UK Technical Advisory Group

on the Water Framework Directive

Response to stakeholders' submissions

UKTAG Stakeholder Review on Proposals for Environmental Quality Standards for Annex VIII Substances

Final

January 2008

(SR1 – 2007)

WFD UK TAG
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Table of Contents

SECTION 1 - INTRODUCTION

The UK Technical Advisory Group (UKTAG) sought comments on the scientific principles underpinning its first proposals for environmental standards for Annex VIII substances. A report was released for stakeholder review and made available on the UKTAG's website.

This document covers the main points of the responses received. It should be read in conjunction with the revised *UKTAG report (December 2007) Proposals for Environmental Quality Standards for Annex VIII Substances*[1].

Questions posed by the UKTAG for the stakeholder review

The UKTAG asked the following:

1. Is the report clear in explaining how we have reviewed and developed the proposed environmental standards and conditions?

2. Do you think that the approach we have taken, as identified in the report and supporting technical documents:

(a) Identifies the environmental standards and conditions required to achieve the environmental objectives of the Water Framework Directive, for example, Good Ecological Status? (recognising that the standards under other EC Directives will also apply).

(b) Uses the best information currently available? If not, please tell us about any information or scientific methods that could improve the approach.

3. Are there any other issues on the UKTAG's approach to developing UK environmental standards and conditions that you wish to comment on?

Responses received

24 responses were received; they are listed in Annex 1. They provide views from non-government environment and fishing organisations; water companies, energy, industry and farming sectors; conservation agencies, the academic sector as well as government organisations. The submissions are available from the UKTAG web-site (www.wfduk.org).

[1] The final report, and this report on the responses to the review are available on the UKTAG's web site.

Review of submissions

The UKTAG reviewed the responses and identified:

- Possible changes to its report. This included amendments to standards where there is new evidence, and improved explanations of methods.

- Issues that should be addressed in this response document, but that did not affect the UKTAG's proposals for Environmental Quality Standards. Here the UKTAG provided more information on, for example, the basis of the standards, how they might be used, or where issues cannot be dealt with at this time.

- Suggestions for future work either in enhancing our understanding of the science, or in developing new standards. Proposals for future work are discussed in this report. References provided as part of the responses are in Annex 2.

- Issues that are considered to be outside the scope of the review and the UKTAG. The UK administrations and agencies were briefed on these.

The UKTAG and its technical authors collated this report on responses and discussed potential changes with the environment and conservation agencies and the UK administrations.
The UKTAG then amended its original report.

Summary of the UKTAG's response

The key amendments to the *UKTAG report (November 2007) Proposals for Environmental Quality Standards for Annex VIII Substances* are:

- The recommendation to adopt 18 Specific Pollutants, including 9 where the existing Environmental Quality Standards will be retained.

Additional data were provided for mecoprop during the stakeholder review. The data were subsequently evaluated and peer reviewed. As a result of this exercise the Environmental Quality Standards for mecoprop have been revised.

SECTION 2 - OVERVIEW OF RESPONSES TO QUESTIONS

Of the 24 submissions, 12 used the questionnaire provided by the UKTAG. The general comments are summarised below. Specific technical issues are in Section 3.

Q1. Is the report clear in explaining how we have reviewed and developed the proposed environmental standards and conditions?

There was general agreement that the UKTAG's report provided a good explanation on how the environmental standards and conditions were developed. The overall approach was welcomed by most respondents. It was recognised that the development of the standards followed the technical guidelines issued at EU level.

Several respondents asked for a clearer differentiation in Table 1 between Parts A, B and C in order to clarify which substances were being proposed as Specific Pollutants.

Some believed that the issues would appeal to a wider audience. Whilst the intended audience would be familiar with how water quality standards are set and used, a revision that would show its relevance to others would be useful, for example to analytical chemists.

Requests for more information were also received on aspects of the technical work, notably the choice of Assessment (Safety) Factors in deriving Predicted No-Effect Concentrations (PNECs).

Q2. Do you think that the approach we have taken, as identified in the report and supporting technical documents:

a) Identifies the environmental standards and conditions required to achieve the environmental objectives of the Water Framework Directive e.g. Good Ecological Status? (recognising that the standards under other EC Directives will also apply.)

The UKTAG received a range of responses. Many felt that the overall approach was sufficient to achieve this objective. It was widely recognised that the UKTAG had to operate within the required methodology, but given these constraints, the proposals represented a sound approach to meeting the environmental goals of the Water Framework Directive.

Some respondents said that some PNECs were too strict and that more information should be acquired to confirm their suitability for purposes of the Water Framework Directive - the concern being that they may prove to be technically unachievable, or overly expensive. It was noted that in the past it had proved difficult to relax even provisional standards where they have been shown subsequently to be too strict.

Several respondents queried the application and implementation of these standards and conditions, with some feeling that it should be for the “competent authorities” to determine whether the proposed standards will enable the objectives of the Water Framework Directive to be achieved. There were requests that the UKTAG work more widely with industry on implementation and compliance.

b) Uses the best information currently available? If not, please tell us about any information or scientific methods that could improve the approach

The overall approach was praised, and it was recognised that the new science for environmental risk assessment for metals as developed in the EU Existing Substances Risk Assessments has been taken into account. However it was suggested that there was a lot of uncertainty around the resulting standards for some of the substances.

Some suggested that a more holistic approach may be needed. This would develop measures based on risk assessment and management in each river basin and catchment in addition to just chemical monitoring for compliance with the standards. It was suggested that this would be consistent with the Water Safety Plans developed by the World Health Organisation and the approach of the Drinking Water Inspectorate.

It was mentioned that the PNECs for each substance may differ for saltwater and freshwater environments; that this needs to be further developed and more use made of the literature.

Most commented favourably on the report as using the most current and relevant research and literature available. Others highlighted new areas of research, for example, Mecoprop, where additional commercially-held data were identified, and Copper where the final outcome of the industry-led voluntary risk assessment for copper is still awaited.

It was noted that the UKTAG should contact chemical manufacturers to obtain any confidential data, as this might increase the volume of data and allow reliable use of statistical approaches to help derive standards.

Q3. Are there any other issues in relation to the UKTAG approach to developing UK environmental standards and conditions that you wish to comment on?

These were incorporated into the above comments or addressed in section 3 of this document.

SECTION 3- DETAILED COMMENTS

For each section of the original report, the following is provided:

- a summary of comments;
- advice on any amendments to the UKTAG report;
- more detailed comments and the response of the UKTAG.

UKTAG Report – Section 1 and 2: Introduction and the Need for Standards

Overview

In addition to the issues raised in Section 2, comments included:

- Clarification of the role of the UKTAG in its links to policy and the status of its proposals;
- A request for more information on how the proposals will be used in the Classification Scheme and on the importance of the designation of Specific Pollutant in this scheme.
- Some wished to collaborate more with UKTAG by sharing information and data.

Amendments to the UKTAG report

Minor changes were made to the introduction of the report.

Comments	Response
What is now the role of the UKTAG? It was understood that the UKTAG is a group advising on technical standards. However, it is evident from the consultation documents that these papers also establish UK implementation policy. We would like to understand better the status of the policy statements and decisions set out by the UKTAG, as they appear to be inconsistent with our understanding of earlier implementation statements from EA and DEFRA.	**Report not amended** The role of the UKTAG has not changed. The UKTAG provides technical advice and recommendations to the UK Government and devolved Administrations. The recommendations are then subject to the normal policy making considerations of the administrations and their agencies. For this reason the approach to adoption and implementation of proposals may vary for each country within the UK.

Comments	Response
In the past discharge compliance monitoring for List I and List II substances made up a significant element of the charging schemes operated by the agencies. What will be the relationship between charging schemes and specific pollutants and other categories of pollutant?	**Report not amended** The relationship between charging schemes and specific pollutants is beyond the scope of the report. The approach taken may vary. For example the Environment Agency is proposing to introduce a new unified charging framework to include discharges in 2009. Charges will be based on risk as defined by the OPRA scheme. The OPRA scores include an 'emissions' element, which will be higher if there are numeric limits on hazardous or dangerous substances. Therefore charges may be higher if there are numeric limits for these substances. SEPA and EHS are currently considering their approach to controlling emissions of specific pollutants but have not yet reached a final decision.
The shift from the previous approach of monitoring discharges for compliance with a standard (as under the Dangerous Substances Directive) to monitoring the environment for effects of discharges / achievement of ecological status classes, is a major shift in approach under the WFD. It would be useful if the final report could give a more detailed explanation of the interface between these UKTAG standards and the forthcoming classification system. In particular, the importance of the designation as a “specific pollutant”; how standards for such pollutants will be used in the classification system; and the difference between specific pollutants and other categories of substance/pollutant.	**Report amended (P.7)** The UKTAG is currently developing its proposals for the WFD classification scheme. In this it is likely that the UKTAG will propose that failure of standards for Specific Pollutants will, in themselves, lead to a water body which is reported as worse than Good Status. The UKTAG proposals on classification are published on the UKTAG website http://www.wfduk.org/UKCLASSPUB/ The response to a failed standard will vary for each pollutant but the UKTAG proposes that as a rule compliance with for Specific Pollutants is achieved **without** a step which involves additional ecological corroboration of damage. The report on Specific Pollutants has been updated to clarify this. In the first River Basin Planning round we expect to include standards for eighteen substances in Table 1 Parts A.& B. Any existing EQ Standards for the remaining substances identified in Part C will remain in force until the driving legislation (Dangerous Substances Directive and Freshwater Fisheries Directive) are repealed in 2013. The substances in Part C of Table 1 will not form part of the programme of measures or unless they are included as specific pollutants. We will continue to address any failure of existing standards as part of our routine work.
For metals, which are largely ubiquitous in the environment, it is essential that every practicable step is taken to reduce loads entering the environment at source (whether this is through IPPC, trade effluent control or	**Report not amended** We note the observations made. However we are aware that there are currently a number of water companies that employ dosing arrangements to reduce lead levels in potable supplies that appear to deliver tangible reduction in other metallic elements.

Comments	Response
product substitution) before any end of pipe treatment investment is made. Our view for metals is that removal at source, combined with pollution prevention mechanisms, should be applied as a matter of principle. Control through end of pipe solutions that are economically and environmentally unsustainable must be avoided.	
The report does not clarify what happens in which planning cycle. Where there is uncertainty, Scottish Water suggests a staged approach to arriving at sustainable solutions would be in the spirit of the Directive: • RBMP1 – appropriate research and development (including further work on source apportionment, monitoring & investigations and, where necessary, assessing the appropriateness of EQS values) • RBMP2 – a period of control at source and associated monitoring • RBMP3 – if source control has not succeeded in delivering EQS compliance then, where the EQS are scientifically robust, for those sites where real benefits can be afforded to the environment by end of pipe treatment further investment can then be considered (within the bounds of disproportionate cost and technically infeasibility).	**Report not amended** The key aim of the WFD is to achieve good water body status by 2015. This applies to those substances identified as Specific Pollutants, where concentrations below the EQS contribute to 'good' status. It is not the purpose of the standards report to identify programmes of measures or approaches to source control. Any approaches taken by the individual Agencies may be site-specific and indeed substance specific. Any asset investment required will be reviewed under the Quality and Standards or Asset Management Programmes. Investment requirements will take account of disproportionate costs and technical feasibility as specified in WFD Article 4. The response to a failure of a standard will depend on the outcome of the objective setting process. This process allows the setting of alternative objectives where the achievement of good status by 2015 would be technically infeasible or disproportionately expensive. Uncertainties will be taken into account in such objective setting decisions. The details of the objective setting process are beyond the scope of the report and will reflect the particular arrangements that have been established in the different parts of the UK. Each part of the UK has made its own provisions for communication and engagements with stakeholders about the planning process and further details can be sought through these routes. In Scotland, investment planning relating to Scottish Water is delivered through the Quality & Standards process. This will remain the case.

