

## Strategies for Protection of Microbiological Shellfish Water Quality & Public Health in England & Wales

- EC Shellfish Hygiene Directive
- EC Shellfish Waters Directive
- Competent Authority Arrangements
- Control of Sewage Discharges
- Receiving Water Quality Targets
- Shellfish Hygiene Research & Development

## Shellfish Waters Directive 79/923/EEC

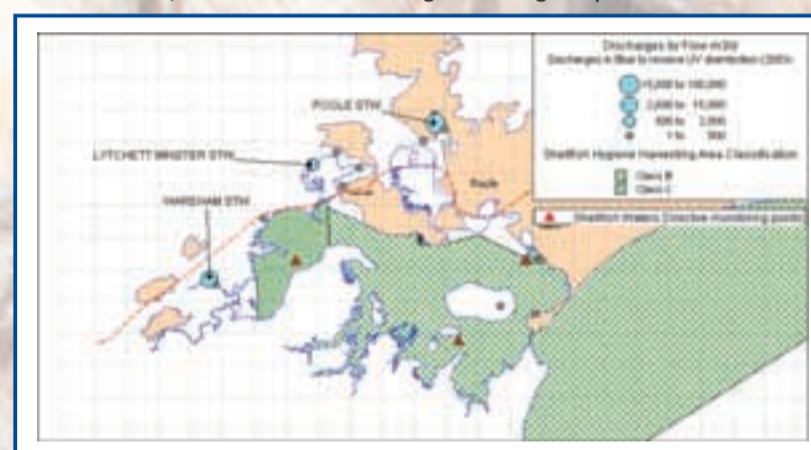
- Applies ...to those coastal and brackish waters...needing protection or improvement in order to support shellfish (bivalve and gastropod molluscs) life...and thus contribute to the high quality of shellfish products directly edible by man.
- Benefits ....control of chemical and microbiological contamination
  - ◆ improved shellfish growth
  - ◆ improved end-product standard
  - ◆ public health protection

## CEFAS objectives

- Liaison with shellfish industry & appreciation of industry concerns regarding shellfish water quality
- Input to development of sewage improvement schemes
- Tracking of sewage improvement scheme progress
- Assessment and monitoring of water quality improvements
- Enhanced interpretation of water and flesh monitoring data

Significant improvements in shellfish water quality are anticipated as a result of water company investment in additional sewage treatment at key sewage treatment works. These improvements should in turn be reflected in the hygiene classification results.

Poole Shellfish Harvesting Areas and Shellfish Water related Sewage Discharge Improvements.



## Sewage Discharge Types

- Continuous
  - Crude / Preliminary treated
  - Primary settlement
  - Secondary (biologically) treated
  - Tertiary treated (eg UV disinfection)
- Intermittent
  - Storm / Surface Water / Emergency / Combined
- Phased
  - Tidal / Batch Process / Periodic

## Discharge Control Philosophy

Consideration of discharge impact throughout whole shellfish water not just at monitoring point

### Continuous discharges

Reduction of microbiological load through improved treatment  
e.g. UV disinfection and treatment efficacy monitoring

Diversion of impact away from shellfishery  
e.g. tidal phasing, outfall extension or elimination

### Intermittent discharges

Consideration of combined impact of all storm spills impacting on any one shellfishery

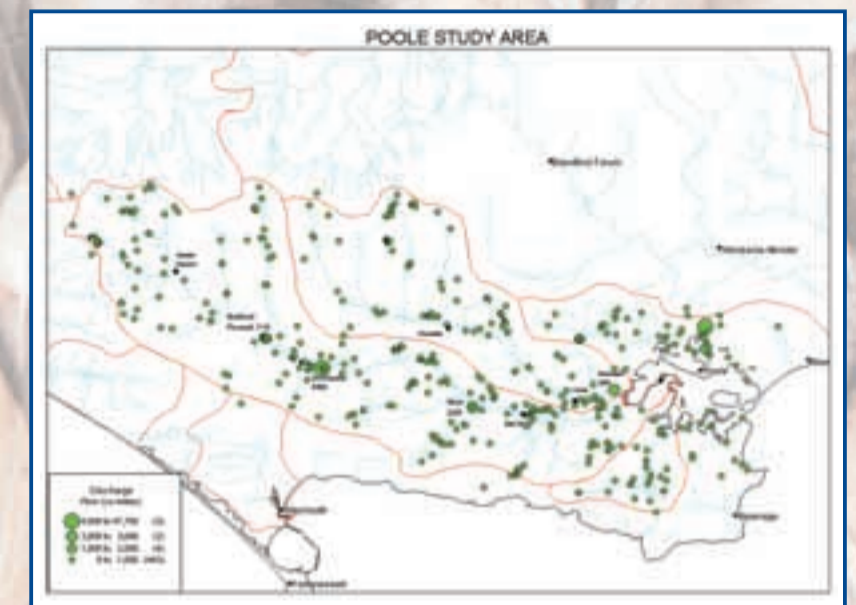
Annual summaries of storm event spills from the sewerage system due to storm events

Reporting of emergency discharges to allow appropriate management actions, possible suspension of harvesting

