- All letters must be typed with double spacing and signed by all authors.
- No letter should be more than 400 words.
- For letters on scientific subjects we normally reserve our correspondence columns for those relating to issues discussed recently (within six weeks) in the *BMJ*.
- We do not routinely acknowledge letters. Please send a stamped addressed envelope if you would like an acknowledgment.
- Because we receive many more letters than we can publish we may shorten those we do print, particularly when we receive several on the same subject.

Functions of the Clinical Standards Advisory Group

SIR,—The Clinical Standards Advisory Group is a statutory body whose members are drawn from the medical, nursing, midwifery, and dental professions.¹ Its functions include advising the health ministers in the United Kingdom on standards of clinical care for NHS patients and on access to, and the availability of, services.

The group was set up last year and has been carefully considering what work it should undertake. The first four specific studies that it proposed were studies of (a) access to, and the availability of, four selected specialist services—namely, neonatal intensive care, paediatric leukaemia, cystic fibrosis, and coronary artery bypass grafting; (b) urgent and emergency admissions to hospital; (c) services to people with diabetes; and (d) the management of normal labour in maternity units.

The health ministers have now agreed to these proposals² and have welcomed the group's intention to undertake preparatory work on other subjects, including infections acquired in hospital and community health care for elderly people.

To succeed the Clinical Standards Advisory Group needs the support and cooperation of the caring professions. Critical to that success will be confidence in its members and in its method of working. Its members are appointed by health ministers from nominations by the royal colleges, colleges, and faculties, plus the chairpersons of the standing advisory committees with observers from other key bodies.³ For each study a team consisting of members of the group and coopted clinicians and researchers will gather detailed information from a representative sample of NHS units. The committee steering each study will now discuss in detail how to take forward this work within a framework of principles agreed by the group at its meeting on 30 January. These general principles include the need to ensure that the confidentiality of information provided to the study teams is respected and the anonymity of individuals assured.

The Clinical Standards Advisory Group is not an inspectorate. It is an advisory body without statutory powers to compel NHS bodies to give them access to premises or records. I have written to the chairmen of all NHS bodies in the United Kingdom, asking them to cooperate with the group's national work and inviting them to consider whether there are any matters on which they would ask the group to advise. The group's purpose, whether it is responding to a request from health ministers or from NHS bodies, is neither to inspect the work of local clinicians nor to accredit local services. Practising clinicians should be reassured, therefore, that those conducting the studies are competent professionals and that confidentiality is assured. I hope that they will be regarded as colleagues.

Ministers are in no doubt of the importance of the advisory group. William Waldegrave has said: "[it] will play a crucial role in maintaining—and where possible, improving—the high standards of clinical care provided to NHS patients."⁴ To this end the government has made available to the group just over £2m for 1992-3. Mr Waldegrave has also promised that the advisory group's reports to ministers will normally be published, together with a response from the government.

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- 1 *NHS and Community Care Act 1990*. London: HMSO, 1990. (Section 62.)
- 2 Written answer. Clinical Standards Advisory Group. *House of Commons Official Report (Hansard)* 1992 Jan 16;201:col 627. (No 41.)
- 3 *Clinical Standards Advisory Group Regulations 1991*. London: HMSO, 1991. (Statutory instrument No 578.)
- 4 Department of Health. *William Waldegrave announces chairman and members of the Clinical Standards Advisory Group*. London: DoH, 1991. (Press release H91/136.)

Quality of drinking water

SIR,—We share Alison Walker's concerns about the health risks of drinking water.¹ The media have not only urged the government to ensure that water resources are not contaminated but have also contributed to the recent increase in consumers' concern about the quality of tap water. Mineral and spring waters are advertised as natural and perceived by many as safer than tap water. Sales have tripled in Britain in the past five years, with the current market amounting to £297 million.

The Natural Mineral Water Regulations 1985 implement the European Council directive 80/777EEC on the exploitation and marketing of natural mineral waters.² This requires all natural mineral waters to be officially recognised and prescribes conditions for the exploitation of natural mineral water sources.

We conducted a survey to determine the bacteriological quality of bottled water (mineral and spring) marketed in the United Kingdom. During October and November 1990 we bought 34 bottles of still and 35 bottles of carbonated (sparkling) spring and mineral water from local retail outlets all over Norfolk. After assessing the results we sampled a further 35 bottles of still water.

No coliforms, *Escherichia coli*, or faecal streptococci were detected in 100 ml volumes of any of the 104 samples. One colony of *Pseudomonas aeruginosa* per 100 ml was detected in four samples. Fifty (72%) of the still waters had total viable counts of over 1000 colony forming units/ml whereas 32 (92%) of the carbonated waters had counts of below 100 colony forming units/ml. Gram negative organisms isolated included *P. fluorescens*, *Agro-*

bacterium radiobacter, *Acinetobacter calcoaceticus*, *P. testosteroni*, and *P. pickettii*.