Comments	Response
New legal powers may be required to enable water companies to control sources of pollution by some Annex VIII substances; for example, pesticides in Article 7 safeguard zones.	**Report not amended** We note the observations made.
It is also clear that in some areas it will not be possible to set standards with any confidence due to the gaps in data, and additional monitoring for the Water Framework Directive is therefore planned. Given the importance of the monitoring plan and programme, we would welcome if this could be made available to the water industry at the earliest opportunity.	**Report not amended** We note the observations made. Monitoring Strategies are being developed independently by the Agencies

UKTAG Report – Section 3: The Process for Developing Standards

Overview

Taken as a whole, the respondents gave a thorough examination of the process and identified a range of key issues:

- A number of respondents asked for clarity on the distinction between Part A, B and C chemicals and asked how these would link into implementation.

- Several organisations were concerned that if there was uncertainty in establishing the standards, then an indirect approach should be taken. Otherwise unnecessary action may be taken in the first programme of measures.

- A number of respondents asked for more detail on the development of PNECs and Natural England asked for the peer reviewers' comments to be made available.

- There was a concern that basing the development of standards on an annual mean would not take seasonality into account.

- It was also felt by one stakeholder that the approach in terms of proposing standards for freshwater and saltwater failed to address the problem for aquatic ecosystems comprised of brackish water. It was also felt that standards in marine waters should be developed for sediments and biota.

- Some respondents raised the question of the data variations between England, Wales, Northern Ireland and Scotland that were used to develop standards. It was stated that some changes need to be made to achieve unified standardisation in the UK, namely a unified routine monitoring approach of all sites to be taken by all UK countries.

- Stakeholders asked UKTAG to consider Research within member states and information on the chemicals from the Manufacturers.

- There was a concern regarding how the assessment factors were applied.

Amendments to the UKTAG report

- The substances selected have been re-arranged in this section with corresponding amendments to Table 1-Parts A, B, C.

- The report clarifies that the response to a failed standard may vary for each pollutant, but the UKTAG proposes that in general, classification, and a consideration of action to achieve compliance for Specific Pollutants does not depend on a step which involves additional and local ecological corroboration of damage. The type of action taken will be subject to the Directive's considerations of cost effectiveness and disproportionate cost. This includes the feasibility of securing compliance and the associated degree of protection or improvement that is achieved by compliance.

Comments	Response
Clarity is needed on the status of Part B and C substance in terms of implementation. They are not classed as Specific Pollutants so where do they enter the process to be included in the Programme of Measures?	**Report amended (P10/11/12)** This report now proposes new standards for 9 of these substances (Table 1: Part A) and that these standards are treated for the Water Framework Directive as Specific Pollutants: 2,4-D (ester and non-ester); chromium; cypermethrin; diazinon; dimethoate[1]; linuron; mecoprop; phenol; and toluene. This report also proposes continued use of the existing standards[2] for the 9 substances in Table 1 Part B as an interim measure. These substances are also defined as Specific Pollutants under the Water Framework Directive. The UKTAG proposes that the use of these standards be extended to any parts of the UK that do not have existing statutory controls: 2,4-dichlorophenol, ammonia, arsenic, chlorine, copper, cyanide, permethrin, iron and zinc. Because ammonia is such a common pollutant the UKTAG has decided that it must be included as a Specific Pollutant. Historically the concentration of the un-ionised fraction has been used as the species that demonstrates the toxic effects. These concentrations have usually been calculated from total ammonia analytical results. We are fortunate to have an extensive dataset for ammonia and therefore instead of using a specific standard for unionised ammonia in fresh water it has been decided to adopt the values set out in UKTAG Phase 1 Standards report. This approach has been taken primarily because we believe that it is sufficiently protective and we may then identify the broader range of potential impacts from ammonia pollution using the class limit boundaries afforded by this approach. In other waters we will continue to use the existing salt

[1] For dimethoate, we have recommended the adoption of the new standard produced using the European Union's Technical Guidance Document. The values so generated are close to existing standards.
[2] And the controls and policies for these substances

	water standard for un-ionised ammonia. Any additional substances will be subject to Stakeholder Review. Any existing Environmental Quality Standards for the remaining substances identified in Part C will remain in force until the driving legislation (Dangerous Substances Directive and Freshwater Fisheries Directive) are repealed in 2013. They will not form part of the Programme of Measures until then or unless they are included as specific pollutants but we will continue to address any failure of existing standards as part of our routine work. UKTAG is currently developing its proposals for the WFD classification scheme. This may be found on the UKTAG website http://www.wfduk.org/UKCLASSPUB/ The approach on how to apply the technical infeasibility and excessive cost exemptions has yet to be finalised. Any existing EQ standards will cease to apply in 2013 when the driving legislation is repealed. Thereafter if these pollutants are considered to meet the criteria for inclusion as Specific Pollutants we will develop standards using the Annex V methodology. The separation of substances into groups was made in an attempt to illustrate the approach taken to date. Substances in Part B have each been the subject of a review as potential specific pollutants but a recommendation for a new standard was not considered possible because of unacceptable uncertainties in the toxicological data set, analytical difficulties or because EU Risk Assessment reports have not yet been completed. It was therefore decided to maintain the existing standards in the interim. Substances in Part C are each the subject of an existing EQ standard but were not considered for further review on the basis of our prioritisation scheme.
The PNECs derived from matched chemical and biological data are, for most substances, 'within an order of magnitude' of those from laboratory data. An 'order of magnitude' will, for some substances, make a huge difference to potential UK compliance and hence the programmes of measures. If doubt or uncertainty remains, then an indirect approach should be taken. Otherwise unnecessary action may be taken in the first programme of measures.	**Report not amended** We have been keen to ensure PNECs are based on the maximum amount of information possible so that uncertainty can be minimised. With this in mind, the UKTAG commissioned a study to investigate whether we could exploit field data where matched chemical and biological data were available. We were able to access a substantial dataset but the data are typically very 'noisy' and this reduces the precision of what can legitimately be concluded. Whilst the sensitivity was recognised about some of these PNECs, the corroboration of the proposed PNECs within an 'order of magnitude'

	is an advance on what has been possible previously. Figure 2 of the report illustrates the process for determining the need to act under the Programme of Measures. This includes the point about being confident about biological outcomes in order to avoid action that, in the context of the Water Framework Directive, is not justified by outcomes. It is appreciated that the details of how this might work are not yet fully developed.
More information was requested: • On certain aspects of the technical work including the choice of assessment factors in deriving predicted no-effect concentrations (PNECs) for some of the pollutants. • More information on the views of the peer reviewers was also requested in order to understand the merits of each standard developed.	**Report not amended** The PNECs have been derived in compliance with the methodology set out in WFD Annex V. This includes guidance on the choice of assessment factors. The factors used for each substance where a new standard has been set are included in the technical summaries. The 'stand alone' full technical reports provide a yet more detailed description of the data and justification for particular assessment factors. The technical reports provide more details, and include a description of different possibilities where these were discussed by the peer reviewers
The best information currently available may not always be good enough to confidently set an EQS. Although in some cases this has resulted in no EQS until further work is carried out (it is not always clear whether this will be available in time for first cycle of River Basin Plans)	**Report not amended** We are re-assured that stakeholders support the line that we have taken on setting standards only where we have robust and reliable data. Clearly where we have identified additional studies that should facilitate such decisions these will be completed as soon as possible, assuming funding becomes available. However we do not expect to introduce any further standards for specific pollutants before the second cycle of plans but in some cases it may not be possible to make recommendations for new standards even then e.g. iron where we need to establish an appropriate mechanism to account for background reference concentrations.
The approach in terms of proposing standards for freshwater and saltwater fails to address the problem for aquatic ecosystems comprised of brackish water, for example estuaries, which are important habitats for many aquatic organisms.	**Report not amended** For a number of the specific pollutants the fresh water and saltwater values are identical However this is not the case for Cr(VI), diazinon and toluene.

Further consideration should be given to transitional waters and these should be included in the UKTAG proposals. Though it is briefly mentioned on page 13, that PNECs may differ for saltwater and freshwater for each substance, this needs to be further elaborated and literature utilized.	For these substances the approach adopted taken for transitional waters will be to utilise the saltwater standards which are usually more stringent. This follows the precedent set by the draft EU Priority Substances Daughter Directive.
For the substances described as 'not yet defined as specific pollutants under the WFD' are there plans to eventually derive EQS in the future, and would this be before or after RBMP1?	**Report not amended** We intend to develop standards for additional specific pollutants but do not expect to introduce any further standards before the second cycle of plans.

I am impressed that differences in the biological effects of closely related chemical forms are being taken into account during the standards-setting process (page 12, bullet point 2).	**Report not amended** We note the observations made.
P13 Step 6 - it is important to compare the existing work undertaken by the UK with that of other member states, as well as the future work.	**Report not amended** We recognise these concerns and have established a close working relationship with experts in a number of other European countries, including France, Germany, The Netherlands, Belgium, and Ireland as part of our work programme. We are using these links to ensure that our proposals are in line with those of our European neighbours.
Point (c): If PNECs may not be possible for RBMP1, could Article 4(4) not be used to extend the timescale?	**Report not amended** We note the observations made. We have identified a number of studies that should enable smaller assessment factors to be used. These have been prioritised and we will endeavour to commission such research as funding becomes available. There should therefore be no need to use Article 4(4) exemption
Has the UKTAG contacted manufacturers to obtain any confidential data, as this might increase the volume of data substantially and allow reliable use of statistical approaches to derive an HC5?	**Report not yet amended** The Stakeholder Review process is designed to deliver this and has proved very useful in securing additional commercially held data. We have reviewed our data in light of new material received and will review our proposals accordingly.
The assessment factors introduce a large level of increased sensitivity by changing standards by an order of magnitude or more from the NOEC or LC50 values on which they are based. It is considered that the assessment factors for diazinon and cypermethrin as well as some crop protection products, could indeed be 1, or less than 1,if all the studies, including manufacturers' tests were included, rather than 10, and if field study and bioavailability data are used. In addition to this, the lowest value is taken from all the studies reviewed and then the assessment factor is applied. The lowest value may not be a study performed to good laboratory practice in a reliable laboratory, so it may be difficult to determine whether it should form the basis of an EQS. If there is ANY doubt about the scientific or regulatory reliability of such a critical data point it should be an absolute requirement to repeat the study before using it to set a mandatory EQS with serious implications for product users. Whilst these values may	**Report not amended** The approach taken is in line with the methodology given in Annex V of WFD. Please refer to the technical summaries for the substances concerned for more detail of the decision process adopted. We have undertaken a quality review process for all critical data and this has then been subjected to an independent Peer review process.

