Book reviews

Environmental Health Criteria. I. Mercury. (Pp. 131; 14.00 Sw. fr.). WHO: Geneva. 1976.

This is the first of a series of reports on the evaluation of health hazards in the environment by an international group of experts under the sponsorship of the World Health Organization and the United Nations Environment Programme, set up in 1973. The scope of the environmental health criteria reports is to compile, review and evaluate information on the biological effects of pollutants influencing human health, and to provide a scientific basis for decisions aimed at protection from the adverse consequences of exposure, both in the occupational and general environment. The more precise objectives are to assess information on the relationship between exposure and health, in order to provide guidelines for setting exposure limits; to identify potential pollutants by preparing preliminary reviews on health effects; to identify gaps in knowledge and thus to promote research, and finally and most important, to promote the harmonisation of toxicological and epidemiological methods for the purpose of obtaining research results that are internationally comparable. Each criteria document, as it is styled, contains chapters on chemical and physical properties, analytical methods, sources of pollution, environmental transfer, distribution and transformation, metabolism, and experimental, epidemiological and clinical studies of effects. The evaluation which follows gives the opinion of the task group on relative contributions to the total dose from air, food, water and other exposures, dose-effect and dose-response relationships and guidelines on exposure. In addition the report gives a summary, followed by recommendations for future research.

It is appropriate that the first of these criteria documents should be on mercury. A decade ago the epidemics of poisoning following the discharge of mercury in industrial effluents at Minamata and Niigata shook the world into a realisation that similar pollution was occurring

in many other industrial centres. At that time we knew little about the complex behaviour of mercury in the ecosystem or of the metabolism of highly toxic methyl mercury in man. The study of predominantly fish-eating populations in Japan, Sweden and elsewhere, together with the observations made on the rural population of Iraq who had consumed bread made from wheat seed treated with methyl mercury, has given a fairly good but still incomplete picture of the long-term daily intake of methyl mercury in the diet associated with the earliest effects seen in an adult population. The levels quoted apply only to adults and relate to the probability of an effect in up to 5% of the population. Assumptions, approximations and some fairly sophisticated arithmetic have been used in arriving at estimates of total dose and of total body burden. However, precise assessment of neurological deficit is difficult enough in specialised centres, let alone in field studies. While the assessment of paraesthesiae must, for the present, remain subjective, the report gives no indication of criteria used in the assessment of the presence of ataxia, dysarthria or deafness. The crude nature of the clinical input data has not been stressed and this must be kept in mind when interpreting the evaluation made by the task group.

The toxic properties of elemental mercury differ from those of its inorganic salts, and from the short chain alkyl mercurials which in turn differ from all other organic mercury compounds. The account of the clinical effects of these different categories is incomplete. In particular, renal disorder following immune complex deposition on the basement membrane of the kidney, and in general the role of hypersensitivity in influencing the toxic reactions to mercury, have not been considered.

Occupational exposure to mercury occurs mainly to elemental mercury vapour. Although large numbers of workers have been exposed to mercury vapour for many years we still do not have precise measurements on exposure

levels, their relationship to concentrations in blood and urine and to total body burden. Information is also lacking on the possible effects of exposure to mercury vapour during pregnancy and these gaps in our knowledge are indicated in the report.

G. KAZANTZIS

Mercury Contamination: A Human Tragedy. By Patricia A. D'Itri and Frank M. D'Itri. (Pp. 311; £13.45). John Wiley & Sons: New York. 1977.

The Phoenicians in 700 BC traded in cinnabar from the rich deposits still present at Almaden in Spain, and mercury was used in far eastern medicine before the Christian era. Since the industrial revolution the uses of mercury have increased steadily, resulting not only in exposure of workers to this toxic element but in increasing exposure of the general population from discharge of mercury into the environment. It has been estimated that Minamata Bay now harbours over 1 million lb (over 450 000 kg) of mercury, and 58 tonnes lie in the mud and silt of San Francisco Bay, an indestructible load presenting space age man with a colossal problem in pollution control on a world wide scale.

The D'Itris trace the uses to which mercury has been put through the ages and this makes fascinating reading. In the sixteenth century, they recount, syphilitic patients were placed on a chamber pot with the head and body covered in blankets while cinnabar was burned beneath them until, breathing the vapourised mercury, their teeth loosened. No less horrifying is the course of events at Minamata and the Iraqi tragedy of the early 1970s in which grain contaminated with methyl mercury was eaten, resulting in probably the largest epidemic of chemical poisoning the world has yet seen. There is continuing unease over the state of the Canadian Indians who fish the mercury-contaminated waterways of the Ontario reserves. The technical and economic problems posed in removal of mercury from waterways is

onsidered. Some of the proposed solutions sound fanciful and desperate, such as covering mercury deposits in waterways with crushed automobile bodies, with plastic film rolled out and pinned on the bottom of water courses, or with a layer of condensed feathers, a tonne of which would complex one pound of mercury. There is a good chapter on the development of legislation against mercury pollution in the United States and the problems posed to the federal Environmental Protection Agency and to state agencies in its enforcement. The complex interaction between industrial, political and public interest is well illustrated. The biological aspects of mercury contamination are less well covered, however, and the medical reader may be irritated by some clinical inaccuracies and by such terms as 'negative symptoms'.

