Referral to hospital is always a difficult decision. In the stages before ulceration varicosities or prominent incompetent perforator veins should be treated surgically. They never regress by themselves. Once ulceration has occurred, however, admission to hospital should be reserved for the patients with intractable lesions. Of course, every venous ulcer will heal if the patient is kept long enough in bed with the leg raised, but admission to hospital, especially in the elderly, may have serious side effects—and all too often ulcers heal in hospital only to recur after discharge. Admission should, however, at least be considered if the ulcer is not responding to adequate compression or is accompanied by severe pain (when an arterial element must always be suspected). And surgical advice should be sought for varicosities or incompetent perforator veins in patients with healed ulcers—just as in those with early symptoms.

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Foodborne infections and intoxications

Prevention requires education and training of staff and monitoring of production and processing

Our species evolved and flourished on diets that were never germ free and sometimes made us ill. In the past two centuries factors such as population growth, crowding into cities with imperfect sanitation and hygiene, the increasing need to provide foods for large aggregates of people, and, in recent years, a great expansion in eating out all necessitated new and latterly intensive methods of producing, processing, and marketing foods. When things go wrong these provide potential for outbreaks of foodborne disease on a bigger scale than possible previously—except, perhaps, for outbreaks of ergotism. Britain has seen an explosion of new catering procedures, of convenience foods, and of new "ethnic" restaurants serving foods that were previously unknown. Economic pressures have led to increasingly intensive production of food animals and recycling of their residues—procedures equivalent to "serial blind passage" in microbiology to unmask latent infections.[1] The consequences have included nationwide outbreaks and recent alarms over salmonellosis, listeriosis, and bovine spongiform encephalomyelitis. Though bovine spongiform encephalomyelitis may not prove transmissible to man, agricultural economists are calculating the economic losses from the epidemic and weighing them against the economic gains forecast from the recycling of animal wastes.

Recent official figures have suggested a substantial and sustained increase in salmonellosis, campylobacter, and other foodborne infections. The data must be interpreted with caution: to some extent they reflect improving epidemiological surveillance and better detection of infections, some unknown or unrecognisable until recently. The high position of Scotland in the food poisoning league, with a virtually static incidence of salmonellosis of about 50 per 100 000 throughout the 1980s, reflects good surveillance[2] and contrasts with the continuing increase in reports from many other European countries. Thus figures for England and Wales have now risen to reach the same incidence as Scotland,[3,4] though it is difficult to believe that trends have really been so different north and south of the border. At all events the unacceptably high incidence of these diseases has raised public and professional concern and brought the new Food Safety Bill before parliament.

The bill attempts to safeguard food (and drink) throughout the chain from farm to shop by extending legislative controls. It empowers ministers to make regulations and adapt food law to present and future needs and meet European Community obligations, and it tidies up various statutes into one statute for the United Kingdom. If powers are used and resources suffice (£30 million a year promised from 1991-2) this should achieve the objectives that are achievable by legislation. Trained staff will be needed to educate food handlers and local government inspectorates—despite current shortages of environmental health officers. Omissions from the bill include measures to require good practice in the initial stages of food production—that is, in agronomy to minimise the chance of infections entering the food chain. Emergence of listeria, campylobacter, cryptosporidia, verotoxic *Escherichia coli* O 157, and other previously unknown or underrecognised problems and the constantly evolving salmonellae require continued monitoring and multidisciplinary research by experts such as those of the Public Health Laboratory Service Food Hygiene Laboratory, Colindale, and the Bristol laboratory of the Institute of Food Research—which is threatened with closure.

Human error and ignorance will inevitably act as limiting factors and ensure the continuance of problems. These usually arise from failure to observe proper standards in preparation, processing, cooking, storing, or retailing food. Elimination of infection from raw food requires correct processing techniques at the industrial, retail, and domestic stages; proper storage; and the prevention of cross contamination. This will require great improvement in education and awareness by personnel and recognition of responsibilities for food hygiene by staff at all levels. Too often the final food handlers have low status, pay, and motivation: there is a rapid turnover of workers, and there are recruitment problems—as described recently by Pollock and Whitty.[5]

Precise recommendations for tackling these problems have been published in an important technical report by the World Health Organisation.[6] This included examples for food managers, whose training needs to be given priority; essential information and outline curricula for staff handling food; and the World Health Organisation's "golden rules for safe food preparation," which are applicable to domestic as well as earlier stages in the food chain. The report emphasises the value of hazard analysis and identification of critical control points in the system at which pathogens are likely to enter or multiply in food but can be controlled by good practice. Systematic and continuous monitoring of these points requires commitment by management and education and training of employees at all levels. A large investment in training may be offset by abandoning obsolete and ineffective procedures. An approach called the Hazard Analysis Critical Control Point system is being introduced in several countries, and the example worked out in detail in the World Health Organisation report for salmonellosis illustrates the analysis and identification of control points for different foods.[7] Investment in education and training with detailed monitoring of critical points in the production and processing of food may be a more effective approach to safety than legal measures to allocate blame after things have unnecessarily gone wrong. The two strategies are not incompatible and can be mutually supportive. Can we hope to remove human error? Probably not, but at least we could try harder.