The survey confirmed previous findings.³ It was reassuring that no evidence of faecal contamination was detected. Bottles of carbonated water had much lower total viable counts, and this correlates with the known antibacterial activity of carbon dioxide in water.⁴ Although the organisms isolated are not pathogenic under normal conditions, they can be responsible for infections in certain debilitated or immunosuppressed patients.

We suggest that despite their perceived purity and safety bottled waters offer no demonstrable bacteriological advantage over tap water. Still waters cannot be recommended for debilitated or immunocompromised people, nor, as Hunter and Burge stated,³ should they be used as an alternative drink for infants.

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- 1 Walker A. Drinking water—doubts about quality. *BMJ* 1992;304:175-8. (18 January.)
- 2 Ministry of Agriculture, Fisheries, and Food. *The Natural Mineral Water Regulations. Statutory instruments No 71*. London: HMSO, 1985.
- 3 Hunter PR, Burge SH. The bacteriological quality of bottled natural mineral water. *Epidemiol Infect* 1987;99:439-43.
- 4 Stickler DJ. The microbiology of bottled natural mineral waters. *J R Soc Health* 1989;109:118-24.

Health and the environment: pesticides

SIR,—The series on health and the environment touches on problems associated with industrial and agricultural environmental health impact assessments, including the uncertainty of information available for such assessments. The methods used in environmental health impact assessments merit more detailed coverage by health journals if effective strategies for a healthy environment are to be implemented.¹

Environmental health impact assessments and audits examine "the assessment of human health and welfare impacts . . . integral to ecological and economic considerations"² and should consider alternatives to proposed actions that avoid adverse effects on health as well as long term and possible irreversible impacts. Industry and the government in developed and developing countries should make greater efforts to use environmental health impact assessments.

Use of pesticides illustrates the value of environmental health impact assessments and audits.³ The presence of pesticides in ground water has been well documented in the United Kingdom, as Alison Walker reports,⁴ but many studies of

pesticides have yielded inconclusive results about the risks presented.³ Effective safety margins, based on the best risk assessment models and full information, are necessary in making decisions regarding environmental health policy because of this uncertainty. Yet, remarkably, no published comprehensive British environmental health impact assessments or audits of pesticides seem to exist. The British process of registering pesticides does not entail effective audit or environmental health impact assessments.

Potential environmental health effects of pesticides must be assessed from the start of the extraction process for basic chemicals to the end of the waste disposal process and residue chain. This does not happen. Information on the pollution effects and health effects of energy used in manufacturing and transporting materials for pesticides is not readily available. Data on resistance of pests and damage to beneficial predators on pests resulting from use of pesticides are lacking. Knowledge of possible pollution effects of pesticides is still limited.

Pesticides occur in rain⁶ and fog⁷ and as pollutants of materials and atmospheres in various buildings. Researchers have found many pesticide residues in the air and house dust of homes.⁸ A study recently showed that over nine months the potential exposure of a crawling infant to flea pesticides could exceed the World Health Organisation's no observable effect levels.⁹ Full audits and environmental health impact assessments of pesticides would identify such potential sources of pollution, would ensure a better assessment of any chemical's impact on the environment, and should be introduced into all relevant legislation in the United Kingdom. This requires active medical participation to monitor and predict the effects of environmental pollution on health and to ensure that Britain endorses the highest environmental standards.¹⁰

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- 1 Godlee F. Strategy for a healthy environment. *BMJ* 1991;303: 836-8. (5 October.)
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Health risks associated with bathing in sea water

SIR,—Short reports are a useful way of publishing case reports or series in which the message is simple. Epidemiological studies, however, are generally more complex, and it is unlikely that sufficient information about the control of potential biases and confounding can be given in short reports to allow readers to interpret the results critically.

This is exemplified by R Balarajan and colleagues' report of a study of health risks associated with sea bathing.¹ The paper gives insufficient information for readers to assess whether the respondents were aware of the purpose of the study and might therefore have been biased in their responses to follow up questions, whether the interviewers were aware of the hypothesis under consideration, and what effect non-ownership of a telephone might have had. In addition, the validity of telephone reporting of symptoms by British respondents is unclear, although it may have been evaluated as part of the study.

