Appendix A1


A1.1 Introduction

A1.1.1 The Second Report of the Group of Experts made recommendations on:

(i) recovery, identification and typing of the organism;
(ii) how it should be controlled in the environment;
(iii) controlling the spread of infection in man;
(iv) water treatment and distribution;
(v) monitoring for oocysts in water; and
(vi) investigation and management of outbreaks.

A1.1.2 All the above are important and it is necessary to have a better understanding of the organism and how it can be controlled in the environment but ultimately public health protection rests largely on effective monitoring, effective water treatment and, in the event that something goes wrong, good outbreak management by all those involved locally.

A1.1.3 This appendix sets out those recommendations from the second report, many of which originated in the First Report, which the current Expert Group considers to be of continuing relevance and worth emphasising. In addition the Group has added and amplified some of the recommendations where necessary. The recommendation numbers refer to those used in the Second Report to which reference should be made.

A1.2 The organism

**Recommendation 1**

Further research work should be encouraged on methods of recovery and identification of *Cryptosporidium* oocysts such as cross-flow filtration, magnetisable particles, flocculation, electro-rotation assays and gene probes.

**Recommendation 2**

Further research should be carried out to develop methods for identifying different species and strains of *Cryptosporidium*.

**Recommendation 3**

The cross-checking of results with specialist laboratories, particularly in relation to research studies and where an outbreak has occurred, is seen as important. Laboratories are strongly advised to participate in a recognised external quality assurance scheme.

**Recommendation 5**

Further work on typing and host specificity of *Cryptosporidium* oocysts should be encouraged.
**A1.3 Control of Cryptosporidium in the environment**

**Recommendation 6**
Water utilities should be encouraged to make results of monitoring available on a regular basis to a national database to provide further information on the occurrence of oocysts in water.

*Further recommendation of the Expert Group*

**A1.3.1** A national database should be established to provide comprehensive information on the occurrence of oocysts in both source and treated water.

**Recommendation 7**
Surveys should be carried out on the concentration of oocysts in sewage effluents.

*Further recommendation of the Expert Group*

**A1.3.2** Research work on oocysts in sewage effluents should be directed at that work associated with typing and host specificity.

**Recommendation 8**
The Codes of agricultural practice to prevent pollution of water sources should be reviewed regularly and the advice on storage and disposal of animal farm waste should be revised in the light of the results of research. Efforts should be made to encourage all farmers to follow these Codes.

*Further recommendation of the Expert Group*

**A1.3.3** The advice on storage and disposal of animal waste should be reaffirmed and efforts increased to encourage farmers to follow Codes of good practice.

**Recommendation 9**
Regulations, codes of practice and enforcement procedures for the disposal of sludges which may contain Cryptosporidium should be reviewed and if appropriate harmonised.

*Further recommendation of the Expert Group*

**A1.3.4** The inactivation of Cryptosporidium oocysts should be made one specific consideration in policy and practice in the disposal of sludges to land.

**A1.4 Cryptosporidiosis in man**

**Recommendation 10**
Laboratories in England and Wales should be required to report the detection of Cryptosporidium oocysts in clinical samples to local public health officials and to the Public Health Laboratory Service (PHLS) Communicable Disease Surveillance Centre. Pending the introduction of a statutory requirement to report, the contract specification with laboratories should include the necessary details.

*Further recommendation of the Expert Group*

**A1.4.1** This is covered in paragraph 3.3.10.

**Recommendation 12**
Recommendation R90/11 of the 1990 Report on advice to persons having contact with livestock is reiterated.

**Recommendation 13**
The advice being produced on visits to farms and contact between farm animals and children should be brought to the attention of Environmental Health Officers and teachers.

**Recommendation 14**
The effort made to date to communicate the advice on the control of person to person spread of infection is recognised, but this is seen to be a continuing requirement.

**Recommendation 15**
Advice on personal hygiene should be brought to the attention of persons handling food, including those preparing ice and bottled waters.
Further recommendation of the Expert Group A1.4.2 Advice on personal hygiene in handling food, in preparation of ice and bottled waters should be reviewed and promoted by the new Food Standards Agency.

Recommendation 16 The possibility of infection arising from pollution incidents in swimming pools should be brought to the attention of pool operators, engineers and designers. Checks should also be made that filtration systems are working effectively.

Recommendation 17 Continued effort should be given to advising the public on the risks associated with accidental or deliberate ingestion of water in its raw state.

Recommendation 18 The absence of Cryptosporidium oocysts in drinking water can never be guaranteed. In the light of a small risk of infection, it would be appropriate to advise people in whom cryptosporidiosis is likely to be a persistent and life-threatening illness as a result of impaired immunity.

Recommendation 19 Where infectivity trials are carried out using human volunteers it is essential that a strain of Cryptosporidium is used which is known to be pathogenic to humans.

Further recommendation of the Expert Group A1.4.3 This recommendation should now be linked to recommendation 5 above in relation to host specificity.

