

Occupational and Environmental Medicine



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from experimental studies suggestive of a progression from thyroid nodules to thyroid cancer in animals exposed to radiation.¹⁸ It is necessary, therefore, to perform accurate medical surveillance to prevent this problem in the workers occupationally exposed to radiation.

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Occup Environ Med, together with many other international biomedical journals, has agreed to accept articles prepared in accordance with the Vancouver style. The style (described in full in the *BMJ*, 24 February 1979, p 532) is intended to standardise requirements for authors.

References should be numbered consecutively in the order in which they are first mentioned in the text by Arabic numerals above the line on each occasion the reference is cited (Manson¹ confirmed other reports^{2,5} . . .). In future references to papers submitted to *Occup Environ Med*

should include: the names of all authors if there are seven or less or, if there are more, the first six followed by *et al*; the title of journal articles or book chapters; the titles of journals abbreviated according to the style of *Index Medicus*; and the first and final page numbers of the article or chapter. Titles not in *Index Medicus* should be given in full.

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- 1 International Steering Committee of Medical Editors, Uniform requirements for manuscripts submitted to biomedical journals. *Br Med J* 1979;1:532-5.
- 2 Soter NA, Wasserman SI, Austen KF. Cold urticaria: release into the circulation of histamine and eosinophil chemotactic factor of anaphylaxis during cold challenge. *N Engl J Med* 1976;294:687-90.
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workers was only found among those older than 40 years, in contrast with other countries where the increased risk was found within all age groups.^{4,12-14} The decreased risk of hepatitis A in our younger workers is unlikely to be attributable to improved working procedures because, unlike hepatitis A, we found that leptospiral infection continues to be a risk for sewer workers regardless of their age. The more likely explanation of our results is that leptospira are still abundant in the sewage system unlike HAV which has only a small probability of being found in sewage as a result of the generalised decrease in incidence of hepatitis A in the past three decades in the developed countries.¹⁵

Personal protection of these workers should be improved, especially for those who operate pipe cleaning machines. It is unlikely that even this will totally avoid the risk of infections. Leptospiral vaccines exist, but they are serovar specific, must be repeated every year, and are associated with a high incidence of painful swelling, especially after revaccination.¹⁶ Better vaccines should be developed before they can be widely used. In contrast, a safe and effective vaccine exists against hepatitis A. The decision to vaccinate sewer workers against hepatitis A should take into account that it is impossible to avoid all contact with sewage fluid and, despite the fact that the actual incidence of hepatitis A is low, there is a real possibility of sporadic exposure during a future outbreak.

We are indebted to Reine Roy and Rachel Chouinard, and to the supervisors and technicians of the biochemistry and haematology laboratories of the Hôpital St-Sacrement for their support. This study was funded by the Centre de santé publique de Québec and SmithKline Beecham Pharma.

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in the exposed and unexposed groups. The follow up study has provided no evidence of any further changes in biochemical and haematological indices since the cross sectional study.

Finally, a comparison of the ranges calculated from the control group with the reference ranges supplied from the manufacturers of the biochemical tests show that there were some substantial differences between the two sets of ranges (table 4). In general the control group (and the study group) had higher average results for all the liver function variables than would have been expected from the reference ranges supplied with the tests. The reason for this difference is not completely clear, although it could be due to the use of hospital or laboratory populations to formulate reference ranges. If this is the case, these populations are clearly not comparable with a group of working men in the north west of England and it does emphasise the importance of having a proper control group in this type of study.

We express our particular gratitude to Sisters Debbie Fearnley, Doreen Evans, Win Ashcroft, and Margaret Riley for their role in local organisation, data collection, and venesection. Thanks also to Sue Braithwaite for her work in data coordination and to Angela Benson for her contribution to the preparation of the report.

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Occupational and Environmental Medicine welcomes correspondence relating to any of the material appearing in the journal. Results from preliminary or small scale studies may also be published in the correspondence column if this seems appropriate. Letters should be not more than 500 words in length and contain a minimum of references. Tables and figures should be kept to an absolute

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The journal also publishes editorials which are normally specially commissioned. The Editor welcomes suggestions regarding suitable topics; those wishing to submit an editorial, however, should do so only after discussion with the Editor.