be precautionary to protect the environment, they take no consideration of the need to retain product because of their value to industry and animal welfare. There has been no consultation on these values with industry professionals who manufacture or use these products, we consider this to be a big flaw.	
These chemicals are not naturally present in the environment and any release into the environment is related to their use, normally during discrete times of the year. Where laboratory ecotoxicological information is related to incidents in the environment this can produce very uncertain results. The impact of a chemical may be recorded within the ecology because of an acute exposure (impacts on fish fertility, for example) but the monitored concentrations of the substance in the watercourse following the incident may not bear any relation to the impact caused as the chemical has moved downstream, has been diluted and is transient in the environment. This could result in a very low concentration to be erroneously associated with ecological impact. How, therefore, does the EA propose to use an EQS for these substances when protecting the environment? Monitoring compliance with EQS for such substances, with random and unpredictable occurrence in the environment, will be very difficult on the basis of 12 samples taken annually which are then used to estimate an annual average or 95 percentile maximum allowable concentration. Also, will cypermethrin and diazinon and crop protection products be measured as dissolved concentrations or as total concentrations, including concentrations on any sediment collected in the sample? If the latter, how can such measurements be compared with toxicity values obtained from lab experiments without sediments?	**Report not amended** Generally the EQS has come through a review of toxicological information as prescribed for the Water Framework Directive and the interpretations of these proposed by the UKTAG. These are translated into annual averages and other summary statistics. When routine monitoring leads to failure at particular levels of confidence these will receive attention under the Water Framework Directive. It is not generally the case that a level found at a particular incident is taken as the required EQS in that instance in a way that leads to an erroneous new standard. Though if there were lots of incidents at different places and, taking account of dilution etc, this could lead to a body of evidence that the EQS were too lax. On the question of 12 samples being used to assess compliance with the annual mean and the annual 95-percentile, high variability means that it will be difficult to detect failure with 95 per cent confidence and so to make a case for serious action on a local basis. If this masked a real problem environmental agencies would do more monitoring and group together several years. But low rates of monitoring are well capable of making a case for national or region-wide controls. Cypermethrin, diazinon and the crop protection products will be measured in samples of “whole” water i.e. unfiltered. This is in accordance with the approach advocated by EU Commission for the Priority Substances. However we recognise that this may lead to an over-estimate of the contaminant concerned should samples be taken during storm events where high levels of suspended particulate matter may be present. We will avoid monitoring under such circumstances. This is made clear in the Substance Summary reports.
There seems to be a confused application of different assessment factors: ‘reliable short term data’ and ‘considerable short term toxicity database’ for 2,4-D gives an assessment factor of 10, whilst ‘reliable	**Report not amended** We note your comments. We are keen to ensure clarity and consistency between reports and the derivation of PNECs. These assertions have been highlighted to Peer Review Panel who have been asked to re-consider and

short term data for cypermethrin results in assessment factors of 10 or 100. This obviously has a large effect on the final standard, changing it by an order of magnitude. Without further information, we cannot suggest whether different values should have been used but as this is one of the most sensitive values in deriving the standards, they should be justified in each of the data sheets and information should be available to help guide those not involved in the process so that if the process were repeated by another group, the same standards would be reached.	advise. The original panel have now completed their review and stand by their original decision. They reject the claim that the assignment of assessment factors was in any way confused.
With the technical derivation of PNECs there appears to be some instances of inconsistency in the application of assessment factors (AF's) used to derive PNECs. Although annex 5 of the WFD details the generic rules for application of AF's, there is scope for expert judgement on a case by case basis. These would be likely carried out by peer reviewers, but it is not always transparent how decisions have been made. For example, we are unclear why the PNEC derived for cypermethrin has an AF of 1. The Moore and Waring (2001) study is the only of its type for cypermethin effects on milt production in fish, therefore we have no basis to state whether Atlantic salmon are the most sensitive fish species. Also this study was hampered by the difficulties associated with the analytical capabilities of detecting cypermethrin below 4ng/L, although effects were seen below this measured concentration. All this considered an AF of 1 does not therefore seem appropriate. Although salmonids are generally towards the top end of the sensitivity scale for fish species, we have no information on the relative sensitivities of other protected species (including fish species such as lampreys).	**Report not amended** See comment above.
It is not clear why freshwater values, and assessment factors have been used in saltwater environments. This needs explaining further.	**Report not amended** The approach taken is in line with the methodology given in Annex V of WFD. Please refer to the technical summaries for the substances concerned for more detail of the decision process adopted
Although there are no standards developed for sediments, there are national monitoring programmes which include routine sediment contaminant analysis.	**Report not amended** The WFD requires Member States to develop standards for water, sediments or biota. We agree that, under some circumstances, more useful information about environmental quality

Sediment “guideline values” have also been used to inform assessments required under the Habitats Regulations for SACs and SPAs. It is more logical to undertake the assessment of hydrophobic specific pollutants in sediments and biota in the marine environment rather than the water column.	might be gained from understanding residues in sediments and biota than the water column. The development of such PNECs is one of the tasks to be undertaken by a recently formed EU Expert Group on Environmental Standards, under CIS Working Group E. As well as developing a methodology (which is not currently in place) that Expert group will also need to identify the substances for which biota and sediment standards would provide useful information.

UKTAG Report – Section 4: The Proposals

Summary

The respondents gave a thorough examination of the proposals and identified a range of issues:

- The implementation of the standards. Some requested clarification of exactly how they will be implemented in the three cycles of the plans for the Water Framework Directive and so ensure that water companies and others will be able to support this work.

- There was strong support that economics and the practical aspects of implementation are important factors in determining useful and enforceable standards.

- There was support that robust data are needed in order to develop scientifically defendable standards.

- Disappointment was expressed that standards had not been developed for aluminium, and that the standard for copper in the Dangerous Substances Directive would continue to be used in the interim.

- Clarification was requested in parts of the report to ensure better understanding.

- Concern for the assessment factors used for chromium and the clarity was requested on the chemical forms of chromium discussed in the report.

- Clarification on the terminology for ammonia.

- A request for a more precautionary assessment factor for cypermethrin.

- Scottish Water has strong reservations for the proposal for iron as they felt there was inadequate confidence in the data used to develop this.

- A better explanation of chlorine chemistry in estuarine and marine waters was requested as was clarification of the conversion of free chlorine to total chlorine.

- In the case of Mecoprop the Mecoprop Task Force considered that the studies used to set the PNEC were scientifically invalid.

- Studies of dimethoate were cited which show that it is not very toxic when dissolved in water.

Amendments to the UKTAG report:

- The report proposes new standards for nine Specific Pollutants: 2,4-D; chromium; cypermethrin; diazinon; dimethoate; linuron; mecoprop; phenol; and toluene. The standards proposed for mecoprop have been revised in light of additional data provided during stakeholder review.

- The report proposes the adoption of existing standards for a further nine Specific Polluting substances: 2,4-dichlorophenol, ammonia(un-ionised fraction in other waters), arsenic, chlorine, copper, cyanide, iron, permethrin, and zinc.

- In fresh waters the report proposes the adoption of the total ammonia standard from the UKTAG Phase 1 Standards Report

Comments	Response
The NFA supports the recommendations not to treat aluminium, arsenic, copper, manganese and zinc as Specific Pollutants in the first round of river basin planning.	**Report amended in various places** We note the observations made, but after further deliberation it has been decided to include arsenic, copper and zinc as Specific Pollutants in RBP1. We will continue to develop proposals on the remaining substances as resources permit.
Zinc The zinc RAR is a good example of where overly conservative assessment factors have delivered PNECs which would not be suitable for use as EQSs. The NFA welcomes the recognition, and strongly supports the view, that economic and practical implementation aspects are important factors in determining proportionate and practically enforceable EQSs.	**Report not amended** We note the observations made.
Many of the proposed PNECs are extremely low and, as acknowledged in the report, further evidence is required to confirm the suitability of the values for WFD purposes. We recognise that the objectives of the Directive are demanding but we do have concerns about the adoption of very tight standards which are then shown to be technically unachievable or disproportionately expensive to achieve. Historically it has been very difficult to move away from standards adopted on a provisional basis even when these have been shown to be unduly restrictive. It is essential that the provisional status of standards still under investigation is made clear in any published documents.	**Report not amended** We have been careful to comply with the requirements of Annex V yet at the same time not to propose standards that either cannot be implemented from a practical viewpoint or are very low because they are subject to high uncertainty (i.e. AF>10). In some cases, we have little flexibility because we are obliged to adopt PNECs arising from European risk assessments. This has clearly limited the number of standards we can propose and presents a significant demand on resources to address the difficulties associated with some substances.
It appears that for some parameters (phosphorus, ammonia) that are to be set to support Good Ecological Status as described by the WFD, have been developed with the help of a large chemical data set that was matched with valuable biological data that covered much of the UK. However, due to the lack of such 'matched' data sets, the development of standards for most substances relies much upon laboratory studies and/or generally small data sets. Generally, data from robust field based experiments rather than laboratory trials would be more useful for the development	**Report not amended** We agree with the comments about the value of field data to inform the derivation of PNECs. We cannot rely entirely on this approach for Specific Pollutants because (a) it would be non-compliant with Annex V and (b) the data are not available except for a very few substances. However, we have used mesocosm (experimental pond and stream) data where they are available, and invested considerable resource (and some imagination) into making as much use of existing field data where we can. We agree that the process of PNEC derivation would be informed by gathering further data from the field but this is resource-intensive. We would welcome further dialogue in this area if it might allow us to generate suitable field data.

Comments	Response
of standards for Specific Pollutants would be more useful to enable sustainable management decisions to be made. Large scale approaches such those required for the UK to meet the WFD objectives by 2015 require robust data to be collected from representative habitats.	
No proposals are made for standards for sediments or biota. This shortfall is addressed in the report, but is in need of expansion.	**Report not amended** We note the observations made. The question of how to set sediment and biota standards has been widely discussed at a European level. The European Commission proposals for standards for Priority list substances were reviewed by European CSTEE committee in 2004 when they indicated that such standards should be developed without delay. However they also remarked that the paucity of appropriate eco-toxicological data was such that progress would not be possible without deriving values using partitioning theory. UK Experts believe that the errors in this approach would not provide a reliable or robust basis for mandatory quality standards. A new European working group has been established to consider the development of new EQ standards. UK will co chair this group and we will watch closely developments in this area. The UKTAG advises and notes in its report that standards for biota and sediments are difficult to use in terms of monitoring for compliance in a way that is efficient and gives confident outcomes and deciding action that will secure compliance.
We note that some of the existing standards listed in Table 1 appear not to reflect fully the current standards applying over the full hardness range and therefore do not give a complete indication of the severity of tightening of the standard. For example, in hard cyprinid designated waters the current chromium VI EQS is 250µgl-1 whilst that suggested in table 1 is 50 µgl-1 (which currently applies to salmonid designated waters). Similarly for zinc.	**Report not amended** We note the observations made.
In the regulation of contaminated land will the proposed PNEC replace the existing EQS value as a measure of significant pollution of groundwater or surface water in terms of the contaminated land regime. In an urban environment where groundwater and surface water is already poor, the	**Report not amended** The PNECs in the Specific Pollutants Report apply only to surface water bodies.

Comments	Response
problem of assessing "significant pollution" will become even more tricky and difficult to deal with. It could lead to economic blight, as the proposed PNEC for some contaminants is lower than the existing EQS, and could be too expensive and/or difficult to achieve for some developments.	
For the substances in Part B, what is the timetable for further work, and when might we expect further consultation? What is the process for revising the status of a pollutant to a “specific pollutant”? Can pollutants get removed from the “specific pollutant” list?	**Report not amended** Substances in Table 1 Part B will be subject to further investigation to remove, as far as technically possible, those factors that prevent the development of new standards (typically high residual uncertainty, difficulties in analysis or implementation problems e.g. dealing with backgrounds). When those outstanding difficulties are resolved we will recommend new PNECs. However, resources are limited and so we must prioritise. Some new proposals may emerge within a year whilst others may take longer to resolve or might require collaborative arrangements to secure adequate resources to address the outstanding issues. We do not expect to introduce further standards before RBP2.
p.22 “…standards are expressed in terms of concentrations from unfiltered samples” Scottish Water acknowledges that the use of unfiltered samples is based on Annexe X of WFD and existing practice for under the Dangerous Substances Directive. However, this approach compounds the level of precaution that is incorporated into the standard. Coupled with the assessment factors applied when deriving the PNECs, along with other inherent uncertainty for the data used to derive some of the standards, Scottish Water is concerned that some of the standards are highly precautionary.	**Report not amended** We recognise that one risk of setting standards in whole water (unfiltered) is that in waters that carry high levels of suspended particulate matter, such as lowland rivers, the level of lipophilic contaminants reported may be comparatively higher than in upland streams. However the UKTAG believes that this approach remains more robust than setting standards in sediment given the recognised sediment ecotoxicological data shortfalls. The substance data summary reports carry a section on implementation that addresses our approach to minimise such problems.