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Low level radioactive waste

Public perceptions do not equate with scientific assessments

A recently published report of a symposium on low level radioactive waste held in New York quoted some "opportunity costs" of radioactive waste disposal. The cost for each eventual life saved by protecting Americans from nuclear waste by building deep disposal centres was $200 million; this was contrasted with the $20 000 needed to save a life from lung cancer by reducing exposure to naturally occurring radon.[1]

Nevertheless, the potential health hazard from burial of low level and intermediate level radioactive waste in shallow disposal sites continues to cause public concern in Britain and elsewhere. By the year 2030 sites will have been needed for the disposal of an estimated one million cubic metres of low level waste and 0·3 million cubic metres of intermediate level waste. At present these wastes are buried in shallow sites such as that at Drigg in Scotland. A deep disposal site would last for 50 years and the current construction cost would be £1650 million (United Kingdom Nuclear Industry Radioactive Waste Executive, annual report 1987-8).

The accepted principle of underlying policies to limit exposure to radiation is that it should be kept as low as is reasonably achievable in order to minimise the risk.[2] Often the public perceives this risk as considerably greater than the reality as determined from mortality and morbidity data. Clearly, decisions on the balance of risk versus the cost of averting that risk need to be based on correct assessments of the risk. One study in the United States found that the public saw the risks from nuclear power as greater than those from chest radiography—the opposite of the observed conclusion from mortality and morbidity data.[3] Nuclear power was seen as a greater health risk than smoking by non-professional women voters and students but not by business and professional people.

In measuring the risks to health from radioactive waste the first step is assessing the effects of other factors, including natural radiation. The mean annual dose of radiation received in Britain is in the order of 2-5 mSv, of which 87% is from natural sources—and half of that is from radon, which is present only in limited areas. The rest is from man made sources. Radiation of medical origin contributes 12%, and the remaining 1% includes a small amount of occupational exposure and exposure from fall out, and so on.[4]

Independent bodies, including the International Commission on Radiological Protection, the United Nations scientific committee on the effects of atomic radiation, and the United States National Academy of Sciences committee on biological effects of ionising radiations have made recent estimates of the effects of radiation. They set dose limits that are based on the different susceptibilities of various organs. In 1977 the International Commission on Radiological Protection set a limit of 5 mSv a year for members of the public.[2] In 1985 it recommended a lifetime exposure not exceeding 1 mSV a year.[5] There is at present an international debate taking place as to whether the annual limits should be decreased further.

How much does waste contribute to this exposure? Low level radioactive waste consists mostly of lightly contaminated rubbish such as discarded protective clothing, used wrapping materials, and worn out or damaged plant and equipment. It contains mostly short life radionuclides, and no shielding is needed when it is being transported. Intermediate waste contains, for example, sludges and gas filters from nuclear power stations. It is more concentrated, tends to be 1000 times more active than low level waste, and does need shielding. More than three quarters of waste in both the low and intermediate categories comes from the nuclear industry. Disposal of intermediate waste that has a long half life is not included in this discussion.

The use or disposal of radioactive substances anywhere in Britain has to be registered to facilitate inspection and monitoring by Her Majesty's Inspectors of Pollution, part of the Department of the Environment. For commercial nuclear installations the task falls on the Nuclear Installations Inspectorate, which is part of the Health and Safety Executive. These inspectors measure discharges and environmental levels to provide independent data and to determine compliance with and the adequacy of the regulations.[6] Aerial and liquid discharges are included in these responsibilities. In England the Department of the Environment and the Ministry of Agriculture, Fisheries, and Food are responsible for agreeing waste management arrangements and share responsibility for developing a strategy for managing radioactive waste. The total discharges from the nuclear industry are estimated by the National Radiological Protection Board to be of the order of 1μSv a person a year if spread out over the whole population.[7] Solid waste from the nuclear industry, hospitals, industry, universities, and the Ministry of Defence is disposed of by the United Kingdom Nuclear Industry Radioactive Waste Executive (Nirex). Both the National Radiological Protection Board, which is an independent body, and Nirex have research programmes that not only estimate ground water flow, gaseous discharges, and other natural events such as earth movement but also human interference with waste deposits.[8] The symposium held in New York made it clear that such assessments need to look not only at the quantitative aspects of risk assessment but also at the responses of policy to informed public opinion.[9] Plenty