Water Framework Directive
Cost Effectiveness Analysis
Preliminary Results

Chemicals

12 July 2007

Scope

- 43 substances considered
  - 33 Priority Substances and Priority Hazardous Substances – EQS set by EC
  - 9 Specific Pollutants – EQS set by UK
  - Plus other substances with known issues (Copper and Zinc) for information
- Mainly freshwater based, chemical and ecological status
- Based on current list of substances, not anticipating 2008 review

Status of DD on Priority Substances

- Based on current text:
  - Article 4 applies to objective of achieving EQS
  - Also applies to aim of cessation
  - Flexibility in approach to sediment and biota obligations
  - Natural background concentration taken into account in assessing compliance with EQS
  - EQS apply only to bodies of water (not territorial water or small water bodies)
  - More pragmatic approach to mixing zones
- Final text may not reflect all these changes.

WFD objectives relating to chemicals

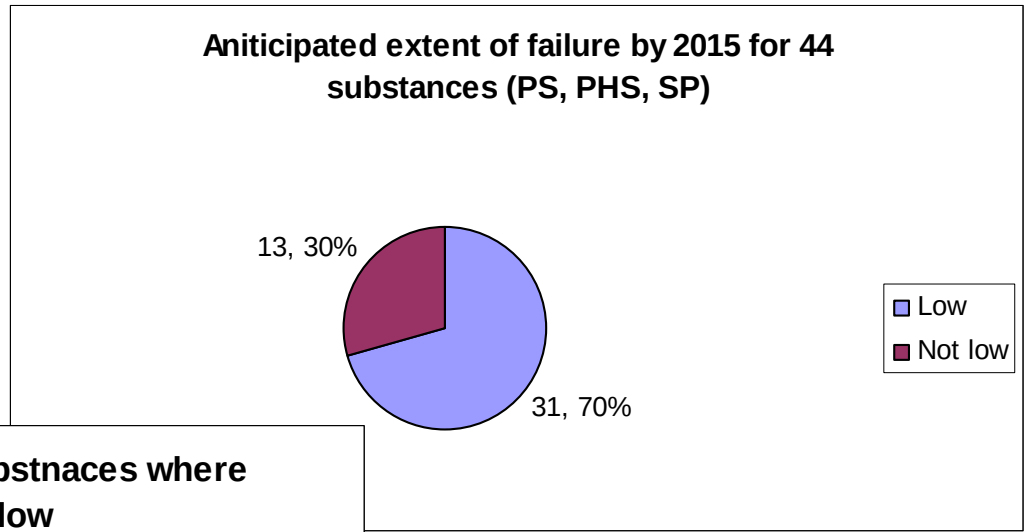
- Good chemical status
  - Achieve EQS for all EQS set by EC, priority substances in Annex 10, substances set out in Annex 9 (carbon tetrachloride, cyclodiene pesticides (aldrin, dieldrin, endrin, sodrin), DDT, tetrochloro-ethylene, trichloroethylene) and other Directives (FWF)
- Good Ecological Status
  - Meet EQS set by MS for Specific Pollutants
- No deterioration
- Groundwater prevent and limit to achieve good chemical status (for PS & PHS rather than List 1 and List 2)
- Article 7 objectives for Drinking Water Protected Areas (point of abstraction)

