



KEEPING TABS ON TOXIC SUBSTANCES

In the past 20 years public interest in the effects of workplace and environmental exposures to hazardous chemicals has grown, as a result of intense investigative work on toxicants such as heavy metals, fungi, solvents and pesticides. As people seek greater assurances about the safety of chemicals and demand firmer controls over their use, the Toxicology Unit of the NSW Health Department is fulfilling an important and growing monitoring role.

Concern also has been generated by the fact that cancer is induced by some chemicals, by issues being aired in the courts (as in the case of Agent Orange), by media coverage of public health issues and by preventive health educational programs.

The Health Department set up its Environmental Toxicology Unit in 1988. Toxicology, the study of poisons and their effects in living organisms, may be divided into several areas — clinical, forensic, environmental and others. Environmental toxicology is mainly concerned with the acute and chronic toxic effects of domestic, industrial and agricultural chemicals in food, soil, water and air.

The International Agency for Research on Cancer and other authorities have listed suggested and proven carcinogenic substances, and the report of the United States Toxic Substances Strategy Committee to President Carter in May 1980 catalogued a number of other effects of hazardous chemicals on humans. They included birth defects and other reproductive anomalies, kidney and liver damage, neurological and behavioural disorders, lung and chest diseases, acute poisoning and acute and chronic skin disease.

The Commonwealth Standing Committee on Environment and Conservation presented its second report on the Inquiry into Hazardous Chemicals (Australian Government Publishing Service) in 1982. The purpose of the inquiry was to examine legislative and administrative mechanisms and make recommendations to ensure that all chemicals are properly assessed, hazards made known and appropriate regulatory controls implemented (the first report dealt with the storage, transport and disposal of hazardous chemical wastes).

In 1990 the NSW Government instigated its own inquiry into the manufacture, transport, storage and disposal of chemicals as a result of the Diversey factory fire at Seven Hills, Sydney, in December 1989. Its scope was extended after the Boral Ltd LPG depot explosion and fire at St Peters, Sydney, in April 1990.

Continued on page 18 ►

Contents

Articles

- 17 *Keeping Tabs on Toxic Substances*
-
- 20 *Records to Make Aboriginality Count*
-
- 21 *Unintentional Poisoning in the West*
-
- 22 *Lindane for Head Lice*
-
- 23 *Public Health Abstracts*
-

Infectious Diseases Notifications

News and Comment

- 28 *Vibrio Vulnificus Death*
-
- 28 *March PHU Meeting*
-
- 28 *Cutting Injuries and Costs*
-

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Keeping Tabs on Toxic Substances

► Continued from page 17

Reports from many sources on particular aspects of damage and suspected damage to humans by chemicals continue to be received by the Health Department and other authorities and there have been many expressions of public concern over the use and safety of agricultural, veterinary, manufacturing and household chemicals.

CONTROL OF HAZARDOUS CHEMICALS IN NSW

Legislation is extensive and complicated and involves international bodies, Australian, State and local authorities. Because agricultural, industrial, domestic and other substances of toxic nature can be numbered in the tens of thousands throughout the world, NSW and Australia rely on an established system for the protection of the population for pharmaceuticals and pesticides. Industrial chemicals are now controlled by a new legislative system, the National Chemicals Notification and Assessment Scheme, administered by Worksafe Australia.

The Australian Agricultural and Veterinary Chemicals Act provides national legislation for the evaluation and clearance of agricultural and veterinary chemicals to be registered for particular uses in the States and Territories. The Act establishes an Australian Agricultural and Veterinary Chemicals Council, which co-ordinates the evaluation of chemicals proposed for registration in Australia and grants certificates of clearance for chemicals whose safety and effectiveness have been demonstrated to its satisfaction.

The council evaluates detailed submissions which provide information on formulation, stability, proposed use, efficacy, safety, toxicology (including acute and chronic studies) and residue levels. Many other matters are also reviewed.

Once an agricultural chemical or veterinary drug is cleared by the Australian Agricultural and Veterinary Chemicals Council, it usually is registered automatically in each State and Territory. In NSW this is done under the Agricultural Acts and in some cases under the Poisons Act.

One of the chief objectives of classification in the Poisons Act is to ensure the product is adequately packaged and labelled, including the declaration of the active ingredients and their proportions, the provision of safety directions (to minimise hazard to the user), directions for use (to maximise efficacy and safety) and directions for first aid attention (in case unintentional poisoning occurs).

When new data on toxicity become available for chemicals which have been registered and in use for some time, they are reviewed by the same system. Such data are received from manufacturers, from other organisations and from government sources. The assessment and control of therapeutic drugs is by similar Commonwealth (through the National Health and Medical Research Council)/State procedures.