The problem of mercury in the environment illustrates the principle, and this is brought out in the book, that the industrial use of a toxic material cannot be considered in isolation but must involve the local community which it purports to serve, and even the population as a whole. The Health and Safety at Work etc. Act (1974) in this country makes some provision for this, and it remains to be seen how effectively our environment can be protected in the future.

This book would be of value to the reader who wishes to obtain a general idea of the social and political problems posed by mercury pollution. There are also 537 references. G. KAZANTZIS

The Back Book. By Maggie Lettvin. (Pp. 160; £4.50). Souvenir Press: London. 1978

There is no doubt that the protection of the back from strain plays a very important part in the management of low back pain and, if carried out meticulously, often results in considerable improvement in symptoms.

This American book is written with two objects, first, to analyse the type and location of the pain and its relationship to various activities. This is done in the form of a questionnaire and pain time chart which, when filled in, would be useful to the doctor seeing the patient, especially a rheumatologist, orthopaedic surgeon or industrial medical officer. The second object, following this analysis, is to show the sufferer from low back pain correct ways to move, sit, stand, lie and lift and also how to carry out every possible activity of daily living, even including sexual intercourse, in ways

that will avoid hurting the back. This is done in considerable detail, illustrated with plentiful diagrams. Some exercise regimes are included with the very appropriate warning that they should be done only if they do not cause pain. It also deals briefly with such things as analgesics, spinal fusion and gynaecological aspects.

I believe that for the intelligent patient this book will provide a lot of useful information. I would disagree with only a few minor points in the text, particularly the suggestion that low back pain is affected by wet, cold or draughts, a somewhat dated concept. Although rather an awkward size, it is neatly set out, easy to follow and not expensive to buy.

A. ZINOVIEFF

The Guide to Hygiene and Sanitation in Aviation. By J. Bailey. (Pp. 162; 28.00 Sw. fr.). WHO: Geneva. 1977.

Nearly 20 years have passed since the Guide to Hygiene and Sanitation in Aviation was first published, during which time little has remained unchanged or unchallenged within the aviation industry, other than those basic principles which have governed its various activities. It is these basic principles as applied to hygiene that the new edition of the guide has restated and clothed in a wealth of accurate and factual advice and, as a result, a very good book has been produced. Moreover, it is one which gives practical advice in sufficient detail to be useful without producing that degree of complication which will deter the faint-hearted, as can so easily happen.

The Guide is intended to be used in conjunction with the IATA Code of Practice which itself became available two years ago and together they constitute just that degree of guidance which is required. Both are complementary and while basic concepts are identical there are, between the two publications, some inevitable differences in emphasis. Probably the most important of these is the emphasis placed by the writers of the IATA Manual on the paramount importance of storage of food between production and consumption. This is also emphasised in the present Guide but the process of 'time stamping' which IATA recommended has not been taken up. This is not always an easy practice to enforce but it does have very great advantages which can safeguard this most crucial period as can no other procedure. Date stamping is now an accepted part of retail food distribution

and sale, and time stamping could most usefully be adopted in airline catering work.

However, both as a work of reference (in which it is helped by an adequate index) and as a manual of practice it is a measure of the Guide's worth that only small criticisms can be advanced. On the credit side some passages can be singled out as of outstanding worth and it would be difficult to express almost all that is best in food preparation techniques as succinctly as has been achieved in Section 4.6. Here and there the presence of correcting hands can be discerned but, on the whole, it is an eminently readable book. What a pity a 170-page paperback has to cost nearly £8! P. J. C. CHAPMAN

Isocyanates in Industry—Operating and Medical Codes of Practice. A Report of the Isocyanate Subcommittee, Health Advisory Commission. (Pp. 84; £4.50; BRMA members £3.00; EEC £5.00). British Rubber Manufacturers' Association Limited. 1977.

The British Rubber Manufacturers' Association has good reason to be proud of this publication which is a model of its kind. It is a revised and improved edition of a booklet which first appeared in 1971, and which was almost entirely concerned with toluene diisocyanate (TDI) alone.

Both medically and technologically the diisocyanates constitute one of the most interesting groups of chemicals in industrial use today. The very real medical problems associated with industrial exposure have been the subject of much comment, frequently ill-informed, in both the lay and the technical press. From time to time suggestions have been made that the isocyanates are too hazardous for industrial use. This Code of Practice gives an adequate description of the hazards and biological properties, both of TDI and other important isocyanates, and even more important, gives a detailed account of the measures needed for medical surveillance and to ensure safety in use. It describes proper storage requirements, the design of polyurethane production plant, proper fume extraction, the advisability of scrubbing systems, personal protective equipment, atmospheric monitoring, sound operating practices, and information for employees. The trade names of various isocyanate compounds are given, their chemical and physical properties, and their suppliers. Also listed are the names and addresses of suitable spirometers, respirators and other protective equipment, atmospheric monitoring de-