

# The Surface Water Scheme

## Portuguese National Meeting



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# Presentation Summary



- **Update on HPA Water EQA Schemes**
- **Surface Water Scheme**
  - **Background and rationale for HPA Surface Water Scheme**
  - **Parameters**
  - **Scheme design**
  - **Sample contents**
  - **Statistics and allocation of scores**
  - **Performance assessment over time**

# HPA Water EQA Schemes: Drinking Water Scheme

**363 participants**

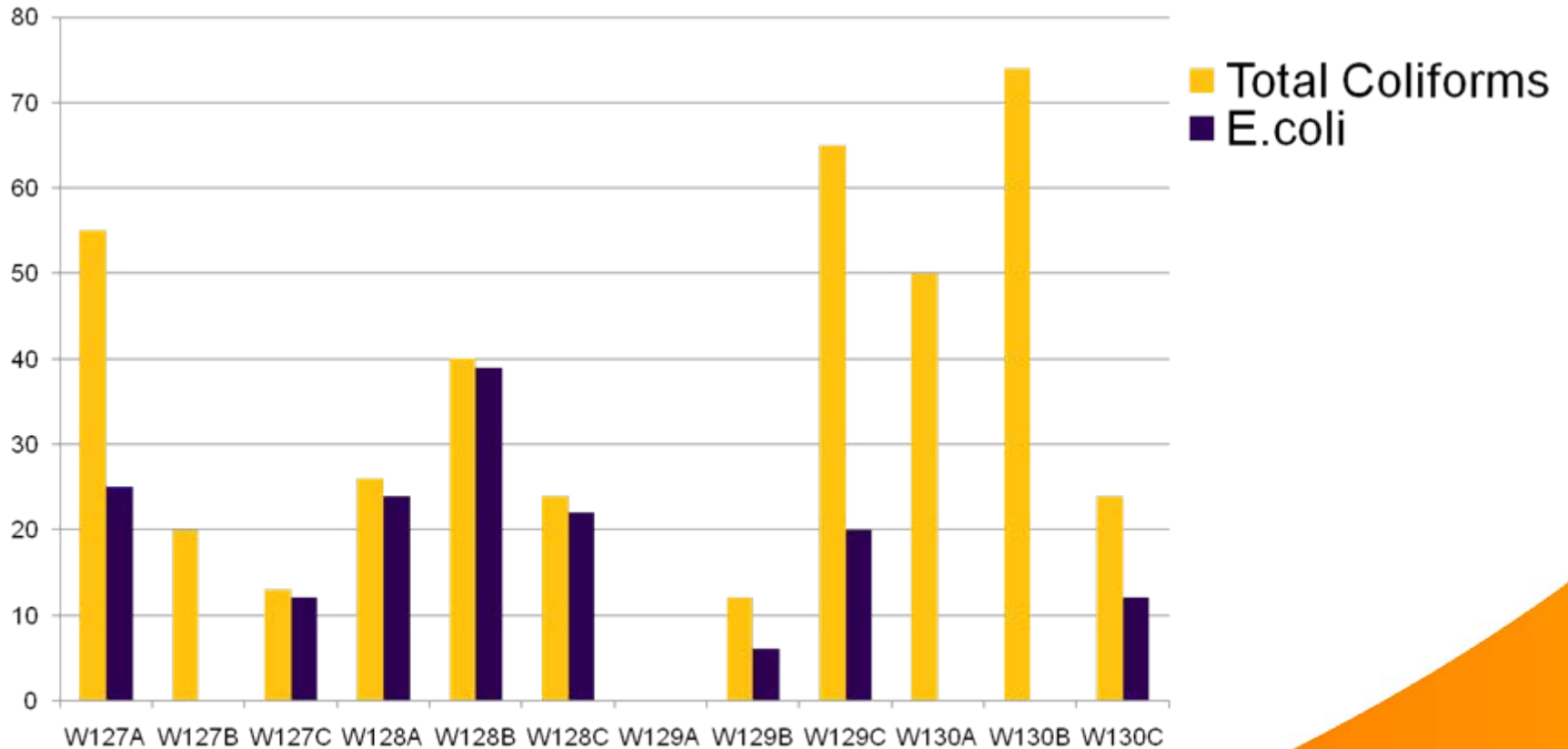
- **Coliform bacteria**
- ***Escherichia coli***
- **Faecal coliforms**
- ***Pseudomonas aeruginosa***
- ***Clostridium perfringens***
- **Colony counts: 37°C and 22°C**