THE ROLE OF THE NSW HEALTH DEPARTMENT

The legislative involvement of the State's Health Department in the control of hazardous chemicals, with the exception of the Poisons Act and the Therapeutic Goods and Cosmetics Act, is minimal. Nevertheless, the final considerations in many cases of environmental pollution are the effects — present and future — of human exposure. *Other authorities and the public expect that the Health Department should be able to provide both expert information and assistance and that it is equipped to do so.* This was the reason for setting up the Toxicology Unit, with these functions:

- To advise the Department on regulatory procedure for hazardous chemicals.
- To collect world data and assess the hazards likely to arise from exposure to chemicals and other agents.
- Maintain departmental contact and co-ordinate toxicological activities with other agencies such as the NH&MRC, Worksafe Australia, WorkCover Authority, State Pollution Control Commission and Agriculture and Fisheries.
- To support toxicological research and training.
- The establishment of a departmental *pesticides committee* which advises the Deputy Chief Health Officer on pesticides and other agricultural chemicals which may influence human health.
- To initiate investigations and recommend actions necessary to protect the public from harm from hazardous chemicals and other agents.
- To provide expert advice and assistance to Regional Offices of Health, Area Health Services and Public Health Units.

The Toxicology Unit is very small and for information and assistance it uses an existing network. Many people in the network are conversant with their counterparts in the different organisations.

The Unit welcomes requests from PHUs on toxicological matters and has issued guidance notes to help PHUs prepare toxicological profiles of their Areas and Regions. The profiles will assist in anticipating possible accidental discharges and concerns of the public on health-related issues such as contaminated land, incineration, water supplies and residues in food.

David Fox
Toxicology Unit
NSW Health Department

Continued on page 20 ►

WHERE TO GET HELP

Sources from which information can be obtained on toxicology and other chemical matters:

To provide regulatory and technical advice on public health aspects of chemical usage

- Toxicology Unit
Public Health Services
NSW Health Department
Macquarie Hospital, Wicks Road
NORTH RYDE NSW 2113

Director: Dr D Fox
Ph: (02) 887-5600

- Pesticides Committee (Health Department)
Secretary: Mr G Richards
Ph: (02) 887-5605

For assistance and clarification on the Poisons Act, pharmaceuticals and other therapeutic goods

- Duty Pharmacist
Pharmaceutical Services Section
Public Health Services
NSW Health Department
Macquarie Hospital, Wicks Road
NORTH RYDE NSW 2113

Ph: (02) 887-5678

For information on chemical additives and residues in foodstuffs

- Food Inspection Branch
Public Health Services
NSW Health Department
Macquarie Hospital, Wicks Road
NORTH RYDE NSW 2113

Ph: (02) 887-5617

Advice on treatment of poisonings

- Poisons Information Centre
Royal Alexandra Hospital for Children
Pymont Bridge Road
CAMPERDOWN NSW 2050

24-hour telephone service:
(02) 519-0466 hospital
(02) 692-6111 direct
(008) 251 525 toll free — outside Sydney

- Division of Analytical Laboratories
NSW Health Department
Joseph Street
LIDCOMBE NSW 2141

Director: Dr E Crematy
Ph: (02) 646-0222

For information on ionising and non-ionising radiation

- Radiation Services Branch
NSW Health Department
Joseph Street
LIDCOMBE NSW 2141

OIC: Mr A Fleischmann
Ph: (02) 646-0222

For advice on cancer statistics and cancer epidemiology

- Central Cancer Registry
NSW State Cancer Council
Macquarie Hospital
Wicks Road
NORTH RYDE NSW 2113

Ph: (02) 887-5637
(02) 887-5638

For information on environmental matters including air, soil and water standards

- State Pollution Control Commission
Civic Tower
Jacobs Street and Rickard Road
BANKSTOWN NSW 2200

Ph: (02) 793-0000

For information on disposal of toxic and other waste

- Waste Management Authority of NSW
Zenith Centre
821 Pacific Highway
CHATSWOOD NSW 2067

Ph: (02) 412-1388

For details of pesticide registration and usage

- NSW Agriculture and Fisheries
McKell Building
Rawson Place
SYDNEY NSW 2000
Registrar of Agricultural and Veterinary
Chemicals: Mr R Toffolon
Ph: (02) 217-5475

For assistance with occupational hazards and incidents

- WorkCover Authority of NSW
Division of Occupational Health
Joseph Street
LIDCOMBE NSW 2141
Ph: (02) 646-0222
- NSW Fire Brigade
DATACHEM (A computerised information
data bank on hazardous chemicals for use
by Emergency Services)
Ph: (02) 319-7000

Many of these agencies have regional representatives who can assist PHUs.

For after-hours emergency numbers each PHU should have these documents:

1. The Chemical Incident Protocol of the NSW Health Department.
2. The Chemical Incidents Procedures Handbook. State Pollution Control Commission publication.
3. The NSW Multiple Casualty, Emergency and Disaster Medical Response Plan (MEDPLAN).

