



Regulatory Approaches to Managing Water Quality in England

Conference Florence 5th - 6th October 2016

Barrie Howe

Senior Advisor Water Quality

Environment Agency, England

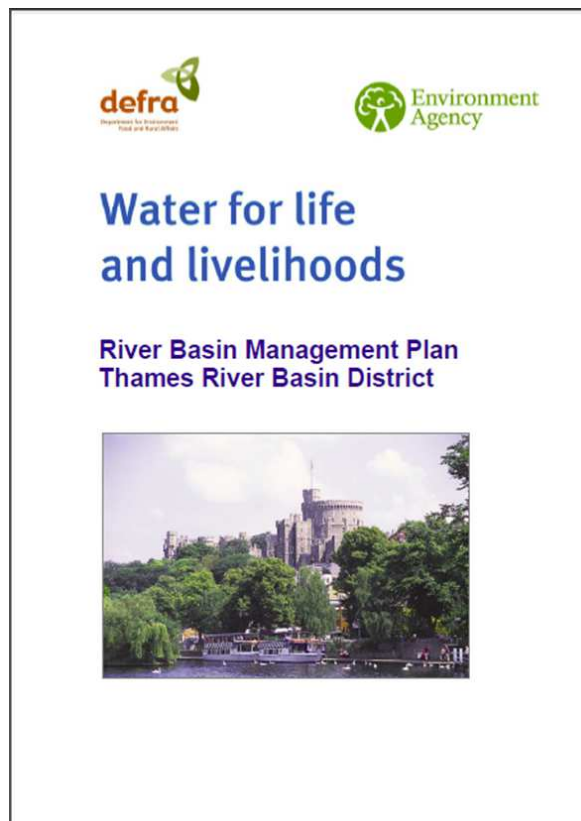


Regione Toscana

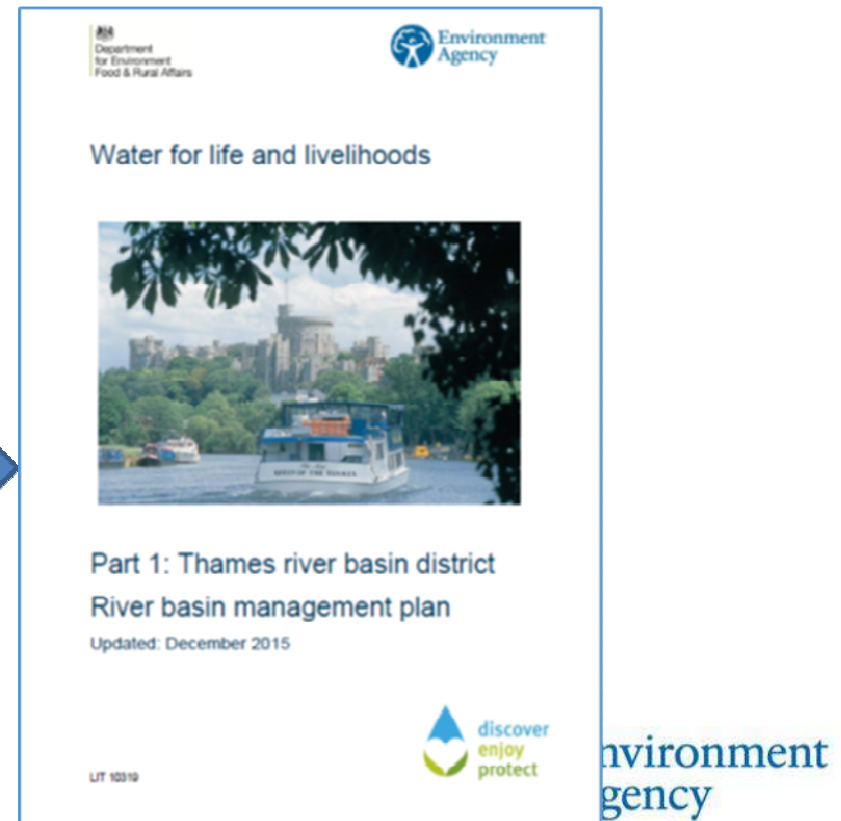


UK Water Strategy Sets Objectives

- ➔ Water Framework Directive is main driver
- ➔ Linked to UK National Strategy
- ➔ With local agreed objectives
- ➔ All included in WFD River Basin Management Plans