**Levels unlikely to exceed 100 cfu per  
100mL (or 100 cfu per ml for total  
counts)**



# Drinking Water Scheme

## Samples from April 2009: Coliforms and *E.coli*



# HPA Water EQA Schemes: Legionella Isolation Scheme



**250 participants**

- **Legionella detection**
- **Legionella enumeration**
- **Legionella identification**

**Levels normally between 1000 and 50000 cfu per L with varying background flora**



# HPA Water EQA Schemes: Surface Water Scheme

**163 participants**

- **Bathing beach waters**
- **Bathing pool waters**
- **Rivers, lakes and streams**

**Levels between 10 and 10000 cfu  
per 100mL (or per ml for total  
counts)**



# Surface Water Scheme: Background – 1999 HPA Newcastle

- Bathing beach waters only
- Two distributions of three samples
- 45 participants
- No accreditation
- No 'negative' samples
- No 'duplicate' samples

**Total coliforms (S30: 2000-15000 per 100 mL)**

**Faecal coliforms (S30: 150-5000 per 100 mL)**

**Faecal streptococci (S30: 200-550 per 100 mL)**

***Salmonella* sp. (present/not detected in 100 mL)**



# Distributions S32 and S33



	<b>Coliforms (cfu per 100mL)</b>	<b>Faecal coliforms (cfu per 100mL)</b>	<b>Faecal streptococci (cfu per 100mL)</b>	<b><i>Salmonella</i> sp.</b>	<b>Colony count 37°C/48h (cfu per mL)</b>	<b>Colony count 22°C/72h (cfu per mL)</b>
S32A	600	460	20	Present in 1 L	52	46
S32B	460	280	14	ND in 1 L	14	13
S33A	700	700	510	Present in 1L	370	370
S33B	0	0	0	ND in 1 L	50	52

# Scheme Development: Recreational Water-borne Illnesses



## **POOLS SWIMMING WITH 30 TYPES OF BACTERIA!!!**

***Holiday swimming pools are putting the health of millions of Britons at risk amid evidence they contain up to 30 different bugs!***

***The majority of pools in sunshine resorts are laced with bacteria that creates a potential health hazard!***

**No legal mandate to report outbreaks from swimming pools in the United Kingdom**

# Sources of Recreational Water-borne Illnesses



## Gastrointestinal infections and skin infections:

- Swimming pools
- Hot tubs
- Rivers, lakes and streams

Questionnaire to participants in July 2009

*(water types, frequency of distribution, examinations, reports and scoring)*



# UK Outbreak: November 2009



**Outbreak data associated illness with a swimming pool in Turkey**

**74 cases in UK – Salmonella (six types) , Campylobacter and Cryptosporidium**

- **People swimming who have diarrhoea**
- **Inadequate pool maintenance**
- **Inadequate guidance for swimmers/staff**