Comments	Response
Compliance assessment - added risk approach. Why should the added risk be based on PNECs from organisms that have not adapted to natural background concentrations? This is inappropriate.	**Report not amended** We are reviewing the best way to assess compliance for metals including a consideration of speciation and the need to account for background. If an added risk approach is used, a background concentration is effectively added to a PNEC, which is based on studies where the metal is absent otherwise you would over-allow for background contribution.
Itis not appropriate to found EQS recommendations on the use of very large assessment factors, particularly where the resulting change in EQS/EAL from current EQSs may be so large or may result in significant change to operational practice. Such large assessment factors may result from using the European Risk Assessment Reports (RAR) toxicity reviews in conjunction with the EU Technical Guidance Document (TGD) approach to deriving PNEC in the absence of sufficient toxicity information. We agree that in general EQSs should be set primarily on the basis of long-term standards.	**Report not amended** We note these comments. With respect to the use of RAR documents, the UKTAG has adopted the precedent set for Priority substances of taking PNECs of European Risk Assessments where these are available.
It is mentioned that there may be case where substances are used or released for short periods and that this occurs for pesticides. We would like to exercise caution in this premise as active ingredients are often used for many different uses, including amenity uses and concentration sampling effort over a specific period of time may certainly bias the results as well as being inaccurate. The development of standards associate with acute toxicity as an absolute limit (face value fail) could result in some legitimate uses of chemicals being examined excessively due to the risk of an accidental spill. This could ultimately result in withdrawal from use of a particular substance with serious ramifications.	**Report not amended** We note the observations made. The UKTAG is aware of the need to ensure that monitoring produces unbiased estimates of compliance and risk. If only intensive monitoring is done for these types of chemicals it should be that the default assumption is that levels are zero outside this monitoring. The UKTAG expects that environment agencies will, as appropriate, regard "maxima" as 95-percentiles with a view to assessing the seriousness of activities that otherwise appear not to cause actual damage at the time.
The standards that have been produced obviously follow the technical guidelines but the NFU are concerned about some more fundamental issues in using very tight standards for the Water Framework Directive. Our concerns are as follows: • Diminishing active ingredients available to deal with certain pests, disease and weeds	**Report not amended** We note the observations made.

Comments	Response
resulting in greater use of a smaller suite of active ingredients. This can lead to: o Increase in pest, disease and weed resistance o Possibility of increased concentrations in watercourses of remaining active ingredients (particularly if there are limits on timing for efficacy of use). • Animal welfare needs must be considered before usage is restricted.	
Although the report is a technical document, it is not made clear how the standards will be implemented within the three cycles of the WFD. It is essential if the water industry is to make provision to support this work that further guidance is provided on this by December 2007 at the latest.	**Report amended (P.17)** The report now proposes new standards for nine polluting substances: 2,4-D; chromium; cypermethrin; diazinon; dimethoate; linuron; mecoprop; phenol; and toluene. These are in Table 1 Part A. In addition this also includes a proposal to adopt the total ammonia standard from the UKTAG Phase 1 Surface Water Standards Report as a surrogate for un-ionised ammonia[1] in fresh waters. The UKTAG considers that this approach will ensure consistency with our earlier report and also provide an appropriate level of protection for all fresh waters Table 1 also lists in Part B those substances for which the UKTAG proposes the continued use of existing controls and standards[2] for the first round of River Basin Plans and until new standards are established. The UKTAG has reviewed these chemicals according to the requirements of the Water Framework Directive and the criteria set out earlier in this report. It is clear that a lack of adequate data precludes the UKTAG from proposing new standards at this stage but UKTAG recommends that these substances should still be considered as Specific Pollutants in the first round of River Basin Plans. These chemicals are 2,4-dichlorophenol, ammonia(un-ionised)[3], arsenic, chlorine, copper, cyanide, iron, permethrin, and zinc. However it is unlikely that any further substances will be added to the UK list until the second round of River Basin Planning. Any additional substances proposed as potential specific pollutants will be subject to Stakeholder Review.
Aluminium We are disappointed that Aluminium continues to be a substance where standards are not available nor is there a	**Report not amended** The situation for aluminium remains complicated. We recognise that chemical dosing using aluminium salts may be a vital part of nutrient management

[1] The concentration of the un-ionised ammonia fraction is a function of the total ammonia concentration, the pH value and temperature of the water under consideration. This parameter is normally calculated from these values.
[2] For some substances there are no existing standards. This applies to aluminium, tetrachloroethane and manganese. UKTAG will consider how these substances may be regulated in future
[3] The existing salt water un-ionised ammonia standard will be maintained because the UKTAG Phase 1 Standards report did not set standards for ammonia in other waters

Comments	Response
firm timetable for the development. Nutrient removal (P) will continue to rely on chemical dosing and both ferric and aluminium salts will be crucial in this. This becomes more relevant to United Utilities if iron standards of less than 1mg/l are to be applied.	regimes and had hoped to develop a reactive aluminium standard for inclusion in this report. However this has not proved possible. We have now commissioned additional work in this important area and are also looking to develop links with the Aluminium industry
Cypermethrin P.27 Paragraph 1: reference is made to table 4 (metals), which does not appear in the document. Paragraphs 2-3: the commentary concerns cypermethrin in groundwaters and coastal / transitional waters; what is the relevance of this text, given that the standard is for cypermethrin in rivers?	**Report amended (P.27)** Groundwater monitoring data: The quality of groundwater can impact on surface waters and so this information can be considered relevant. Sea-lice control: for clarity this information perhaps could have been provided under a separate heading for marine waters. The standards for cypermethrin are for fresh and salt waters not just rivers
Chromium • The NFA has sought specialist advice regarding the use of Predicted No Effect Concentrations for Chromium III and VI and may submit further views on this point at a later stage.	**Report not amended** Noted.
• The apparent precision of the standards is almost certainly false, e.g. '3.4' for Cr (vi). Nor is it clear why the safety factors (assessment factors) chosen have been used. The 'three times' approach for Cr (VI) appears arbitrary. It would have been helpful to see a sensitivity analysis - or indeed, if there remains uncertainty why are these standards not considered as thresholds for an indirect model approach?	The long term PNEC to which these comments refer is based on the PNEC developed in the European RAR for Chromium. The UKTAG has adopted the precedent set for Priority substances of taking PNECs of European Risk Assessments where these are available. Further information is provided in the Chromium Technical Report. **The approach to be adopted on direct and indirect models is given in Section 6 below** **Report not yet amended** (See earlier comment in the summary on the approach to dealing with new data .
• Sources of chromium VI On page 16 it is stated that The only sources of chromium(VI) are anthropogenic Strictly speaking this is incorrect. In natural waters the most common forms of the metal are Cr(III), mainly present as an aquo-ion and Cr(VI), principally as the chromate ion, CrO42-. Thermodynamic factors indicate that in oxygenated waters of pH value greater than five, the Cr(VI) form will predominate (Elderfield, 1970).	**Report not yet amended** (See earlier comment in the summary on the approach to dealing with new data

Comments	Response
• Hence whenever chromium is present, its natural state in most environmental waters will be as Cr (VI). This applies to both natural and man-made sources of the metal. (See also p52 where this point is implicitly acknowledged.) In practice, the rate at which thermodynamic equilibrium is attained can be so slow as to make Cr (III) seem relatively stable. Whilst the report goes on to state the sensible conclusion that a total risk approach can be adopted for chromium because current levels are low in relation to the proposed limit values, unless they are raised by anthropogenic inputs it is wise not to completely rule out natural sources of CR(VI). Elderfield H. (1970) Earth Planet Science Letter, 9, 10-16. Analytical techniques for Cr(VI). Statements on page 55 imply that methods might not be available for the determination of Cr(VI) at sufficiently low concentrations. Please see Gardner and Comber (2000) for a reported method with a limit of detection of 0.024 µg l-1. This is suitable for the intended purpose though it may not currently be in widespread routine use. Gardner, M.J. and Comber, S.D.W. Determination of Trace Concentrations of Hexavalent Chromium. Analyst. (2002) 127(1), 153-156. Limits of detection required for WFD purposes The assumptions/statements concerning current requirements may need to be updated in the light of recent draft proposals for a Commission Decision on this subject. • It may be appropriate to revisit and confirm or clarify the statement that Cr(VI) is more thermodynamically stable than Cr(III) in surface waters (page 52, subheading Properties and fate in water); I am advised that the reverse is true under many circumstances. • The 'three times' approach for	**Report not amended** P12, step3: There is an important difference between a no-effect concentration and a PNEC. As specified in annex V of the WFD, we rely on laboratory experiments on individual species. These experiments estimate the lowest concentration to have no effect (a 'no-effect' concentration, or NOEC) on that species and chosen endpoint. However, we may have such NOECs for only a few species. A NOEC does not account for risks to other species, or species for which we have no test data. When estimating a PNEC, we therefore have to extrapolate to account for this uncertainty; that is what the Assessment Factor (or sometimes SSD) deals with. We can never completely eliminate uncertainty which is why there will nearly always be an Assessment Factor of some sort. However, we have gone to considerable lengths to reduce uncertainty wherever we can and not to recommend EQSs where there is a high residual uncertainty because this could lead to over-protective standards where investment to comply with the standard may not be borne out by environmental

Comments	Response
Cr(VI) appears arbitrary. It would have been helpful to see a sensitivity analysis – or indeed, if there remains uncertainty why are these standards not considered as thresholds for an indirect model approach? The AF giving rise to "overly protective" standards may lead to a danger of unnecessary investment and carbon emissions.	improvement. **The approach to be adopted on direct and indirect models is given in Section 6 below**
Ammonia What is the provenance of the annual mean of 15 microgrammes/l for unionised ammonia? This is a new interpretation. What is the UK position as regards compliance with this? As such it is incorrect to state that this is an 'existing' standard as it does not feature on GQA or other schemes. The reports refers to 'ammonia' and 'unionised ammonia' almost interchangeably (particularly in annex B). This is confusing and unhelpful. Nor does it inspire confidence in the report when in 'deriving the standards' (p11) it refers to the process for setting standards for phosphorus and ammonia based on matched chemical and biological data, when it is now recognised that phosphorus is an indirect value and ammonia (total) ought to be. Page 20 – An un-ionised NH3 standard of 15 µg/l is not just a tightening of the GQA/RE class but also the standards for salmonids in the Freshwater Fish Directive.	**Report amended (P.17)** UKTAG does not now intend to set a fixed value for un-ionised ammonia as a Specific Pollutant. Un-ionised ammonia is a calculated determinand based upon ammonium concentration. UKTAG has reviewed its position on this latter parameter and is now satisfied that the standards for Total Ammonia proposed in the Surface Water report are sufficiently protective for un-ionised ammonia in freshwaters. Clearly the existing standards for un-ionised ammonia under earlier directives will remain in force until 2013. The report has been reviewed on this point to try and use the term "ammonia" only when discussing in general the need for standards to control either total or unionised ammonia. There is a long and successful history of using standards for total ammonia as direct standards. The UKTAG suggests this should continue. The standard of 15 is an annual mean – that in the Freshwater Fish Directive and River Ecosystem Classification is an annual percentile. UKTAG does not now intend to set a fixed value for un-ionised ammonia as a specific pollutant in fresh waters (see above). The existing standards for un-ionised ammonia under earlier directives will remain force until 2013, and must be maintained, in particular for salt waters, where the Phase 1 report does not provide an equivalent standard .
Copper • Given the body of work available regarding copper and complexation it is disappointing to see the existing standard being promoted, even as an interim measure.	**Report not amended** Once the EU Risk Assessment Report has been finalised we intend to review the situation for Copper. There is a recognised precedent in WFD that the conclusions reached in these risk assessments provides the most comprehensive basis for setting EQ standards and that account