Revised
Plan 2016



Local Water Quality Objective

Permitting: to meet
local objective

Behavioural and
numeric conditions

**WASTEWATER COLLECTION AND
TREATMENT**

Descriptive and
numeric permits

**Local
Objective
from WFD or
RBMPs**

RISK BASED APPROACH

Environmental Permitting – New UK Regulations

Modern Regulation being implemented via an Environmental Permitting regime

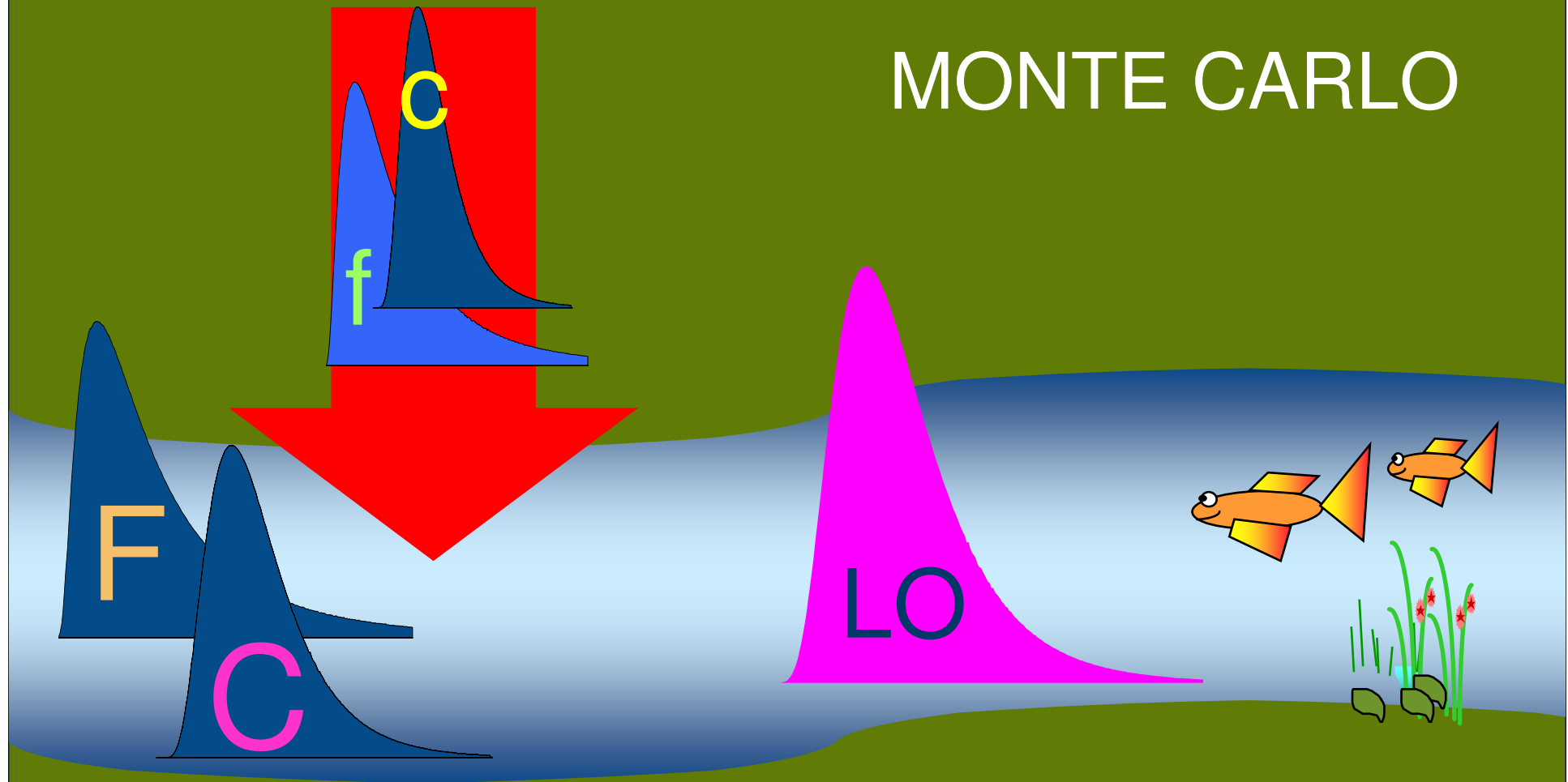


How to comply with your environmental permit

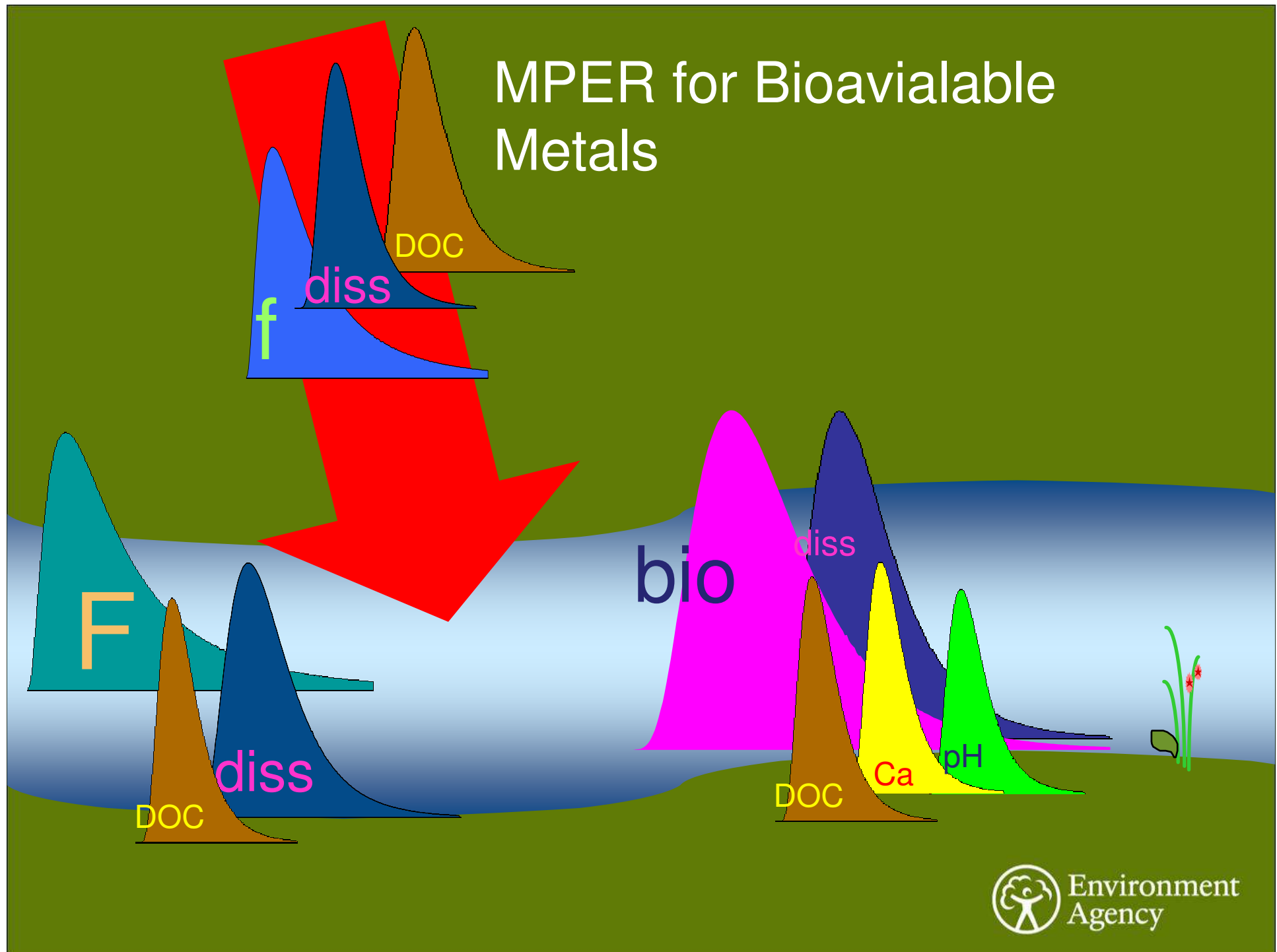


Modelling Tools

MONTE CARLO



MPER for Bioavailable Metals



MPER

MPER Verion 3.8: Monte Carlo Simulation for Bioavailable Metals

Exit Base Data Help

Discharge Clifton STW

River River Mall

Determinand Copper

Bioavailable
related data

Calculate

New Discharge

UPSTREAM RIVER

Mean flow 100