# Surface Water: Scheme Plan



**34 responses to the questionnaire including one of behalf of all Portuguese laboratories**

- **Bathing Beach Waters:**

***E.coli*, enterococcus, Salmonella (detection)**

- **Bathing Pool Waters:**

**coagulase positive staphylococci, coliforms, *E.coli*, *Pseudomonas aeruginosa* and total viable counts**

- **River, Stream and Lake Waters:**

***E.coli*, coliforms, enterococci, *C.perfringens*, total viable counts and Salmonella (detection)**

# Sample Design



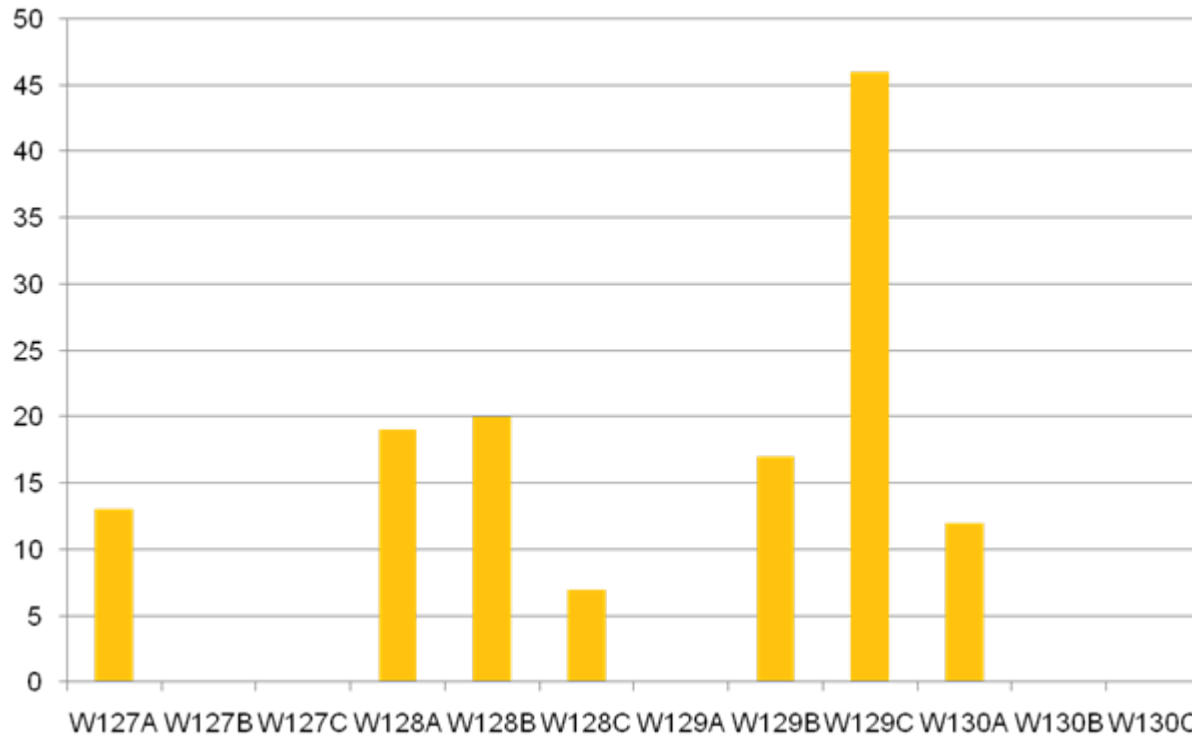
- **Ensure all parameters are covered at a range of different levels**
- **Include samples with ‘unexpected’ results**
- **As with other schemes – more ‘positive samples’ than in routine testing**
- **Aim of the scheme is to challenge participants’ ability to enumerate a range of micro-organisms and detect Salmonella in ‘recreational waters’**