- 3 Kneale GW, Mancuso TF, Stewart AM. Hanford radiation study III: a cohort study of the cancer risks from radiation to workers at Hanford (1944–1977 deaths) by the method of regression models in life-tables. *Br J Ind Med* 1981;16:156–66.
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- 1 Sorahan T, Gilthorpe MS. Non-differential misclassification of exposure always leads to an underestimate of risk: an incorrect conclusion. *Occup Environ Med* 1994;51: 839-40.
- 2 Loeve M. *Probability theory*. Princeton: D Van Nostrand, 1962.
- 3 Dosemeci M, Wacholder S, Lubin JH. Does non-differential misclassification always bias a true effect toward the null value? *Am J Epidemiol* 1990;132:746-8.
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- 7 Wacholder S. When measurement errors correlate with truth: surprising effects of non-differential misclassification. *Epidemiology* 1995;6:157-61.

Author's reply—Our short report on the properties of non-differential misclassification of exposure, as judged by computer simulations, has prompted Wacholder *et al* to make several useful observations.¹ These observations include a restatement of what we judged to be the "more important" feature of the simulations. We concluded (to paraphrase) that for any particular epidemiological study that investigates a causal risk factor and in which each study subject had the same probability of being misclassified (with respect to a single binary exposure variable), it would be incorrect to infer that the measure of effect obtained from the study—for example, relative risk or rate ratio—could only be increased if more reliable information were to be obtained such that all misclassification could be removed. We are pleased to learn that Wacholder *et al* are of the opinion "that this is an important point for readers to appreciate". We did not find those results of the computer simulations that supported this conclusion to be "disturbing"; they seemed to us to be intuitively obvious. What disturbed us was the fact that many researchers are convinced that the removal of non-differential misclassification of exposure from their studies can only increase the point estimate of relative risk (or rate ratio).

Why is our conclusion so little known? We have three possible explanations; all could be prompted by the comments of Wacholder *et al*. It may be because of confusion about the definition of non-differential misclassification. We chose the definition that "all exposed and non-exposed subjects have the same probability of being misclassified (these two probabilities may be different, one must be not zero)". Wacholder *et al* describe this as misclassification "treated as a process". They note that non-differential misclassification may also be defined in terms of "realisation" in a given data set—that is, the same fraction of diseased and non-diseased subjects were, in fact, misclassified. The first definition seems more relevant to study settings. Under the second definition, non-differential misclassification would rarely occur and a researcher would not be aware when it had occurred. (It would never occur when there was an even number of diseased subjects and an odd number of non-diseased subjects!)

A second explanation is the influence of textbook examples in which misclassification

is invariably shown to operate on a proportionate rather than a random basis. We choose not to believe that errors are made every *n*th record and prefer to believe that random misclassification is more relevant to study settings.

A third possible explanation is the way in which the word *bias* is interpreted. Sometimes the word is used to indicate a tendency toward a given distortion, and sometimes (perhaps incorrectly) to indicate a distortion that will occur on each and every occasion—for example, in the game of bowls, the oblique course of a bowl due to its lopsided form is said to be due to bias. If the first definition were in universal use, our conclusion would be well known.

Our short report may be viewed as a call for more appropriate interpretation of study findings.¹ The observations of Wacholder *et al* may be viewed in the same light.

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- 1 Sorahan T, Gilthorpe MS. Non-differential misclassification of exposure always leads to an underestimate of risk: an incorrect conclusion. *Occup Environ Med* 1994;51: 839-40.

NOTICES

For a good working life. ICOH'96, the 25th International Congress of Occupational Health. Stockholm, Sweden. 15-20 September 1996.

The Congress will present the latest research discoveries in occupational health as well as provide a forum for exchange of ideas between practitioners and researchers.

This ICOH Congress will be noted by the introduction of new subjects of great concern to the society of today and tomorrow, such as work organisation, psychosocial factors, and gender research. A large number of minisymposia will form a bridge between the more traditional occupational health research and the new challenges of promoting a good working life.

MINI SYMPOSIA

A large part of the conference will be mini symposia arranged by the permanent Scientific Committees, such as "chemicals and allergies", "occupational health nursing in the future", "occupational health in small industries". More than thirty mini symposia will give the participants a unique opportunity to keep up with the rapid developments in occupational health.