95% exceedence flow 10

Mean dissolved metal 1

Standard deviation 1

Number of samples 15

0.1

correlation with
flow

DISCHARGE

Mean flow 20

Standard deviation 10

Mean dissolved metal 150

Standard deviation 150

Number of samples 49

0.6

correlation
with river flow

-0.2

correlation with
discharge flow

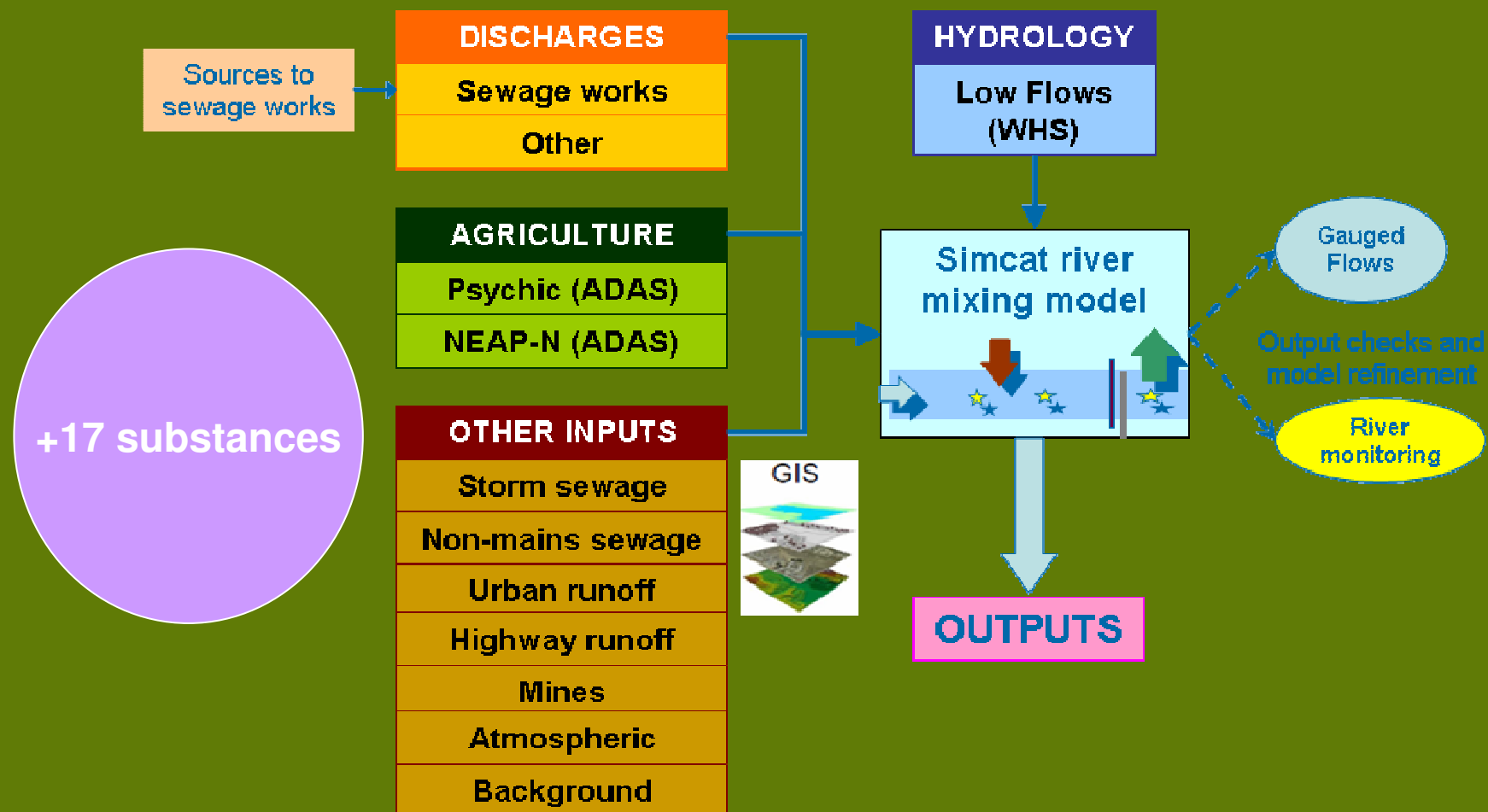
DATA FOR ASSESSING BIO-AVAILABLE METAL

	Mean	Stan.Dev	Samples	Correlation with ...	
Upstream DOC	1.5	0.8	30	0	river flow
Discharge mean DOC	15	8	30	-0.2	discharge flow
Downstream pH	8	0.28	30	0	river flow
Downstream calcium	50	12.5	30	0.6	river flow

0.1011

with calcium

The SIMCAT/SAGIS approach



Assessing Compliance

➔ Monitoring discharge quality

➔ Inspections


➔ Responding to incidents

➔ Enforcement