# Sample Contents:

Example from Drinking Water Scheme



## *P.aeruginosa*



# Statistics and Allocation of Scores

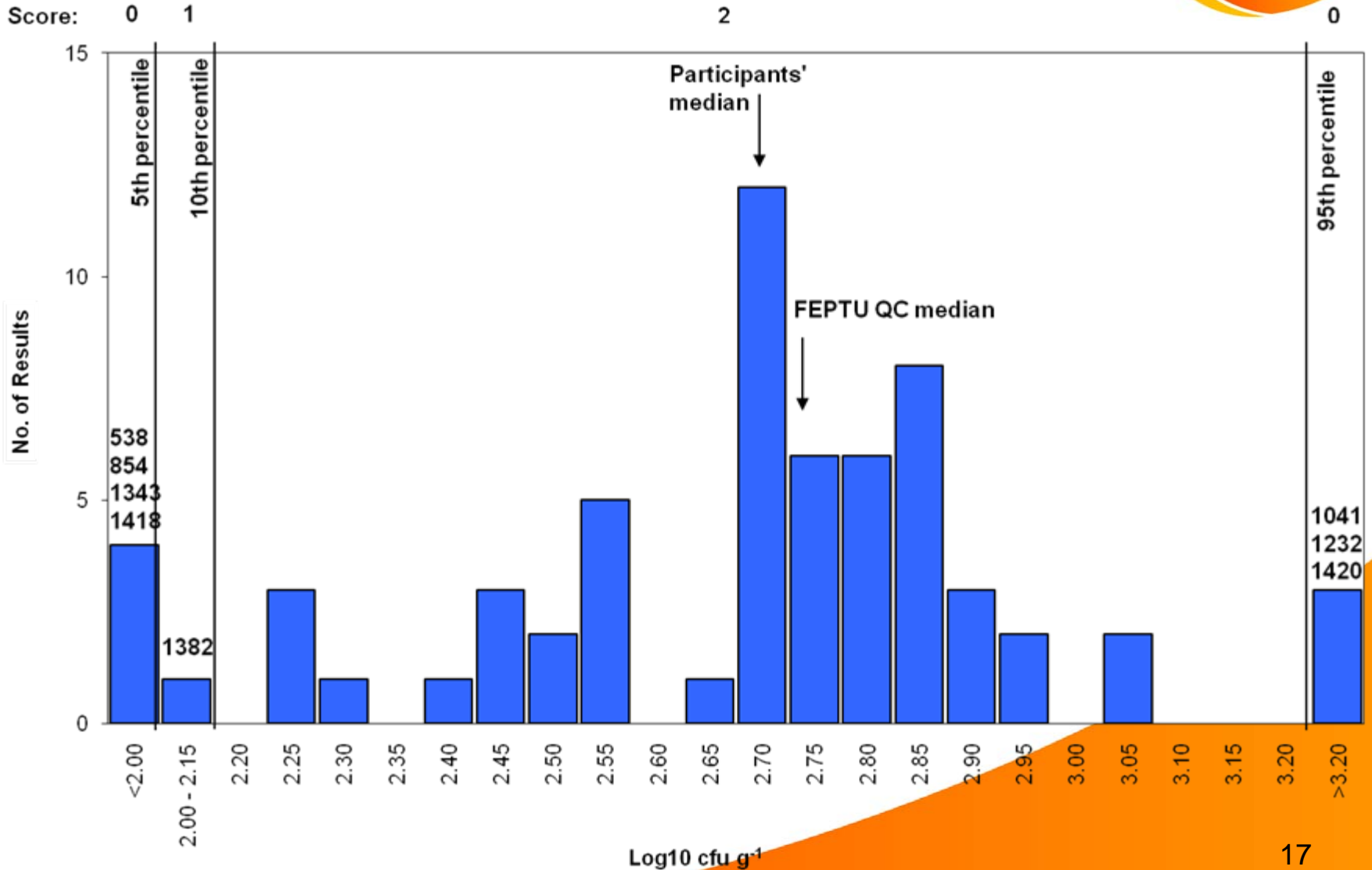


- **Percentiles (robust statistical method)**
- **Rank all enumerations (lowest to highest)**
- **Determine median level**
- **Determine counts in 0-5<sup>th</sup> percentile & 6<sup>th</sup> -10<sup>th</sup> percentile**
- **Determine counts in 90<sup>th</sup>-95<sup>th</sup> percentile & 96<sup>th</sup> -100<sup>th</sup> percentile**
- **Compare range with median**
- **Allocate scores**

# Allocation of scores

- **Within expected range: score = 2/2**
- **Outside expected range: score = 1/2 or 0/2**
- **Recognise that counts may be outside range on a single occasion due to chance**
- **Evaluate performance over time**

# Scores: S34 *S. aureus* Enumeration



The laboratory numbers for participants scoring <2 are included on the figure

# Future:



- **Develop performance assessment over time for all parameters**
- **Include performance assessment in distribution report**
- **Consider changing name of scheme (Recreational (and Environmental) Waters Scheme)??**
- **Consider other parameters for inclusion??**
- **Other points for consideration??**

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