MORE THAN 1000 PRESENTATIONS

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- Working conditions and cardiovascular diseases. Johannes Siegrist, Institut für Medizinisches Soziologie, Düsseldorf, Germany
- Dose concepts in occupational exposure assessments. Thomas J Smith, Harvard School of Public Health, Boston, USA
- Promoting safe behaviour. Carin Sundström-Frisk, National Institute of Occupational Health, Stockholm, Sweden
- Electromagnetic fields and cancer. Gilles Thériault, McGill University, Montreal, Canada.

The conference is sponsored by multinational and Swedish companies. Major sponsors are AMF Trygghetsförsäkring, SmithKline Beecham, Pasteur Mérieux MSD and the Swedish Power Association, Svenska Kraftverksföreningen. Other sponsors are Samhall and SJ, the Swedish State Railways. The official airline is SAS. There will be an exhibition in conjunction with the conference. Companies and organisations interested in taking part should contact the ICOH'96 secretariat.

Authorised press is welcome to cover the Congress.

For further information contact: Arne Wennberg, secretary general ICOH'96, Lars Grönkvist, press officer ICOH'96, Elisabeth Lagerlöf, information ICOH'96, Maud Werner, secretariat ICOH'96, National Institute of Occupational Health S-171 84 SOLNA, Sweden. Tel (+46) 8 730 91 00; Fax (+46) 8 82 05 56.

Broadening the Limits of Occupational Hygiene. 14th Annual Conference of the Australian Institute of Occupational Hygienists. 11-13 December 1995. Adelaide, South Australia.

A three day conference (11-13 December) and two days of continuing education sessions (9-10 December). This conference will run back to back with the 31st Annual Conference of the Ergonomics Society of Australia at the same venue.

An exceptional line up of international and local speakers include

- Professor Morton Lippmann, New York University. Inhalation Toxicology and Regulatory Policy
- Associate Professor Harriet Burge, Harvard University. Bioaerosols
- Professor Jens Rasmussen, Copenhagen University. Human Computer Interaction and Human Error
- Dr Jim Stewart, ex vice president Dupont Canada. Safety Performance and Organisational Change

For further information contact Dr D Pisaniello, AIOH-95 secretary, Department of Community Medicine, University of Adelaide, South Australia 5005. Fax: (61 8) 2234075. email: dpisanel@ache.mad.adelaide.edu.au

**Hazard Control in the Work Place.
3 October 1995. The Royal College of
Medicine, Wimpole Street, London.**

The Royal College of Medicine is an appropriate venue for this prestigious conference, the first of its kind to be held in the United Kingdom.

It will provide essential information for everyone concerned with occupational health and safety and is a unique opportunity to obtain up to date knowledge and insights from internationally renowned experts in their field. The day will cover all aspects of hazard identification, standards and control, and the role of the Health and Safety Executive.

Conference topics include occupational exposure limits, the control of hazards, particularly chemical hazards, risk assessment and the role of the Advisory Committee on Toxic Substances (ACTS). The conference will also provide a forum for delegates to share experiences and discuss topical issues.

The conference will be chaired by Professor Malcolm Harrington, Director of the Institute of Occupational Health, Birmingham University. Speakers include Dr L S Levy, Senior Lecturer, Institute of Occupational Health, Birmingham University, Occupational Health Consultant Mr F Gill, Dr H Rafaat, of the Health and Safety Unit, Aston University, and Dr Linda Derrick, Regional Director for London, South East, and Home Counties Regions Field Operations, a division of the Health and Safety Executive.

This conference is being organised by Suffolk Educational and Training Services, part of Suffolk College, where a thriving Group Occupational Health Service has been based for some years.

A brochure with full details can be obtained from conference administrator Jan Wain at SETS Ltd, Suffolk College, Rope Walk, Ipswich IP4 1LT. Telephone (01473) 296633 Fax (01473) 216416.

For further information please contact Audrey Semple, SETS Ltd, Suffolk College, Rope Walk, Ipswich IP4 1LT. Telephone (01473) 296518; fax (01473) 216416.