Comments	Response
• However, we are interested to see what the outcome of the industry-led voluntary risk assessment for copper, currently in preparation, will yield. The SSPO would wish to be fully involved in this process and made aware of the conclusions of this RA as these come to light. • We do not have any specific comments on the copper standard set out in this document but we would wish to be involved and updated on any revision of this standard. • The Water Industry agree that maintaining existing standards, despite the mounting and significant evidence is disappointing.	should be taken of these conclusions when setting standards for priority substances. We have acknowledged this approach in preparing our approach for specific pollutants. **Report not amended** Once the EU Risk Assessment Report has been finalised we intend to review the situation for Copper. There is a recognised precedent in WFD that the conclusions reached in these risk assessments provides the most comprehensive basis for setting EQ standards and that account should be taken of these conclusions when setting standards for priority substances. We have acknowledged this approach in preparing our approach for specific pollutants.
Diazinon This decision also contrasts with that taken for diazinon where the authors have opted for an AF of 10, although there are a number of other reproductive parameters affected, the authors note "Although the exposure period was only 30 minutes, effects on reproductive steroid concentrations, the sensitivity of the olfactory epithelium and sperm volumes were observed, with important long-term implications for reproductive success" (p46). This decision would appear to reinforce the need for a more precautionary AF for cypermethrin.	**Report not yet amended** (See earlier comment in the summary on the approach to dealing with new data.
Cypermethrin • This is a factor that needs to be taken into account within a Regulatory Impact Assessment since it could ultimately affect the viability of the salmon farming industry. Any further restriction to practical farming operations managed through WFD will further disadvantage the industry with inevitable economic consequences. (more written text on this)	**Report not amended** The adoption of the new UKTAG should not impact upon the licensing of Cypermethrin in the form of Excis at marine cage fish farms in Scotland. Adequate environmental protection should be afforded by the current licensing approach which utilises short term standards for the substance as a means of imposing licence limits on the scale and rate of discharge of cypermethrin at cages sites. Given that no change to the licensing approach is required, there should be no impact upon producers as regards the viability of their businesses and the cost of regulation. SEPA currently regulate the use of cypermethrin on the basis of a 6 hour standard, limiting the amount of cypermethrin which can be discharged in any

Comments	Response
• P19 - the cypermethrin standards in surface waters are in ng/l whereas the other pesticides standards are in µg/l. Assuming this is not a mistake, it will be technically challenging to measure cypermethrin (or any of the other synthetic pyrethroids) at these concentrations • Northern Ireland was unable to assess compliance with the new standards for cypermethrin because of limits of detection (page 25).	three hour period to that which will be diluted and dispersed by local tidal currents over the course of a 6 hour period. At the time that this was derived SEPA also derived regulatory standards for 24hrs following treatment. SEPA believes that licence limits set to ensure compliance with its regulatory short term standards will provide adequate environmental protection at a water body scale against the proposed cypermethrin standards in the UKTAG Specific Pollutants report. **Report not amended** Cypermethrin is notably more potent than many other pesticides and this is reflected in very low effect and no-effect concentrations, typically in the ng/l range. We have considered the availability of analytical methods and judge that suitable sensitive methods are currently available. These are detailed in the full Technical Report. For this reason we feel we are in a position to propose a PNEC for cypermethrin. EHS did some very limited analysis for cypermethrin at a particular location in Northern Ireland several years ago. However, the method used had a higher LOD than is now required. Development work on a new method for cypermethrin has been carried out more recently, using our GCMS Triple Quad. We are planning to complete this area of work in 2008 and are confident that we will be able to achieve the required LOD. We will then be assessing the situation in NI as part of our Surveillance monitoring. Also, EHS are currently about to embark on some Investigative monitoring at 4 particular areas within NI. Using passive samplers, we will be monitoring for cypermethrin along with a number of other substances. The analytical part of this area of work will be delivered by EA NLS Llanelli. This monitoring will only be able to highlight whether cypermethrin is an input in these areas and will obviously not give a quantitative result.
Iron The proposed 1mg/l standard for iron would be a new standard in Scotland. Scottish Water does not support the inclusion of iron in the list of standards for the following reasons: • The proposed EQS for iron of 1mg/l may	**Report not amended** We have been unable to recommend a new PNEC for iron that fulfils the requirements of Annex V of the WFD with the information available to us. Under these circumstances we would normally recommend continuation of the DSD (Dangerous Substances Directive) standard, at least as an interim until we were able to overcome the

Comments	Response
limit water companies' abilities to remove phosphorus from wastewater using end of pipe ferric dosing, particularly given the tight P standards proposed in the first UKTAG report. • Scottish Water is not convinced that there is 'adequate confidence' in the iron data. The working paper for iron suggests very low PNECs for iron (e.g. PNEC freshwater of 0.016mg/l, approx 60 times lower than the proposed EQS of 1mg/l). However, neither the working paper nor the Annexe VIII report explain why the 1mg/l iron is selected in Table 1 of the Annexe VIII report. Scottish Water is seeking a much clearer statement as to why 1mg/l is proposed and, given the current information, cannot support its inclusion. In addition, we would be strongly opposed to an even tighter standard for iron should one be proposed in the future. P17 – there is the possibility that a new EQS for iron could limit water companies abilities to remove phosphorus from sewage using end of pipe ferric dosing, particularly given the tight P standards proposed in the first UKTAG report. However, this would depend on the level of the proposed iron EQS.	difficulties of proposing a new standard. In the case of iron, the situation is complicated as the existing standard applies only in England/Wales to fulfil the requirements of DSD. The UKTAG will recommend that this standard should be adopted by the other Administrations, but clearly this will be a matter for Ministers to decide. We acknowledge the link between iron dosing and P removal, and the possibility that an iron standard might compromise Water Companies abilities to comply with the P standard. This has prompted a piece of work to look at this relationship and this will inform our eventual proposal. We also plan to revisit the PNEC for iron but progress here will be strongly influenced by available resources. At this stage we cannot say when we will be in a position to come forward with a new proposal.
Chlorine • The technical document on chlorine (free available) would appear to omit an understanding of chlorine chemistry in estuarine & coastal waters where a bromine rather than chlorine chemistry is predominant. Nor does it capture an understanding of the chlorination by-product fluxes involved and their impacts (which may indeed substantiate the (in a historical context superficially surprising)suggestion that they are largely not an issue) or many other papers that have been produced over the years associated with the use of 'chlorine' as a fouling control agent at coastal and estuarine power stations. The references listed behind Taylor, 2006; The effects of biological fouling control	**Report not yet amended.** UKTAG will ensure an adequate explanation of chlorine chemistry in estuarine and marine waters is included in the technical report. In addition, we would welcome any further information that would help us address your concerns about false positives.

Comments	Response
at coastal and estuarine power stations; Marine Pollution Bulletin 53, 30-48 may be useful in this regard. The authors are correct to be concerned that the standards suggested challenge the capability of current instrumentation - but they should be equally concerned over the meaningfulness of these particular oxidant levels in natural (estuarine and coastal) waters where other sources of oxidants may confound matters: no indication is given in the document as to the natural sources of variance in this parameter. From past experience, there are grounds for suspicion that in at least some instances the toxicity tests that have been used to derive these extremely low standards did not employ 1:1 flow-through systems but perhaps sought to maintain a consistent residual oxidant level with at least some degree of recirculation or a relatively low flow-through: in such circumstances CBPs can build to toxic levels and a false positive result may be obtained.	
• TRO (Free Chlorine, Annex VIII substances) We agree that UKTAG has made use of the best available laboratory toxicity science (as referenced in the EU RAR for NaOCl). We welcome the UKTAG recommendation to retain the current UK EQS/EAL for fresh and saltwaters pending additional work. For clarity UKTAG should state the basis by which it has converted free chlorine to total chlorine (and how this varies with pH). We note and agree with many of the UKTAG remarks on analysis methodology. In the field detection limits of 10 µgl-1 cannot be achieved, with practical limits being say 20-50µgl-1. Moreover, in field conditions with natural waters interferences are common and can indicate apparent TRO of say 20µgl-1. These practical limits of detection cause issues in assessing compliance and	**Report not yet amended** (See earlier comment in the summary on the approach to dealing with new data

Comments	Response
limit the confidence in predictive modelling at and below such concentrations. • TRO (Free Chlorine, Annex VIII substances) We welcome the UKTAG recommendation to retain the current UK EQS/EAL for fresh and saltwaters pending additional work. We are also concerned that in applying the future EQS, care should be taken to interpret the EQS in the light of the nature of exposure of biota in field conditions. For example, the physico-chemical processes governing the mixing and decay of chlorination-derived oxidant in field conditions is such that exposure of biota would frequently be of intermittent and of short-duration (e.g. in the case of benthos or intertidal biota exposed to a buoyant cooling water thermal plume in tidal conditions). We note that power plant cooling water circuit chlorination has been practised for many years meeting current BAT without reports or evidence of widespread compromise of ecological receptors (see for example Langford (1990), Langford (1998)). On the contrary ecological effects associated with cooling water plumes appear to be subtle and confined largely to the immediate vicinity of the cooling water discharge. In deriving future EQS and associated mixing zone concepts we would urge UKTAG to take into account such evidence from field conditions as well as laboratory studies in interpreting how any laboratory-based EQS is applied in practice.	**Report not amended** This is outside the scope of this report
The Task Force is concerned at the proposed EQS's. The basis of this concern is on the reliability of the individual data set used to derive the PNEC's. In the consultative document (page 14 bullet point (d), The UK TAG writes that "the regulatory standards should be based on adequate data in which there is sufficient confidence" The individual studies used to select the PNEC will be reviewed below, however there are some general points	UKTAG has now had an opportunity to review these data and has revised its recommendations for mecoprop.

Comments	Response
that should be considered. • Springborn Data In the case of Mecoprop-P the Task Force does not consider that the studies used to set the PNEC are scientifically valid. See Mecoprop Task force report and letter	
Dimethoate (p. 62-65): In a recent Danish study dimethoate was shown to have almost no effect on a number of different stream macroinvertebrates including the crustacean Gammarus pulex (most sensitive) that showed LC50 (96 hrs) values > 1 mg/L dimethoate and no indirect effect on feeding behaviour when concentrations were > 2 mg/L. The data is available is reported in : (Møhlenberg, F., Schlüter, L., Gustavson, K., Andersen, T.T., Forbes, V., Cold, A., Friberg, N., Larsen, S.E. & Lauridsen, R.B. 2004: Effekt af bekæmpelsesmidler på flora og fauna i vandløb. Miljøministeriet. - Bekæmpelsesmiddelforskning fra Miljøstyrelsen Nr. 82: 134 s.can be downloaded http://www.mst.dk. (Danish with English summary and conclusion)). In light of these results the very low limits set might be revised. Overall, the vast amount of studies on dimethoate will show that it is not very toxic when dissolved in water.	We are grateful for this information. However, after further analysis it is clear that other data, including data used in the 91/414 Draft assessment report, indicate dimethoate is toxic to other species at concentrations lower than those referred to in the Danish study. We also have evidence of higher sensitivity of Gammarus to dimethoate than that indicated in the Danish study. We therefore propose to make no change to the proposed PNEC for dimethoate.

UKTAG Report – Section 5 : The Implications for Rivers

Overview

There were a few issues regarding the implications for adopting standards for rivers. A number are highlighted below:

- General concern about the implications for adopting standard for marine waters, one being that data availability in TRaC waters is relatively poor.
- An issue was highlighted when considering the compliance of a water body and how this should be determined when there are defined mixing zones within it.
- One respondent welcomed the report which includes some clear exposition of metrological principles relevant to the interpretation of standards, including the confidence interval associated with statistical errors in sampling and analysis.