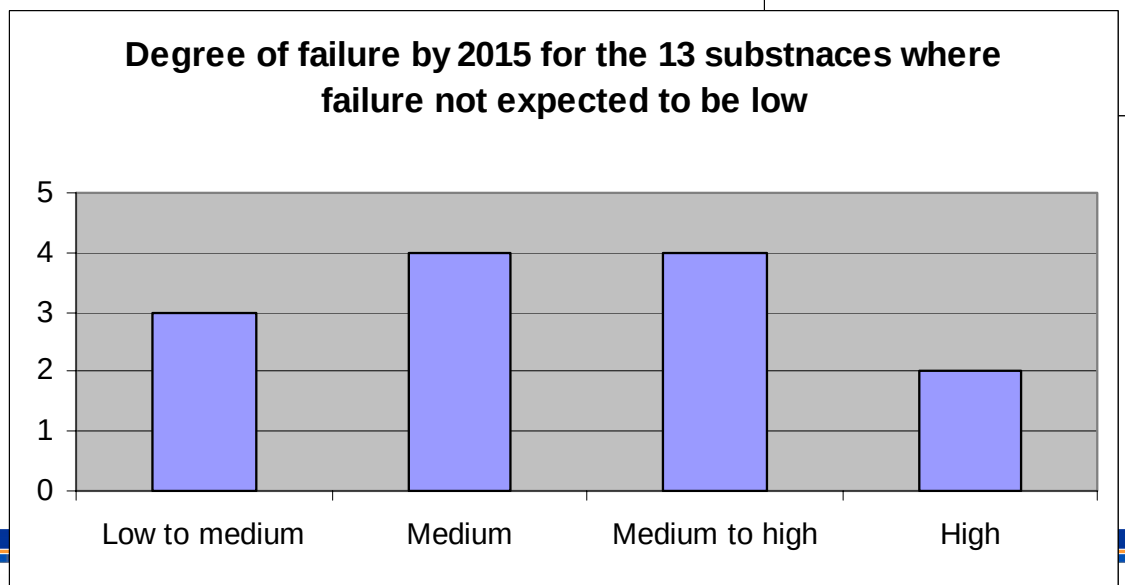
Pressures and trends

- TOO MANY TO MENTION…..
- Pesticide use and regulation (thematic strategy, VI, Strategy on Sustainable use of PPP etc.)
- Hazardous waste regulations (dental mercury)
- P and nitrogen removal and co-removal at WWtW.
- ESR risk reduction strategies
- Bans on substances (marketing and use controls)
- REACH
- Extension of ES and ECSFDI
- Revision of IPP Directive
- EA sector plans

Extent of gap

- EA investigation of WIMS for PS & PHS, UKTAG for SPs + other sources





13 substances: Anthracene, cadmium, chromium, cypermethrin, DEHP, lead, mercury, nickel, TBT, trichloromethane, PeDBE, +Copper and Zinc.

Apportionment

- Point
  - Industry
  - Water Industry (trade-effluent)
  - Water industry (domestic sources)
- Diffuse
  - Agriculture
  - Non- agricultural diffuse

Range of measures

- Negotiated agreements
- Tighter discharge consents
- Upgrade effluent treatment
- Marketing and use controls
- Do nothing - accept residual “tail off” failures
- Improved drainage (SUDS)
- Accelerated product replacement
- Product import controls
- Greater enforcement
- Storage/handling controls and restrictions
- Sediment cleaning

Scenarios considered

- Limited phasing – do everything by soonest date (unless technically infeasible)
  - emphasis on actions that can be done immediately, using available and tried technology
- High phasing – put off taking action where it might not be proportionate (more reliance on existing trends and innovation)
  - Emphasis on an adaptive approach, put off uncertain actions or actions unlikely to be proportionate and where more information is needed. Emphasis on source control where possible.

Scenario assumptions*

	Scenario 1	Scenario 2
Industrial direct discharges	EoP controls based on RIA analysis - 100-150 installations	Phase investment 1/3 in each cycle. Improved certainty reduces investment need by 50% in each cycle.
Industrial discharges to WWtW	Possible source control if CE compared to EoP, but not costed. Impact on costs limited	Lower need for control, but not costed. Impact on costs limited.
Water Industry	10% of all WWtW require additional treatment. All EoP	Source control where more cost-effective. Phase investment 1/3 in each cycle. Improved certainty reduces investment need by 50% in each cycle.
Non Ag Diffuse	Too uncertain, do nothing (+ GBRs?)	(GBRs +)SUDS where cost-effective.
Agriculture	No action needed	No action needed
Ports	Action taken on dredging	Action taken on dredging

* Generic – used for costing, but specific measures also identified

Sector	Scenario 1		Scenario 2	
	Low	High	Low	High
Direct industrial discharges	2	4	1	2
Industrial discharges to WwTW	No cost estimates provided in any previous work. Additional pre-treatment should be introduced when cost-effective. Will not significantly reduce the total costs.			
Water industry	167	335	84	167
NADiP	Too much uncertainty to introduce measures		Only cost-effective measures should be included and no impact on total costs.	
Agricultural diffuse pollution			0	0
Ports, canals and dredging	35	185	18	93
Investigations and monitoring*	0.1	0.2	0.1	0.2
Total	**210**	**530**	**100**	**260**

Rationalisation of previous cost estimates

- 2 key sources of cost information
  - Updated RIA and UKWIR WW17 work
- pCEA work has rationalised these as far as possible, remaining differences are due to:
  - Difference in scope (including SPs or not)
  - Assumptions about dilution
  - No of WWtW at risk
  - Compliance regime (e.g. total or dissolved)
  - Effectiveness of existing controls

Finding 1

- Cost-effectiveness of end of pipe versus source control measures
  - Source control can be very costly if taken to an extreme and used as the only measure
  - Usually some SC measures can be done in a highly cost-effective way but not to the exclusion of EoP
  - Hence a mixed approach is needed with SC options explored as part of a CE PRP
  - Arises because of the various uses/sources/pathways of substances – hence more detailed substance specific CE analysis will be needed
  - Generically costs of around 10 m/yr to 40 m/yr might be expected for the SC part of a POM

Finding 2

- Is the application of drinking water treatment technologies (sand/GAC/ozone) a cost-effective and proportionate generic approach
  - No
  - High costs, high energy requirements and inability to remove all substances to levels required
  - Can only be part of the approach, will need to be targeted

Finding 3

- Is there sufficient evidence to act cost-effectively and proportionately in the first cycle?
  - Lack of robust evidence on the extent of the gap prevents robust conclusions being drawn
  - Adaptive phased approach is preferable
  - Benefits would have to very high to make a more accelerated programme proportionate