Recommendation 21 The Department of Health should keep work in progress under the Group review and encourage further controlled trials of treatment where appropriate. See also paragraph 9.6.2.

A1.5 Water treatment and distribution

Recommendation 22 Water utilities should ensure that the design and operation of treatment plant is optimised in a cost effective way for particle removal taking into account the level of risk identified at each plant.

Recommendation 23 Advice given in the 1990 Report (recommendation R90/19 (ii)) on minimising rapid changes of flow is reiterated. However, ways of reducing the passage of particles into treated water following backwashing and after filter shut-down require further research.

Recommendation 25 Strategies should be developed for each treatment plant whereby the optimum use can be made of turbidity and/or particle monitors to minimise passage of particles into supply at all stages in the filtration cycle.

Further recommendation of the Expert Group A1.5.1 The Group has made further recommendations on water treatment in Chapter 5, Advice to Water Utilities.

Recommendation 27 Continuing attention is required to maintaining borehole linings and seals.

Recommendation 28 A realistic assessment should be made, using published results, of the likely impact of disinfection strategies on reducing the risk of cryptosporidiosis in humans.

Further recommendation of the Expert Group A1.5.2 It is considered that although disinfection has some effect, its contribution at time of most need (that is barrier breakthrough) has not been proven so in public health protection terms it cannot be relied upon.
Recommendation 29

Water utilities and manufacturers should be encouraged to publish the results of trials on the removal of Cryptosporidium oocysts by membranes and textile filters.

Recommendation 30

Water utilities should confirm regularly, with the appropriate authorities, contingency arrangements for the disposal of contaminated sludge and process waste waters.

Recommendation 31

Attention needs to be given to the effective design of systems for separating supernatant water from sludge and backwash solids.

Recommendation 32

Water utilities and manufacturers should be encouraged to publish the results of using novel separation methods and disinfectants in recycling systems.

Recommendation 33

Water utilities should continue to maintain good hygienic procedures for the repair and maintenance of distribution systems taking account of national guidelines.

Recommendation 35

Manufacturers should be required to provide, within their instructions for filter units, guidance on the safe handling and disposal of used filter elements.

Recommendation 36

Monitoring of raw water for Cryptosporidium should be related to an assessment of catchment risks and the nature of the treatment provided at individual sites.

Recommendation 37

Monitoring of treated water for Cryptosporidium on a regular basis for health protection is not recommended but should be carried out where a significant disturbance to raw water quality or to a water treatment plant has occurred. Additional investigations will be required if an outbreak of cryptosporidiosis occurs.

Further recommendation of the Expert Group

A1.5.3 The Group has made further recommendations on monitoring in Chapter 5, Advice to water utilities.

Recommendation 38

Water utilities should continue to ensure that their staff or those of contract laboratories are up-to-date in their knowledge of sampling and examination procedures including quality assurance measures. There should be regular monitoring and testing for Cryptosporidium to maintain the expertise of staff.

Recommendation 39

Consideration should be given to confirming the adequacy of the laboratory arrangements by simulation of emergency situations.

Further recommendation of the Expert Group

A1.5.4 In light of some mistaken laboratory identifications of Cryptosporidium, consideration should be given to further training of laboratory staff and electronic links with expert laboratories.

A1.6 Investigation and management of an outbreak

Recommendation 40

Epidemiological studies to investigate significant local increases in the background incidence of cryptosporidiosis should be encouraged, even if the increase does not apparently constitute an outbreak. Comparable methodologies should be used in these investigations.
Further recommendation of the Expert Group

A1.6.1 The Group has made further recommendations on epidemiological studies in Chapter 7, Guidance on the epidemiological investigation of outbreaks of infection associated with mains water. See also Appendix A4

Recommendation 41

Health authorities, local authorities and water utilities should continue to update and rehearse existing emergency plans, which should cover chemical or microbiological incidents as well as outbreaks of waterborne disease.

Recommendation 42

The circumstances where water supply zones overlap health and local authority areas, or where more than one water utility supplies a single authority, should be addressed by discussion between parties to agree protocols for dealing with emergencies.

Recommendation 43

Arrangements should be put in place to ensure regular liaison between the appropriate staff of water utilities, health authorities and local authorities. This should not be confined to periods where there are problems.

Recommendation 48

Key members from the Incident Management Team should agree procedures for the issuing and withdrawal of boil water advice. When considering imposing such advice there should be clear recognition of the need to agree criteria for its withdrawal.

Recommendation 49

Attention should continue to be given to effective communication with the public and media during incidents or outbreaks. This should be included as part of the Incident Management Team and Outbreak Control Team plans and should be rehearsed regularly.

Recommendation 52

The importance of adequately prepared and regularly rehearsed water utility plans as set out in the 1990 Report (R90/49) is confirmed.

Recommendation 53

Water utilities should collaborate with local authorities to identify more clearly which high-risk premises are fed by particular supply zones thus enabling appropriate emergency plans to be drawn up in advance.