BOOK REVIEWS

Book review editor: R L Maynard

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(The price and availability are occasionally subject to revision by the Publishers.)

Trends in Cancer Incidence and Mortality. Edited by M P COLEMAN, J ESTEVE, P DAMIECKI, A ARSLAN, H RENARD (Pp 806 + viii; price £120). 1993. Lyon, France: International Agency for Research on Cancer. ISBN 92 832 2121 4.

This book represents a departure from the previous IARC publications in that most of the data are presented in graphical rather than tabular form. Detailed tables are presented in a companion volume, but here one finds an encyclopaedic compilation of material on cancer incidence from the six previous IARC volumes of *Cancer Incidence in Five Continents* along with national cancer mortality data taken from the WHO publications. Cancer incidence data cover the period 1950–1987 and mortality data are available from 1955 to 1988. Incidence data are provided from 60 registries in 29 countries and 36 national mortality data sets are used. Such a broad coverage makes the book daunting for the non-specialist, but the graphical layout makes it easy to find things, and is particularly useful for developing and preliminary testing of hypotheses about possible causes of cancer. Even in this context, however, it will need to be used in conjunction with the more detailed tabulations published in other IARC volumes. One weakness is the unavoidable delay in compiling international data, so that information on trends is already eight years out of date. Another concern is the choice of rates to plot. The truncated rate and cumulative risk have very similarly shaped curves, the only difference being changes in the age structure of populations. It would have been useful to look at time trends more fully for younger and older age groups, especially for early onset cancers, such as Hodgkin's disease and testicular cancer. The one acknowledgement of this is a final chapter on childhood cancers in which trends in cumulative risk for ages 0–14 years for leukaemia and all cancers are given.

The book is organised by chapters on each specific cancer site and they follow a standard pattern. Each chapter has some explanatory text that describes patterns separately for Europe, Asia and Oceania, and

the Americas, but most of the space is filled with graphs. Trends in incidence for the truncated rates (30–74 years) and the cumulative risk from ages 30–74 years are given for each country for men and women separately for most sites. The best fitting age-period-cohort polynomial model is given for each country and graph. Separate graphs then give the percentage change per 5-year period for age bands 30–44, 45–64, 65–74 and the total age group 30–74. This process is then repeated for the mortality data.

This is very much a reference book for specialists. The availability of graphical data is useful and saves time when making lots of comparisons. Its value to the more casual reader is likely to be limited, however, and the sheer mass of material will put off the uninitiated.

JACK CUZICK

Textbook of Clinical Occupational and Environmental Medicine. Edited by L ROSENSTOCK, MR CULLEN (Pp 909, price £96). 1994. Philadelphia: WB Saunders. ISBN 0 7216 3482 6.

Environmental medicine is now a distinct medical discipline in North America and is seen as complementary to occupational medicine. Unfortunately, in the United Kingdom there is still much debate over the definition, scope and even "ownership" of the subject so that this American book may be a very useful contribution to the development of environmental medicine in this country as it shows the closeness of the subject to occupational medicine.

The book is ambitiously aimed at the needs of students, clinicians in training, and established clinicians who "seek a resource to integrate occupational and environmental medicine into routine clinical practice". In this it does succeed, by presenting a seamless transition from the practice of clinical occupational medicine in the workplace to the application of the same and similar principles to the health effects of physical, chemical, and biological factors in the general environment.

The first section on principles and practice compares and contrasts the knowledge base and the fundamental skills central to good clinical practice. A chapter on communication of risk is especially welcome as this skill is so frequently lacking in commentators on environmental issues. It was also particularly pleasing to see the role of specific susceptibility, as a factor in risk assessment, fully considered. The chapter that deals with legal and regulatory matters is understandably devoted to American legislation, bearing in mind the origins of the book, and so has little relevance to the British reader.

The next section describes the core disciplines of toxicology, epidemiology, and industrial hygiene. As introductions to these topics, the chapters constitute good succinct reviews and should stimulate the interested reader to refer to other dedicated texts. The paucity of references in these chapters was a little disappointing and indeed, this is a criticism of the book in general. Few references are given in the bibliographies at the end of each chapter so that the stimulated reader may be somewhat frustrated.