Thames Water fined 'record-breaking' £1 million for pollution offences

Enforcement Policy and Strategy

- ➡ Published Enforcement policy documents
- ➡ Set out procedures and actions



Environment Agency
Asiantaeth yr Amgylchedd

Enforcement and sanctions statement

Policy 1429_10 (previously EAS/8001/1/1) Issued 04/01/11

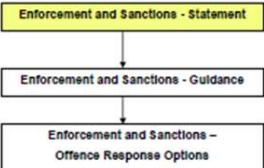
Statement

This document explains our position on Enforcement and Sanctions. You must read it together with the:

- [Enforcement and Sanctions – Guidance](#)
- [Offence Response Options Document](#)

This will give you a complete explanation of our approach to enforcement and sanctioning.

How the documents work together



```
graph TD; A[Enforcement and Sanctions - Statement] --> B[Enforcement and Sanctions - Guidance]; B --> C[Enforcement and Sanctions - Offence Response Options];
```

Statement authorisation

Policy sponsor
Legal Services Director.

Document details


References

Feedback

Contact for queries

Dan Wiley

Doc No 1429_10 Version 1 Last printed 25/01/12 Page 1 of 7



Environment Agency
Asiantaeth yr Amgylchedd

Enforcement and Sanctions - Guidance

Issued 04/01/2011

What's this document about?

This document provides guidance on Enforcement and Sanctions and the use of civil and criminal sanctions.

Who does this apply to?

All staff, when considering whether an enforcement response is necessary to achieve the desired outcome.

Contents

You should read it in conjunction with the:

- Enforcement and Sanctions – Statement; and
- Offence Response Options

This will give you a complete explanation of our approach to enforcement and sanctioning.