Amendments to the UKTAG report

A note on the risk based aspect of monitoring has been added

Comments	Response
In discussing the implications for different water bodies, face value failures have been stated, however this does not take into account the allowance within the Directive for 'temporary deterioration' under Article 4 (6).' It has been suggested that a 95%ile is used for compliance, but it is certain that enough samples must be taken to allow a 95%ile value with confidence to be generated. It will be these standards (assuming alternative objectives are not set) that drive programmes of measures and so it is imperative that there is sufficient level of certainty to identify a failure of a standard.	**Report not amended** We note the observations made.

Comments	Response
There are still a number of issues regarding the implications for adopting standards for marine waters. A number are highlighted below: • The lack of any compliance tables highlights the fact that data availability in TRaC waters is relatively poor. The statistical compliance requirements associated with freshwaters would therefore not likely to be achieved, or relevant for marine waters as data collection will be less frequent • Work is underway to review natural background concentrations for metals, against which, an “added risk” approach can be applied. However this will only be relevant for freshwaters, and it is assumed that “total risk” method will be applied in marine waters, but this is not clear from the report.	**Report Amended (P.31)** • A note on the risk based aspect of monitoring has been added. • Background levels of metals will be substantially lower in the marine environment than in freshwaters. In addition, we would expect them to be less variable. These factors would encourage a 'total risk' approach for the marine environment.
It may also be appropriate for UKTAG to give state how the compliance of a water body is to be determined when there are defined mixing zones within it. We suggest that in determining the compliance or otherwise of a water body with EQS for WFD purposes concentrations within a mixing zone are to be ignored. It may also be appropriate to note that the extent of the mixing zone and constraints on the point discharge would be determined by regulators so that the resulting environmental and ecological impacts were such that the WFD objectives would be attained in the water body outside of mixing zones. We also note that even should there be an exceedence of an EQS in and adjacent (or remote) water body, it is still appropriate for point discharges to retain a mixing zone, though its extent and the controls on the point discharges would be determined so that compliance with the EQS for the water body could subsequently be attained. Without understanding the mixing zones to be permitted for several substances it is not possible to assess the potential consequences of the proposals for some potential emissions.	**Report amended (P.24)** The Priority Substances Daughter Directive provides for mixing zones within which EQS can be exceeded. We expect that the Commission will bring forward guidance for Member States when setting these zones. This may provide a useful reference for setting zones for specific pollutants. A note has been added to Table 1 to reflect this.
I am particularly pleased to see that the report includes some clear exposition of metrological principles relevant to the interpretation of standards, including the confidence interval associated with statistical errors in sampling	**Report not amended** We note the observations made.

Comments	Response
and analysis (page 23, footnote).	
In table 1 there is no discussion of the location at which EQSs should be applied. We suggest that for definiteness, in the context of a relevant discharge, UKTAG should explicitly recommend that the EQS should apply at the edge of a site-specific mixing zone, in keeping with the approach taken in DoE circular 7/89 (Dangerous Substances Directive List II).	**Report amended (p24)** Agreed. We have included a paragraph to reflect this in the note that accompanies Table 1

UKTAG Report – Section 6: The Response to Failure of the Proposed Standards

General comments:

- The approach for indirect models was broadly welcomed which led to the question whether any models need to be direct. To avoid confusion a way of naming these standards was suggested.

- NFA commented regarding the challenges faced in determining background levels and that there may be situations where the added risk approach or the total risk approach are not always appropriate.

- There was a concern that the environmental agencies are monitoring unnecessarily for a number of "old" substances where measures have already been introduced to deal with the resultant pollution.

- Request for more information on the relation between charging schemes and specific pollutants and the ensuing rules for the licensing of discharges.

- The water industry commented that disproportionate costs and technical feasibility tests in Article IV of the WFD should be fully applied to ensure: that correct objectives are set; and that further investment in treatment should be developed with special consideration to the carbon footprint of these investments.

Amendments to the UKTAG Report

Sections have been added to:

- Indicate the systematic approach that will be adopted in response to failure, using monitoring and modelling as appropriate and a consideration of cost-effectiveness and proportionate cost and the feasibility of securing compliance.

- Indicate the adoption of a “risk-based” approach to monitoring in UK.

Comments	Response
Direct and Indirect models. The elaboration of the use of indirect models is broadly welcomed, as it should mean that action is only taken where there is a justified environmental need. Nonetheless we need to understand better what the 'next steps' are in the proposals to gather evidence. Specifically, guidance should make it clear that a precautionary approach is not to be taken if the impact on the ecology is uncertain or unproven - i.e. that there should be positive evidence of adverse impact. It will otherwise be almost impossible to demonstrate the absence of an adverse effect.	**Report amended in various place** Generally the UKTAG proposes that failures for Specific Pollutants do not require additional Weight of Evidence for classification or for considering actions as part of Programmes of Measures. The type of action actually taken will be subject to the Directive's considerations of cost effectiveness and disproportionate cost. This includes the feasibility of securing compliance and the associated degree of protection and improvement provided by compliance. The considerations behind this comment are seen as being taken up in the Programmes of Measures for River Basin Plans – for pesticides, for example, it is likely that chemical failures will be taken to require corroboration in the form of impacts. Figure 2 of the report illustrates the process for determining the need to act under the Programme of Measures. This includes the point about being confident about biological outcomes in order to avoid action that, in the context of the Water Framework Directive, is not justified by outcomes. It is appreciated that the details of how this might work are not yet fully developed.
The application of indirect models leads us to question why any standards need to be direct. With hindsight, for instance, why is ammonia (total) not considered to be indirect, as it is broadly accepted that it is the unionised ammonia which is the pollutant?	**Report not amended** For ammonia the link between concentration and risk is clear and there is no need for additional weight of evidence on a local basis. Failure of the standard indicates an unacceptable risk to the ecology. For total ammonia there is a clear association between level and set levels of ecological protection. The cause may be the toxicity of un-ionised ammonia, the toxicity of total ammonia, or general issues correlated with ammonia and associated with the amount of treated sewage in waters and the cocktail of risks associated with this. A standard for un-ionised ammonia would, at low pH allow 10-15 mg N/l of total ammonia in a river and this is clearly unacceptable.
Nomenclature: The term 'standards' is applied both to those parameters which are ‘direct’ and those which are 'indirect'. This is likely to cause confusion and it would be better to differentiate clearly - either describe them as 'd-standards' and 'i-standards' or as 'standards' and 'thresholds'.	**Report not amended** This point applies across several of the reports of the UKTAG. We like the idea but feel we should have to distinguish with indirect models the role of “Weight of Evidence” and the role of general response to failure in terms uniform controls on operators. For example for phosphorus many proposals include weight of evidence and the expectation of uniform

Comments	Response
	emission standards for certain discharges. Under certain applications of the Nitrate Directive failure is judged on the basis of compliance with the chemical standard without additional weight of evidence, but yet again the response to failure is general controls, as opposed to controls that are back-calculated to achieve compliance. **The approach to be adopted on direct and indirect models is given in Section 6 above**
Added Risk and Total Risk Approaches The NFA would comment that there may be situations where neither an added risk nor a total risk approach is entirely appropriate. The recognition of the need to account for naturally occurring background levels of substances is welcomed. However, there are still a number of challenges which must be overcome in determining natural background levels. These include dynamic variations, contributions from historical sites and mine waters pumped out of or seeping out of closed mines. There is a need for a model to be constructed on a river basin by river basin basis in order to identify the mass source specific weighted contribution of all sources of each of these metals and see where and how regulatory control may be most effectively deployed. NFA welcomes the recognition that further work is needed in this difficult area.	**Report not amended** We appreciate the technical limitations of the Added Risk approach (including those you have highlighted) but, in most circumstances, this approach would be preferable to one based on Total Risk because this could give rise to spurious EQS failures. We have recently commissioned work to develop a better understanding of the distribution of backgrounds for different geological regions. You quite rightly highlight the question of geographical scale over which the background should apply (reach? catchment? geo-region?) but we would need to strike a balance between the level of detailed understanding required for a particular site and ease of assessment. In another piece of work, we are investigating the sensitivity of taking backgrounds into account compared to, for example, taking speciation into account when assessing compliance with some metal EQSs.

Comments	Response
Determining the need for action under the Programme of Measures The NFA supports the consideration of whether there is “real risk” to a water body in the process of determining the need for action under the Programme of Measures, represented in Figure 2 of the document. NFA would, however, suggest that certain aspects of “refining the understanding of risk” should be factors in determining compliance with the EQS and thus classification of a water body as “good” or “less than good” rather than being a consideration at this later stage. This is particularly true for consideration of natural background levels, speciation and bioavailability. The NFA could not establish, from Figure 2, at what point it could be determined that there is no “real risk” and what the outcome of this determination would be. Is the intention that with increased confidence that there is no “real risk” then the water body could be classified as good even though the original EQS had been exceeded? Alternatively does the outcome of no “real risk” trigger a low priority for action in the Programme of Measures? If the latter is the intended outcome, how does a water body then eventually progress to good status given that there is no action needed in the Programme of Measures? It is important that the intended outcomes of considering “real risk” are clarified.	**Report amended (P29/30)** In the section entitled “The Response to Failure of the Proposed Standards” we have given an indication of how standards will be used under the Programme of Measures. However we would refer you to the forthcoming UKTAG Classification Report and its discussion of classification and the basis for action when waters are recorded as worse than good.

Comments	Response
In terms of control mechanisms we believe that the substances concerned fall into three groups. These are firstly those substances that are already banned or could be banned and thus will naturally decrease over time. In this case little monitoring and no regulatory controls should be required. Secondly, the remaining man made organic substances which will not be banned, but should be controlled through IPPC and other control of pollution at source approaches. The most harmful of these substances and certainly any substances which are classified as List I under the old directive, or Priority hazardous substances under the new Directive should be phased out over time. Those which classified as List II or Priority Substances will require monitoring and or in cases where EQS compliance is substantially at risk further regulatory controls at source are to be applied.	**Report not amended** While we recognise concerns that we are monitoring unnecessarily for a number of "old" pollutants where measures have already been introduced to deal with resultant pollution, there is an ongoing obligation upon Member States to demonstrate that progressive reduction is taking place and also to provide an inventory on discharges emissions and losses of all polluting substances under WFD.
There appears to be a change in emphasis from some earlier UK TAG documents on the use of standards and compliance assessment. Is it proposed to revise the earlier papers?	**Report not amended** The earlier reports are being updated after consultation. But they proposed weight of evidence approaches for nutrients.
We suggest that the modelled data used to support individual measures is assigned an alpha-numeric confidence grade comprising a reliability (alpha) and accuracy (numeric) assessment. For example, A1 equates to sound records and procedures with an accuracy level of ±1%; D6, on the other hand equates to unconfirmed verbal reports or cursory inspection or analysis with an accuracy of ±100%. The water industry has been using such a system for over a decade. Utilising such a system would require those proposing measures to ensure that there was sufficient quality data available to support the measure whilst providing those required to make an investment with a modicum of confidence that the measure was appropriate. We consider that a holistic approach is needed to the development of measures based on risk assessment and management in each river basin and catchment in addition to monitoring against the standards. Such an approach would be consistent with the Water Safety Plans being advocated by the World Health Organisation and would follow the proposed approach of the Drinking Water Inspectorate in relation to	**Report not amended** This kind of approach is taken within the agencies' systems for deciding how to act on reported failures or damage, for example for price reviews. It involves statistical confidence of failure (in terms of uncertainty in monitoring), confidence about cause and effect and confidence about apportionment.