## Diffuse Microbiological Contamination in the Wider River Catchments

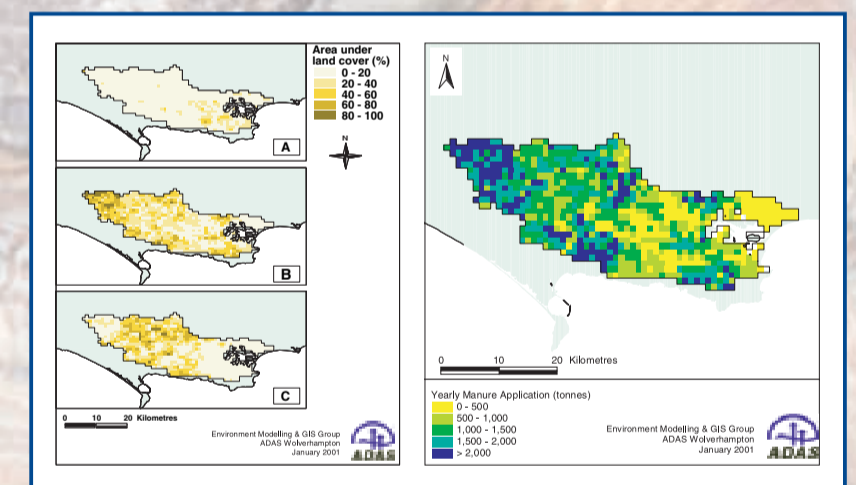
Background water quality may be influenced by many point source discharges in the wider catchment areas.

Point Source Sewage Discharges in the Wider Catchment



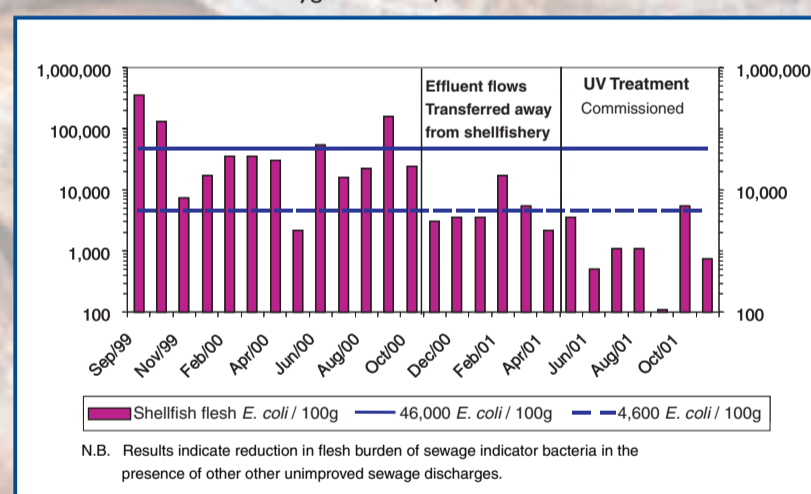
CEFAS and ADAS are undertaking joint research into faecal contamination from diffuse sources in the wider river catchment areas.

Manure Application to the Wider Catchment



Parameter	Imperative		Guideline	
	water	flesh	water	flesh
pH	✓			
Temperature			✓	
Colour	✓			
Suspended solids	✓			
Salinity			✓	
Dissolved oxygen	✓		✓	
Petroleum hydrocarbons	✓			
Organohalogenes	✓	✓		✓
Metals	✓	✓		✓
Faecal coliforms				✓
Taste		✓		

Example Effects of Changes in Sewage Treatment on Hygiene Classification Results.



## Discharge Consenting

- Discharges in England & Wales consented by the Environment Agency (EA) under the Water Resources Act 1991 as amended by the Environment Act 1995.
- Discharger makes application to Environment Agency for a consent to discharge effluent or variation of an existing consent.
- CEFAS act as statutory consultees to the Environment Agency on behalf of DEFRA Marine Environment Division for those discharges impacting on bivalve molluscan shellfisheries.
- CEFAS undertakes technical assessments.
  - Burnham - general, chemicals etc.
  - Weymouth - shellfish microbiology.



## Poole Harbour Tidal Analysis

Tidal data is one consideration in assessment of discharge impacts and interpretation of monitoring results

Significant Tide Levels			
Levels	Derevation	ATT	mCD
HAT	ATT	14.9	
MHWS	ATT	13.2	
Sp HW		12.4	
Int LW		12.5	
MHW	ATT	11.5	
Int HW		10.6	
NS HW		10.7	
MHWN	ATT	9.8	
Int HW		9.4	
MSL	ATT	7.0	
Int LW		5.5	
MLWN	ATT	3.8	
Int LW		3.1	
MLW	ATT	2.4	
Int LW		1.7	
Sp LW		1.8	
MLWS	ATT	1.0	
HAT	ATT	-0.2	
seasonal corr.	ATT	0.0	

Working Definitions			
Tide	Criteria	mCD	mCD
Springs	HW	>	12.4
	LW	<	1.8
Intermediates	HW	>	10.6 < 12.5
	LW	>	1.7 < 3.1
Neaps	HW	>	8.4 < 10.7
	LW	>	3.0 < 5.8
datum	CD=OD(N)		-6.5

## Acknowledgements

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