Document details

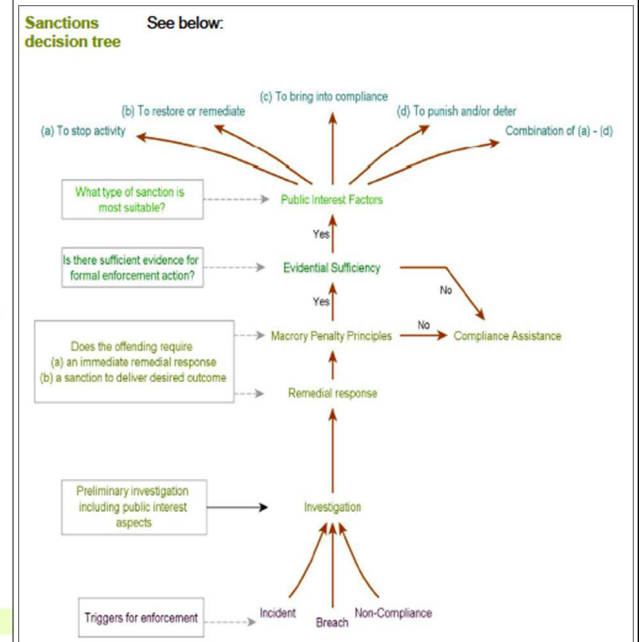
Related documents

Feedback

Contact for queries

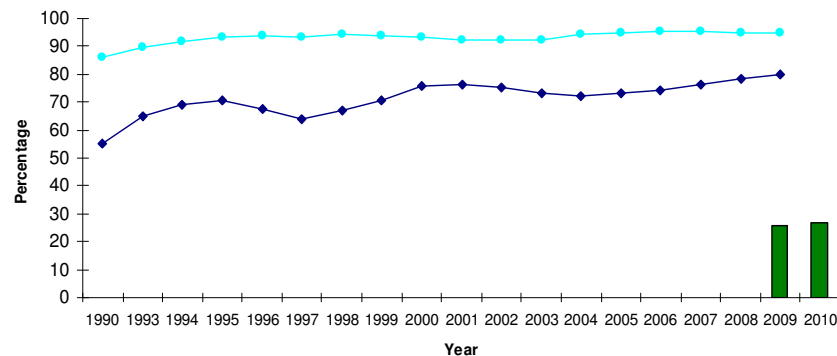
Dan Wiley

Doc No 1428_10 Version 1 Last printed 25/02/11 Page 1 of 40

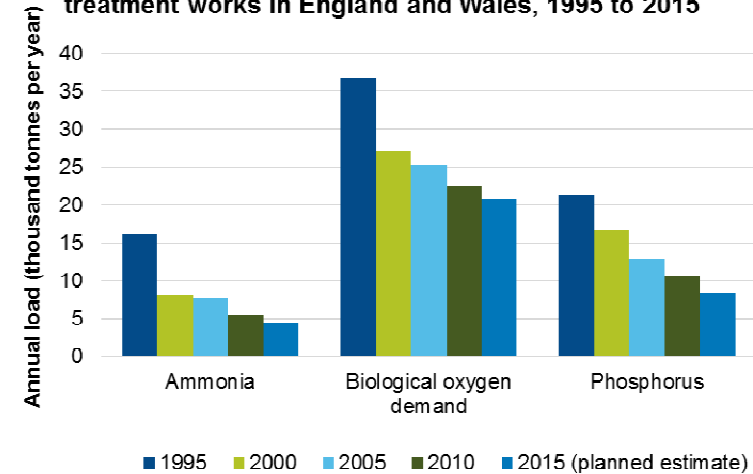


What has this achieved?

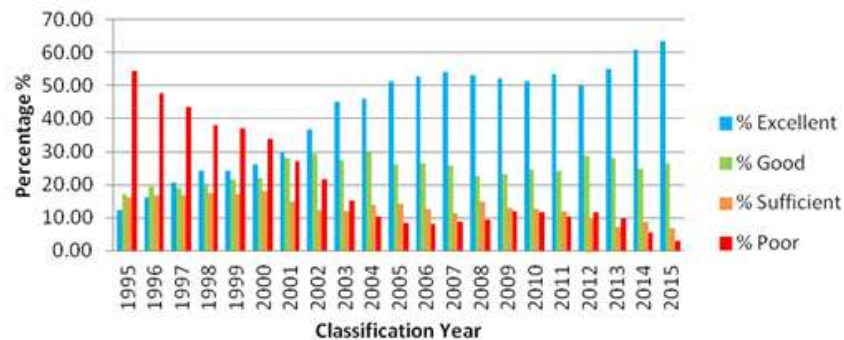
General Quality Assessment and WFD Water Quality Assessment



Loads discharged to rivers from water company sewage treatment works in England and Wales, 1995 to 2015