Comments	Response
compliance with the drinking water quality standards.	
Where necessary in order to protect against short-term or intermittent releases MAC standards should be set as 95%iles over a sufficiently long period. In particular, we welcome the recommendation to assess the actual state of the biology before determining the need to take action within the Programme of Measures. This is particularly important in the context of substances for which the natural component may be a large proportion of the EQS but is also relevant for other substances, especially those for which the toxicity in the field may depend critically on the speciation and bio-availability resulting from local water quality and may differ substantially from that occurring in the toxicity testing which underpins the definition of the EQS.	**Report not amended** We note the observations made. The approach adopted by the UKTAG is given in Annex B. Short term or MAC standards will be expressed as 95%ile values.
Compliance and responses to failure Comments made above in relation to application of standards (2.1.3) are also valid for this report. Figure 2 highlights the policies that the environment agencies would adopt when faced with a failure of a particular standard. We are concerned with the step entitled "refining the risk" which seeks to increase confidence in the assessment. It is understood that there is a need to consider natural backgrounds for metals, and also the speciation associated with a particular chemical, however, we would not endorse a requirement to prove that biology is impacted before taking action on a chemical which is failing (with confidence) its EQS - which has been derived through the TGD process and peer reviewed. The normative definitions outlined in Annex 5 of the WFD state that waters at good status should not exceed EQSs set under this process.	**Report not amended** UKTAG is currently developing its proposals for the WFD classification scheme. In this it is likely that the UKTAG will propose that failure of standards for Specific Pollutants will, in themselves, lead to a water body which is reported as worse than Good Status. The UKTAG proposals on classification will be the subject of a consultation document in 2008. The response to a failed standard will vary for each pollutant but the UKTAG proposes that as a rule compliance with for Specific Pollutants is achieved **without** a step which involves additional ecological corroboration of damage. The report on Specific Pollutants has been updated to clarify this. This is likely to be the subject of a further consultation document.
In the section on failure of the proposed standards, the paper indicates that there are 2 ways in which compliance with standards can be used to make decisions, we consider that there is a third, using the standards as a trigger for further site specific, and local investigations. This is important in the context of WFD as you will be asking someone to make a change to their activities, infrastructure etc. and there will be an associated cost. The local investigations are vital to identify the problem and also scope	**Report not amended** We note the observations made. The report identifies our approach on this matter in Annex B. As a matter of course Agency staff will investigate the reasons for failure of a given standard and this is a vital part of the decision tree for developing programmes of measures

Comments	Response
out the most effective solution, both in terms of cost and the environment. We very much agree that one of the programmes of measures must be further investigations where there is insufficient confidence. It is virtually impossible to cost things like resistance management costs until after the event and you know what you now have to do. Also switching from 1 product to another product which is less effective is impossible to cost and it's very difficult to cost the switching crops as large scale changes will obviously affect market values.	
We feel particularly uncomfortable about the suggestion that modelling may be used to assess compliance with a particular standard. For the specific pollutants associated with agriculture, there are too many variables, including soil type, crop type, weather patterns, cultivation technique etc, to enable broad brush assumptions through modelling. Figure 2 explains how risk can be refined using all available evidence but it is not clear how a high level or low level of confidence will be determined.	**Report not amended** If this degree of variation happens then useful models will not come through the process. The predictions of the model will be too uncertain to be helpful. The UKTAG would propose that estimates would always be made in terms of "there is X per cent confidence that ...". With high modelling errors there will be few cases where we could pinpoint actual instances where X is say, 95 per cent. It may be the modelling will pin point places for targeting monitoring and discussions with agriculture. But it is conceivable that there could be models that can target risk - and these may be helpful in avoiding the wasteful imposition of controls on a region-wide or countrywide basis.
Monitoring, compliance methods, and subsequent management action will need to consider influences of turbidity and desorption of pollutants from sediment in TRaC waters.	**Report not amended** Proposals for metals relate to dissolved concentrations and so desorption from e.g. bed sediments would need to be taken into account when assessing risks to TRaC waters. Sampling for organics has been the subject of European debate and is normally based on 'total' concentrations which might include a sorbed fraction as well as the dissolved fraction.
If action is required, how will the WFD tests of disproportionate cost and technical feasibility be applied?	**Report not amended** This point is beyond the scope of this report. The approach is still under development
It would be useful if the report could describe the interface between in-river standards (as proposed) and licence conditions in more detail; particularly the apportionment of the standard between multiple dischargers of a pollutant / specific pollutant. In addition, when a new application for a discharge of a pollutant is made to the agencies, how will this affect existing	**Report amended (page 30).** Generally where a standard is failed the agencies will seek to determine the cause (the Reasons for Failure) in a systematic way. Where the outcome from this is set against a single discharge the agency will seek to tighten permit conditions subject to the Directive's considerations of cost effectiveness and disproportionate cost. Where there are several discharges the Directive promotes the most cost-effective approach. Where there is

Comments	Response
dischargers where results show that the pollutant is at or near the standard in that water body? Similarly, if a standard in a river is already exceeded for a specific pollutant (i.e. failure of good ecological status), and the agencies receive an application for a new discharge of this pollutant – what will be the response to the application?	a mix of point sources, diffuse sources and unknown sources a further step will be needed to determine and apportion the causes. This may involve monitoring and modelling and a consideration of cost-effectiveness and proportionate cost and the feasibility of securing compliance. Relocate to Section 6 Response to failure
Will their implementation be subject to comparable or equivalent considerations of disproportionate cost and technical feasibility?	**Report not amended** P30 provides a statement on the use of disproportionate cost and technical feasibility- these principles will be applied to all specific pollutants standards

UKTAG Report – Section 7: Future Work

Overview

- Interest was shown in the timetables for further work on specific pollutants.
- Some respondents were pleased that standards would be revised as and when specific scientific information became available.
- It was highlighted that in the Prioritisation process of new specific pollutants, it should urge that the process is capable of highlighting new and emerging chemicals of concern, where environmental data will be scarce, and places less emphasis on historic or banned substances, where environmental data may be prevalent.

Amendments to the UKTAG report

- The UKTAG report was amended to include a section on the periodic review of standards.

Comments	Response
For the substances in part B, what is the timetable for further work, and when might we expect further consultation? We have considerable reservations regarding the supporting technical reports which propose alternative (and considerably more stringent) EQSs - are these strictly for consultation now? If so, this is misleading, as the consultation appears to be considering the current UKTAG proposals.	**Report not amended** Several of the substances in Part B are the subject of ongoing discussions under EU Existing Substances regulations. There is a recognised precedent in WFD that the conclusions reached in these risk assessments provides the most comprehensive basis for setting EQ standards and that account should be taken of these conclusions when setting standards for priority substances. We have acknowledged this approach in preparing our approach for specific pollutants. Therefore the finalisation of the Risk Assessment reports for Copper and Zinc is awaited before a final decision is taken on either substance. These are expected later this year. In the case of chlorine the rate limiting step is the

Comments	Response
	availability of a sufficiently sensitive analytical field technique. This may preclude any recommendations for the foreseeable future. In the case of the remaining substances we will undertake further work subject to the availability of a research budget
Future work: It is implicit in the proposals for Part B substances that these 'standards' are interim pending further work, presumably based on the underpinning technical reports. These technical reports (for instance, iron, and ammonia) imply very different standards from those currently proposed. What is the process for the expected review, and to what timetable?	**Report not amended** The timetable for further work will be dependent upon the availability of funding. Clearly at present with great pressure on public spending we will have to compete on a prioritised basis for such funding.
Where UKTAG have been unable to derive standards further work will be undertaken to collect data in order that this can be achieved. The report seems contradictory in relation to the timescales for deriving the remaining standards but seems to suggest that this will be ongoing through the 1st RBMP in order that the new EQS will apply in RBMP2.	**Report not amended** Where funding becomes available, finalisation of studies will be completed as soon as possible. We do not expect to introduce any further standards for specific pollutants before RBP2 but in some cases it may not be possible to make recommendations even then e.g. iron where we need to establish an appropriate mechanism to account for background reference concentrations. UKTAG does not now intend to set a fixed value for un-ionised ammonia in freshwater. Un-ionised ammonia is a calculated determinand based upon ammonium concentration, pH and temperature. UKTAG has reviewed its position and is now satisfied that the total ammonia standards proposed in the Phase 1 Surface Water Standards report are sufficiently protective for un-ionised ammonia. Clearly the existing standards for un-ionised ammonia under earlier directives will remain force until 2013, and must be maintained, in particular for salt waters, where the Phase 1 report does not provide an equivalent standard .
The NFA strongly supports the proposals to improve the approach for certain metals, improve confidence though field data and improve the understanding of risks from metals. The metals industry is actively involved in some of the additional work identified. The NFA is supportive of the items of work summarised on Page 35 of the document. The UK NFA would, however, appreciate it if the scope of additional work and opportunities for those with specialist knowledge to contribute were clearly defined.	**Report not amended** We are pleased that you recognise the value of the approach we have adopted although, as we explain in an earlier response, we are limited by the field data at our disposal. Much of our additional work on metals (including those items referred to in our previous response) is in collaboration with experts from metal industry associations. We value this collaboration and hope it will continue.

Comments	Response
Members of the NFA would be particularly pleased to contribute to the process of determining EQSs for prospective Specific Pollutants at the appropriate time.	
Appropriate research and development including further work on source apportionment, monitoring and investigations, and where necessary assessing the appropriateness of EQS values should be funded and undertaken in AMP5 (2010-2015). For those sites, where the EQSs are scientifically robust, and where real benefits can be afforded to the environment further investment can then be considered within the bounds of disproportionate cost and technically infeasibility	**Report not amended** We note the observations made.
We note UKTAGs statement that more data is needed in many of the areas under review and, in the case of the Annex VIII substances there is inadequate analytical sensitivity for some of the substances of interest. Further research will be needed, as will more extensive data gathering, but it is debatable how much additional information or data will become available to influence the development of programme of measures within the first River Basin Management Plans. This absence of data raises a number of concerns, not least in areas where models are being proposed. Unless a model is properly calibrated the outcome can be highly suspect. As an evidence-based organisation we firmly believe that the scientific and other technical data has to be in place to support the investment decisions that will be made over each of the three cycles of river basin planning. This is not to say that we require certainty of outcome before we would support individual measures. But we do believe that, collectively, we should be reasonably confident that any proposed actions will deliver desired outcomes, or at least move us close to that goal. We would, therefore, be very concerned if decisions were taken on the basis of flawed modelling. We can not, and we must not, waste money on programmes of measures for which there is little or no evidence to support the investment	**Report not amended** UKTAG has long recognised that because of the iterative nature of River Basin Planning process we will need to review and refine our approach as we develop our plans. For this reason decisions for the first Programme of Measures of River Basin Planning may prove challenging as we may not have a comprehensive set of data available. However the likelihood is that we will initially select only those measures where we are satisfied that we have the right information and look to improve our understanding of other issues for inclusion at a later stage.

Comments	Response
There is not a finite sum of money available to do all that we might like to do so we must work on the basis of no regrets as we strive to meet the WFD objectives.	
Otherwise unnecessary action may be taken in the first Programme of measures. It is implicit in the proposals for Part B substances that these 'standards' are interim pending further work, presumably based on the underpinning technical reports. These technical reports (for instance, iron and ammonia) imply very different standards from those currently proposed. What is the process for the expected review, and to what timetable?	**Report not amended** We have already commissioned some additional work to address issues that prevent us from proposing robust and implementable EQSs at the moment. However, resources are limited and so we must prioritise. This means that progress on some substances, including iron, is likely to be slow, and it is unlikely that we will be able to submit new proposals on iron for at least 12 months. See the above discussion on “indirect” approaches.
Prioritisation of new specific pollutants The prioritisation process is clearly detailed and provides a useful audit trail for the selection of new specific pollutants. We would urge that the process is capable of highlighting new and emerging chemicals of concern, where environmental data will be scarce, and places less emphasis on historic or banned substances, where environmental data may be prevalent.	**Report not amended** You are correct in pointing out that prioritisation could be biased toward substances where there are a lot of effects and exposure (e.g. monitoring) data. The process is less robust when data are sparse e.g. for emerging chemicals. We are aware of this and so we invite intelligence from colleagues on emerging chemicals to help inform our decision-making. We also recognise that the current procedure only deals effectively with organic substances; if resources allow, we hope to revisit the prioritisation process to allow us to accommodate inorganic substances alongside organics.
The use of field data to improve confidence in standards based on laboratory risk assessment (page 33) shows a broad-based approach to the available evidence. It is reassuring that the two strands of evidence point to similar standards in most cases. In principle, mathematical models can have a stopgap role in suggesting what should be done to comply with standards where there are as yet no reliable analytical methods for low concentrations of a pollutant in environmental waters (page 14, footnote). However, the predictive value depends on the evidence base used to calibrate the model. The final version of the report could be strengthened by brief discussion of the ways in which modelling methods would be scientifically benchmarked.	**Report not amended** You have raised the suggestion that compliance assessment might be based on predictions of environmental concentrations rather than sampling and analysis. There may be some legal constraints to be taken into account but where this is possible, you are correct in advising that the operating domains for any such models should be understood and validated before use.