The most persuasive finding in the study is the so called dose-response effect of different forms of immersion. These, however, are not defined, and it is unclear whether wading might be a dampening of the ankles or being in up to the bather's neck. Immersion of the head might be expected to confer a considerable risk, and it is not clear if this was included in any of the definitions. The second problem with this aspect of the study is whether the result might be due to confounding. Though age and sex were adjusted for (in an unspecified manner), other variables are potentially associated with both sea bathing and the range of outcomes reported, such as social class, smoking, and alcohol consumption. Were these recorded and were they confounders?

Finally, the study tested procedures for studies of the effect of sea bathing but not for bathing in contaminated water—for example, the strategy of examining the variation in contamination at each beach was not addressed.

The paper leaves us to conclude that the information is insufficient. Although the authors refer to other sources, these are unpublished reports that have not been peer reviewed. It seems preferable for research sponsored by the government to be published in a way that permits fully informed judgment of the findings. Certainly, the evidence presented in this paper alone does not justify the conclusion that the study's design is suitable for application. Judgment of the suitability of any study's design must depend on well documented, rigorous methodology.

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- 1 Balarajan R, Soni Raleigh V, Yuen P, Wheeler D, Machin D, Cartwright R. Health risks associated with bathing in sea water. *BMJ* 1991;303:1444-5. (7 December.)

AUTHORS' REPLY.—We agree with A J Hall and L C Rodrigues that our most persuasive finding was the dose-response effect of different forms of contact with sea water: those bathing activities that entailed more immersion usually resulted in more symptoms being reported.

There are clearly difficulties in determining the precise degree of immersion of bathers without detailed questioning. We had estimated at the design stage of the study that the prevalence of self reported symptoms (particularly gastrointestinal symptoms, including diarrhoea) was likely to be low. This in turn implied that a large sample (2000 subjects in 19 days) would be required to obtain sufficient events for detailed analysis. We also knew that age and to some extent gender strongly influenced the type of sea water activity pursued, and these characteristics could easily be judged by the trained interviewers for quota sampling.

To avoid prolonging the interview at the beach questions were kept to a minimum so as to focus on key information such as a telephone number for contact; whether the subject lived locally or was a day tripper or holidaymaker at the resort; and the degree of contact with sea water. To distract from knowledge of the real hypothesis under question interviewees were asked if they had consumed

10 locally purchased foods (individually identified) on that day.

At the telephone interview the questions on sea water activity and on foods were repeated, and only then were subjects asked about their illnesses or symptoms after the interview at the beach. The interviewers at the beach were not aware of the questions about symptoms to be posed at the telephone interviews, which were conducted by a different team of interviewers, who were briefed to avoid reference to symptoms until the final stage of that interview.

Relative risks adjusted for gender and age were obtained with standard logistic regression models.

We agree that the validity of telephone reporting of symptoms is unclear, but we assume that, although overall reporting levels may be inflated, this should not distort the dose-response relation we observed. Follow up medical examinations are not feasible for this type of study.

Hall and Rodrigues are right to raise the question of relating the symptoms reported to bathing in contaminated sea water. As we indicated in our paper, the quality of the water varied appreciably day by day, and we also know that it varied by time of day and by location at each beach. Clearly, the proportion of bathers experiencing, for example, gastrointestinal symptoms can be plotted daily together with the quality of the sea water and relation between the series examined. Unfortunately, for analyses addressing this question and the responses about food consumed we have observed too few events; we await the data to be collected in August this year before we can complete these aspects of the study.

In summary, we agree with the sentiment and points raised by Hall and Rodrigues, but the design of this study was a balance between what was desirable and what was achievable with the resources available.

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Unnecessary radiology

SIR,—Fiona Godlee in her very comprehensive article on environmental radiation¹ refers to the report from the Joint Working Party of the National Radiological Protection Board and the Royal College of Radiologists,² which called attention to a study showing that some 33% of patients attending an orthopaedic clinic in Scotland had to have repeat x ray examinations because their original films were not provided by their general practitioners.³ There is a danger that this rate of 33% may become misconstrued as being the norm in orthopaedic clinics generally. One step towards misconstruction may have occurred already through a *BMJ* editorial which, in referring to the Scottish survey, commented: "The missing radiograph is another cause of unnecessary exposure, and a survey in an orthopaedic clinic reported that a third of all patients had repeat examinations because of missing films—a bland statement of a shocking fact."⁴ The editorial was correct but did not mention two important aspects of the Scottish survey. Firstly, the survey was concerned only with referrals from general practitioners, and, secondly, most of the missing x ray films had been taken at four health centres (G R Sutherland, personal communication) and at other hospitals away from the orthopaedic clinic.

To assess the repeat x ray rate in a more typical English district hospital setting, we carried out the following audit. During a three week period in August and September 1991 we prospectively surveyed all patients attending 29 consecutive