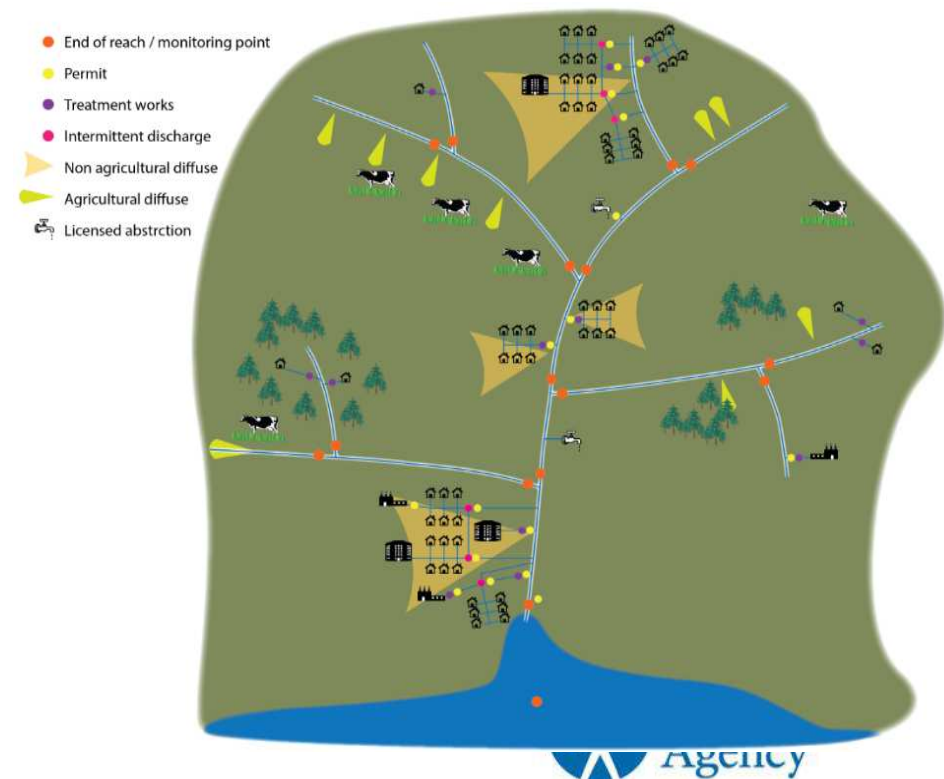
Bathing water directive 2006/7/EC projected and classified results in England 1995 to 2015



Encouraging Innovation

Flexible Permitting: Achieve Water Quality Objectives whilst minimising cost and carbon emissions

Catchment Permitting



Future Challenges

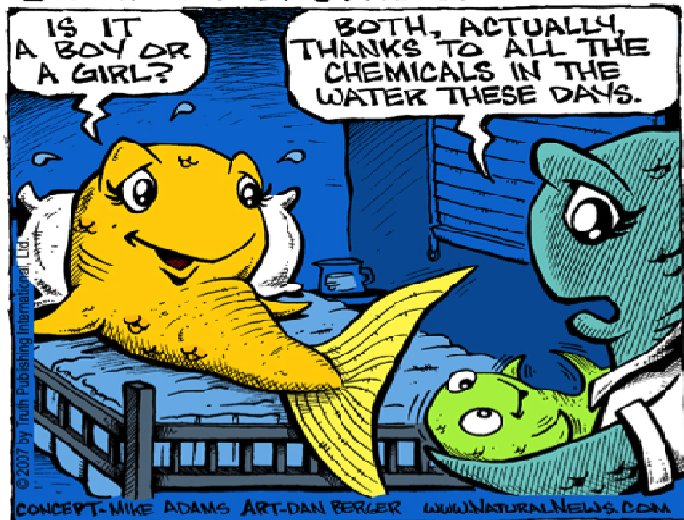
Network Assets

Balancing cost and benefits

MICROPLASTICS - INTERNATIONAL CAMPAIGN AGAINST MICROBEADS IN COSMETICS

Emerging Chemicals

COUNTERTHINK



Anti-microbial resistance

News > Environment

Drug-resistant bacteria: Sewage-treatment plants described as giant 'mixing vessels' after scientists discover mutated microbes in British river



Exclusive: Discovery reveals role of sewerage plants in creating mutated microbes that are resistant to antibiotics

STEVE CONNOR | SCIENCE EDITOR | Saturday 19 July 2014

Chemical Investigations 2015 - 2020

- ➔ c£90 million
- ➔ Effluent impact assessment - 600 sewage works & environment
- ➔ Process sampling - 45 sewage works; including pharms
- ➔ Treatment options - 10 large CIP1 demos, 3 pilots innovative tech
- ➔ Catchment studies - 5 catchments; key sectors; catchment solutions
- ➔ Technical investigations – including sludge disposal characterisation

Environmental impact

- Evidence of impact
- PR19 & PR24 planning

Options for treatment

- Practical experience of operational control
- More robust costing base

Pharms & current treatment

- 20 pharmaceuticals (influent & effluent)

Catchment

- Multiple pollutants with multiple sources and multiple interventions with differing results across substances
- Are catchment solutions possible?
- Role of end-of-pipe & source control