Comments	Response
p.32 With regard to iron, what is meant by “this needs to be addressed”? It is unclear whether further research on the effects of iron is planned. Scottish Water welcomes future work on aluminium before any standards are proposed.	**Report not amended** We are referring here to the relative importance of direct toxic effects due to dissolved iron and smothering (indirect) effects of iron floc. We need to understand whether both or only one of these should 'drive' the standard. This is the issue that will need to be addressed and will form the technical basis of a PNEC. Aluminium shares some of the same difficulties where, in addition, complex speciation also influences how a standard would be expressed and compliance assessed. This is a high priority for further work and we are at an advanced stage of planning a significant programme of work on aluminium that we hope will enable us to derive an evidence-based standard.
There are several instances in the report where despite the best information suggesting current standards are too severe, it is proposed not to relax them because of the "no deterioration principle". Please confirm that by adopting more stringent standards now, or introducing standards for additional pollutants, the UK is not placing itself at a disadvantage and would be able to relax these standards if better toxicity evidence is produced, other Member States are found to have adopted less stringent national standards, or the EU subsequently adopts less stringent standards. If standards may only be retained or tightened, then further evidence should be obtained so that they can be set more accurately.	**Report amended (P.38/39)** We recognise this as a very important concern. The policy approach adopted by UKTAG in developing environmental quality standards has been designed to minimise, wherever possible, levels of uncertainty that may give rise to unnecessarily stringent standards. In this process we have not developed standards where we believe that the level of uncertainty is unacceptable. For example we have not advocated setting standards when the safety factor required is larger than 50. Furthermore where we know that there are pending negotiations in the EU Risk Assessment process we have not set standards for the substances concerned. In addition we have commissioned a number of ecotoxicological studies where we have identified a key data gap in order that we may reduce the safety factors for the chemicals concerned. We believe that this philosophy will minimise the occurrence of unnecessarily stringent standards. However we also intend to introduce a regular review of our standards catalogue, probably on a six yearly cycle to coincide with RBP cycles, to ensure that we are using the best data when setting or reviewing standards.
It is reassuring that UKTAG will make proposals to revise standards if and when new evidence becomes available. Within the proposed standards is there any mechanism for the formal review of standards after a specific time period?	**Report amended (P.38/39)** UKTAG will seek support from DEFRA for the development and resourcing of a routine review process.

UKTAG Report – Annex A: Setting Priorities for Deriving Standards

Overview

- The NFU had a concern regarding the approach used to determine the Environmental Standards where there is little ecotoxicological data as if there is a small dataset then a large assessment factor is used, which would result in a small predicted no effect concentration (PNEC).

Comments	Response
The NFU are concerned with the approach used to determine the Environmental Standards where there is little ecotoxicological data, if there is a small dataset then a large assessment factor is used, which results in a small predicted no effect concentration (PNEC). Though we understand this is undertaken to ensure a precautionary approach is taken to protect the environment. The Water Framework Directive aims to look at standards pragmatically and has a consideration of economics and we consider this precautionary principle applied to these standards is not in keeping with the spirit of the Directive. It is understood that only those specific pollutants with adequate data should have been included in this round of standard setting but it is not initially clear as to whether this is an iterative process and whether the PNEC can increase in future planning cycles if additional data collected increases confidence and shows the specific pollutant is not as harmful as predicted. It is noted that this is mentioned in the 'Use of Field Data' section but it is not immediately apparent.	**Report amended P.38/39** We recognise this as a very important concern. The policy approach adopted by UKTAG in developing environmental quality standards has been designed to minimise, wherever possible, levels of uncertainty that may give rise to unnecessarily stringent standards. In this process we have not developed standards where we believe that the level of uncertainty is unacceptable. For example we have not advocated setting standards when the safety factor required is larger than 50. Furthermore where we know that there are pending negotiations in the EU Risk Assessment process we have not set standards for the substances concerned. In addition we have commissioned a number of ecotoxicological studies where we have identified a key data gap in order that we may reduce the safety factors for the chemicals concerned. We believe that this philosophy will minimise the occurrence of unnecessarily stringent standards. However we also intend to introduce a regular review of our standards catalogue, probably on a six yearly cycle to coincide with RBP cycles, to ensure that we are using the best data when setting or reviewing standards.

UKTAG Report – Annex B: The Process for Developing Standards

Overview

- One respondent queried if the pollutants are not designated as specific pollutants and would they be formally used in the classification system?

Amendments to the UKTAG report

The UKTAG report was not amended.

Comments	Response
Page 45 – Will the nine substances where data on PNECs is lacking but the existing regulatory controls still apply in the interim be classified as poor until proper UKTAG standards are established? Without being specific pollutants under WFD, no plans to reduce levels would be generated in RBMP1, except perhaps investigatory work.	**Report not amended** No as these substances are to be formally adopted as specific pollutants they will be used as part of the classification scheme under Good Ecological Status However as the standards that apply have been in place for a significant period of time we do not anticipate that compliance will present additional problems.
Basing the development of standards on annual means fails to evaluate the effect that seasonality (i.e. temperature etc) and other factors may have on the concentrations of specific pollutants and subsequently the time of exposure to aquatic biota. As such, it is suggested that this may be discussed in more detail in the report and how standards based on acute toxicity may be developed to address this problem.	**Report not amended** We note the observations made.
Currently, the amount and type of data available to develop UK standards differs much between England and Wales, Northern Ireland and Scotland. However, to enable unified standardisation in the UK and to meet WFD objectives by 2015, it is necessary that a unified and unbiased routine monitoring approach (of sites at risks as well as sites not considered to be at immediate risk) be taken by all countries within the UK. To enhance the confidence of the stakeholders, assurance may need to be given in this report that such plans and works are underway	We note the observations made. The UK Agencies will develop independent monitoring strategies as part of their implementation plans. However under the UKTAG there are working groups set up specifically to ensure that cross border arrangements are in place to for shared river basin districts.

UKTAG Report – Annex C: Data Sheets by Substance

Overview

- One respondent commented on cypermethrin and the challenge that it represents in terms of routine monitoring and analysis.
- More information was requested on the filtration procedure for the analysis of diazinon.
- There was agreement with the assessment of analytical capabilities given in the data sheets.

Amendments to the UKTAG report

Comments	Response
While the ecotoxicology data on page 57 appear to support the proposals for this substance, it is clear that the limits of determination derived from them according to the one third rule (see page 58, subheading Analysis) are exceptionally demanding. Analytical scientists may need to liaise, agree and then jointly advise the environment agencies on minimum technology requirements for routine monitoring to make this standard workable.	**Report not amended** This comment refers to cypermethrin. We agree that the proposed standard represents a significant challenge for routine monitoring. Laboratories operating across UK currently have differing LoDs for cypermethrin. For the proposed standard, we will be required to achieve 0.03 ng/l. This will require a concerted effort and a collaborative approach may be the most cost-effective way of achieving the required quality. We will establish analytical capabilities for the Agencies and consider through UKTAG CTT analytical subgroup.
P.61 Some clarification of the intended filtration procedure would be helpful in relation to diazinon (subheading ˜Implementation). In fact, I believe that a defined sampling protocol should be an explicit condition of use for standards. For many substances, including metals, a common operational definition of the dissolved fraction could relate to passage of samples through 0.45 Î¼m filters.	**Report amended (P.64)** Because it is highly lipophilic, there is a tendency for diazinon to sorb to suspended solids. Care will need to be taken to exclude such solids from samples taken for compliance assessment (e.g. by avoiding taking samples during periods of high flow) because otherwise environmental concentrations will be over-estimated. Determination of pass or failure of the standard can then be based on comparison with the PNEC, including a consideration of sampling error.
Generally, I agree with the assessment of analytical capabilities given in the data sheets (Annex C to the consultation paper).	**Report not amended** We note the observations made.

ANNEX 1 - LIST OF RESPONDENTS

Submission	Organisation
5	Wessex Water
6	South West Rivers Association
7	APEM
10	Thames Water
12	Non-Ferrous Alliance
13	United Utilities
14	Severn Trent Water Ltd
15	Water UK
17	Scottish Water
18	Mecoprop P Task Force
19	Yorkshire Water
20	Natural England
21	Scottish Whisky Association
22	Scottish Salmon Producers
25	Gospall Fishing Club
26	WRc
27	Consumer Council for Water
28	Laboratory for the Government Chemist
29	Joint Environmental Programme
32	Glasgow City Council
34	National Farmers Union
35	Department of Business Enterprise and Regulatory Forum
36	British Energy
37	Macaulay Institute

ANNEX 2 - REFERENCES PROVIDED BY RESPONDENTS

Topic	References	ID
Mecoprop	EU 91/414 assessment report	18
Mecoprop	MCPA Acid – Toxicity to duckweed *Lemna gibba*, J R Hoberg (1993), Springborn Laboratories, Inc. Report SLI 93-11-5052	18
Mecoprop	MCPA: Toxicity to *Lemna minor*, S D Mattock (1998), Covance Laboratories Ltd. UK, Report 785/19-D2145	18
Mecoprop	MCPA: Toxicity to Duckweed (*Lemna gibba*), Moore, K W and Huchings, M J (2000), AstraZeneca Brixham Environmental Laboratories Ltd. UK, report BL6837/B	18
Mecoprop	MCPA-DMA salt – Toxicity to Duckweed *Lemna gibba*, J R Hoberg (1994), Springborn Laboratories, Inc. Report SLI 93-11-5046	18
Mecoprop	MCPA DMAS: A 14 day toxicity test with duckweed (*Lemna gibba* G3), Drottar, K R and Krueger, H O (1999), Wildlife International, Ltd. USA, Report 364A-103	18
Mecoprop	MCPA-2EH Ester Technical - Toxicity to Duckweed, *Lemna* Springborn Laboratories, Inc. Report SLI 93-10-4976	18
Mecoprop	MCPA (DMA salt): Higher plant (*Lemna gibba)* growth inhibition test. C A Jenkins (2006a) Huntingdon Life Sciences Ltd. Cambs. UK Report TFT 0006/062180	18
Mecoprop	MCPA (DMA salt): Recovery of *Lemna gibba* following exposure to the test substance for three days. C A Jenkins (2006b) Huntingdon Life Sciences Ltd. Cambs. UK Report TFT 0008/062236	18
Clorine	EU RAR for NaOCl	29
Diazinon	(Møhlenberg, F., Schlüter, L., Gustavson, K., Andersen, T.T., Forbes, V., Cold, A., Friberg, N., Larsen, S.E. & Lauridsen, R.B. 2004: Effekt af bekæmpelsesmidler på flora og fauna i vandløb. Miljøministeriet. - Bekæmpelsesmiddelforskning fra Miljøstyrelsen Nr. 82: 134 s.can be downloaded http://www.mst.dk. (Danish with English summary and conclusion)).	37