water quality. The water company investment programme has been targeted primarily at continuous sewage discharges and intermittent discharges in the vicinity of the Bathing Water. Contamination carried by freshwater courses has a significant impact on many Bathing Waters, and sources of contamination to these freshwater courses include:

- Continuous and intermittent sewage discharges;
- Leaking sewers or cross-connections;
- Private discharges, especially in rural unsewered areas;
- Animal sources, including uncontrollable sources from animal grazing, and controllable run-off from slurry pits and “bad agricultural practice”;
- Re-suspension of contaminated sediments in agricultural areas;
- General land run-off during wet weather, including urban run-off.

The Bathing Water may be contaminated directly by beach users and their animals, or by wildlife, notably birds.

At a large number of Bathing Waters, routine monitoring of the bacterial quality of streams and other watercourses is undertaken at the same time as the Bathing Waters are sampled. This additional sampling can provide data which can be used to make a rapid assessment of whether freshwater is the source of the contamination.

However, identifying specific sources of microbial contamination to watercourses can be very difficult, due to the occurrence of multiple sources, and the difference in patterns of contamination during repeat surveys. In addition, there may be underlying land run-off which causes elevated background levels of bacteria against which controllable sources must be distinguished. The investigation of diffuse and multiple sources can be very resource intensive, and does not necessarily guarantee a solution.

7. Investigations

The Agency will continue to investigate the reasons for non-compliance at those Bathing Waters where schemes that have recently been completed and have failed to secure compliance with Imperative and /or Guide Standards

We will review the methods used to investigate Bathing Water quality with a view to establishing best practice.

There is scope for further improvement towards Guide compliance, but;

- More resources will need to be deployed to investigate causes of non-compliance.
- The law of diminishing returns applies – the most intransigent and complex problems will require intensive use of resources to resolve them.

8. Research & Development

The Agency will ensure that funding is available in its national R & D programme, which will be targeted at gaining a better understanding of diffuse sources of pollution, and to aid future development of policy to address compliance with standards for enterovirus and salmonella.

9. Conclusions

There has been a considerable improvement in Bathing Water Quality since 1990. The trend will continue as controllable discharges receive investment, but it is not likely to be possible to consistently achieve full compliance with Bathing Water standards, as not all microbiological sources are amenable to regulatory control.

The Agency will be targeting resources at gaining a better understanding of the sources of bacterial contamination which cause intermittent problems with Bathing Water quality.

DISCUSSION

Question George Hare Montgomery Watson

You referred to the crude method of determining pass or fail. Do you know how the new Bathing Waters Directive proposals will address this, for example, more sample points and more frequent sampling ? Are the results sensitive to sample point location?

Answer

I really don't know the details of the new directive proposals it is still early days they are under consultation - .the Environment Agency puts it's views across to the Government and to the EC. We currently sample at one point , and the results can be very sensitive to sample location. I hope that the new directive will try to address all these problems.

Comment Tony Warn Environment Agency

There is some good news in the the new draft regulations

The problem is the 95% compliance which imposes a 50% chance that a good beach will fail. If this method was applied to STW it would lead to a substantial increase in failure.