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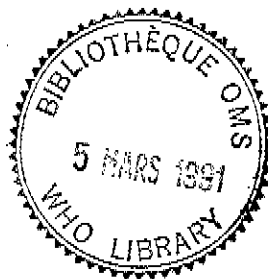
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ORIGINAL: ENGLISH

SUMMARY REPORT

Third Training Course and Intercalibration Exercise in Microbiological Methodology for Marine Pollution Monitoring (WHO/UNEP joint project, MED POL Phase II)

Msida, Malta
3-8 September 1990



1991

EUR/HFA target 20

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TARGET 20

Water pollution

By 1990, all people of the Region should have adequate supplies of safe drinking-water, and by the year 1995 pollution of rivers, lakes and seas should no longer pose a threat to human health.

Index:

MICROBIOLOGICAL TECHNIQS
SEAWATER - standards
WATER POLLUTION - analysis
EDUCATION
MEDITERRANEAN SEA

Twenty-two participants from nine Mediterranean countries attended this course and exercise. Most of them were microbiologists either engaged in, or due to be engaged in, monitoring of the microbiological quality of coastal marine recreational and shellfish waters. Four temporary advisers from two Mediterranean countries, and one from a non-Mediterranean country, gave the lectures and provided laboratory supervision and instruction supported by technicians from the host institution, the University of Malta.

Under the terms of the 1976 Convention for the Protection of the Mediterranean Sea against Pollution, and the 1980 Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources, Contracting Parties have undertaken to establish a marine pollution monitoring system for the Mediterranean Sea area, and to systematically assess, as far as possible, the levels of pollution along their coasts.

The Long-Term Programme of Pollution Monitoring and Research in the Mediterranean Sea (MED POL Phase II) has been a decisive factor in the development of national pollution monitoring programmes in Mediterranean countries. All these programmes include the determination of bacterial concentrations in coastal recreational and shellfish-growing areas.

Several microbiological laboratories have been upgraded as a result, and new ones established. This has created a need for more trained manpower and for harmonization of methodologies between the institutions in the various countries to ensure comparable results and to enable regular region-wide assessments to be performed.

Two training courses were held in 1988-1989, the first in English in Athens, in collaboration with the Environmental Pollution Research Project, Ministry of the Environment, Physical Planning and Public Works, and the second in French in Tunis, in collaboration with the Institut Pasteur de Tunis.

This course and exercise, the third in the series of four, was convened jointly by WHO and UNEP in collaboration with the Council of Europe's European Mediterranean Centre of Marine Contamination Hazards in Valletta, Malta. It was in English, and its objectives included:

- to give more training to microbiological laboratory personnel from Mediterranean institutions participating in MED POL Phase II, by familiarizing them with agreed methodologies for determining the main bacterial parameters in seawater and shellfish;
- to promote contacts between scientists from different laboratories, by discussing mutual problems in the application of microbiological techniques;
- to increase the comparability of results obtained in the microbiological component of MED POL Phase II, by intercalibrating data;
- to make recommendations for future training courses.

Results

The participants determined the concentrations of four major bacterial indicator organisms (total coliforms, faecal coliforms, *Escherichia coli* and faecal streptococci) in prepared samples of natural seawater, in each case using both the membrane filtration culture (MF) method and the multiple test

tube (MPN) method. They also determined concentrations of Staphylococcus aureus in the sample - using the MPN method - and the presence of Salmonella species. The results obtained were reasonably comparable, both between the participants and between the two methods (MF and MPN) where both were used to determine the same parameter. Differences in experience with the methods were offset by continuous supervision of individual participants throughout the laboratory work.

As part of the theoretical component of the course, and to give participants a better knowledge of the broader framework within which their own laboratory work is being carried out, a number of lectures were delivered, as follows:

- introduction to microbiological methodology in seawater analysis
- quality assurance and quality control in microbiological analysis
- the use of reference methods in microbiological analysis
- microbiological sampling of seawater
- statistical evaluation of the MF and MPN methods
- the microbiological component of the MED POL programme.

Several group discussions were also held to deal with various methodological and related problems. The participants were given a questionnaire to complete at the end of the course, on (a) the amount of new knowledge acquired, expressed as a percentage of the total course content, and (b) suggestions for modifications to lectures and practical sessions in future courses. According to the replies, 80% of the course content was new for 5 participants, 50% for 15 participants and 20% for 2 participants. General comments about the course as a whole varied according to the background and experience of individual participants.

Recommendations

The majority of participants in their answers to the questionnaire recommended that future courses should contain more lectures on microbiological techniques, quality control and epidemiological studies.

Regarding laboratory studies, most recommended that more time be allocated in future courses to determining bacterial indicator organisms. Opinion was divided regarding pathogens, and although all the participants thought future courses should contain more work on these, individual preferences covered a wide range of organisms, not only those dealt with in this course but also others, notably Candida albicans, Campylobacter and Pseudomonas. This divergence was expected, both in view of the participants' varied background and because the importance of pathogenic microorganisms in seawater can be very different in different geographical localities in the Mediterranean region.