RECORDS TO MAKE ABORIGINALITY COUNT

Aboriginality is poorly recorded in the three Statewide health data collections in NSW — mortality, hospital inpatient and midwives — that routinely provide the main information on deaths. The major problem, according to Gray and Hogg¹, is under-enumeration. They found that 33 per cent of the 315 deaths of Aboriginal people identified in a study in rural NSW had not been coded as such in official births, deaths and marriages records.

ABORIGINAL MORTALITY DATABASE

The most accurate information about Aboriginal mortality has come from individual studies of specific communities. Recent studies have documented the persistently poor health status of Aboriginal Australians compared to the non-Aboriginal population (for example, Khalidi, 1989²; Gray and Hogg, *ibid.*). Such studies tend to be time-consuming and resource-intensive. They deal with specific (usually geographically) defined populations and relate to deaths over an earlier, rather than current time.

As a result of their 1989 study, Gray and Hogg made several recommendations for improving the data on Aboriginal mortality in NSW. Their report was released as public health was being strengthened in NSW, including the establishment of an Epidemiology Branch within the Health Department which undertook to improve the enumeration of Aboriginal mortality in NSW.

We found that Aboriginal health workers in rural areas of NSW were already using a special form to notify the deaths of Aboriginal people to the Aboriginal Health Unit of the Health Department, thus providing a continuing but under-utilised source of data not readily available elsewhere. Aboriginal health workers at all levels were keen to retain the existing reporting system, with some modifications. The form was revised in consultation with the Aboriginal health workers and now records date of death, age at death, where

the person died, where the person lived, sex, main cause of death, contributing conditions, whether there was an accident or violence involved (the latter three coded by ICD-9).

Copies of the form (minus identity) are forwarded to the Epidemiology Branch and will be used to prepare regular statistical statements on Aboriginal mortality. The new reporting system will cover deaths from October 1, 1990. The objectives of the enhanced reporting system are to improve the enumeration of Aboriginal deaths, provide Aboriginal health workers with a regular statement about deaths in their area and promote the health concerns of Aboriginal people.

In the first instance the collection is unlikely to be complete: it will include only deaths of which the health workers are aware and forms will be returned only from areas where there are State health workers. We anticipate that deaths in urban Aboriginal communities will be under-represented on the register, but we plan to tackle this problem by approaching other Aboriginal health services to participate in the reporting system. Future work will concentrate on other issues central to setting up a death reporting system, including defining denominator populations, validation of death data, and cross-referencing the collection with births, deaths and marriages data.

Judith E. Jones and David Lyle, Epidemiology and Health Services Evaluation Branch, and Liz Williams, Aboriginal Health Unit, NSW Health Department.

We are grateful for the assistance of the Aboriginal Unit, NSW Health Department and the Senior Aboriginal Health Workers throughout New South Wales in revising and implementing the reporting system.

1. GRAY A and HOGG R. Mortality of Aboriginal Australians in Western New South Wales 1984-87. New South Wales Department of Health, Sydney, 1989.
2. KHALIDI NA. Aboriginal mortality in central Australia, 1975-77 to 1985-86: a comparative analysis of levels and trends. The Australian National University, Canberra, 1989.

Keeping Tabs on Toxic Substances

► Continued from page 18

EDITORIAL COMMENT

Assessment and management of the risks posed by community exposures to any of the estimated 65,000 chemicals in industrial and domestic use in Australia is very complex. Comprehensive toxicological information is available for only a minority of the chemicals. Increasingly, the desires of "modern, literate and socially enfranchised communities to take greater control of their own social environment and health"¹ lead to questioning of the assumptions underlying risk assessment and risk

management practices. Toxicology is the fundamental science which informs these debates.

Regulatory toxicology, the branch of this science practised by the Toxicology Unit in the NSW Health Department, will face several critical issues in the coming decade. The role of quantitative risk assessment in the management of environmental health issues and the effectiveness of risk communication are two examples. Also, developments within the public health infrastructure will enable the Unit to participate in *ad hoc* studies in environmental health and in the analysis and interpretation of routinely collected cancer and birth defects data.

1. McMichael T Social Justice and World Health *In Touch* 7:4, pp 3

UNINTENTIONAL POISONING IN THE WEST

One of the goals of the Better Health Commission is 'to increase protection against and reduce exposure to environmental hazards posing a threat to health'. By the year 2000 it is hoped to reduce by 10 per cent deaths and injuries caused at home by hazardous chemicals. With this in mind the Western Sector Public Health Unit decided to review some aspects of unintentional poisonings in its area.

This report summarises the separations in 1988-89 as a result of unintentional poisoning in the Western Sydney Area Health Service (WSAHS) and the Wentworth Area Health Service (WAHS). Poisonings as acts of attempted suicide are not included.

Information was obtained for all separations in the E code categories E850-E858 and E860-869 (International Classification of Diseases, Ninth Edition). The E code allows the classification of environmental events, circumstances and conditions as the cause of injury, poisoning, and other adverse effects.

Unintentional poisoning by drugs, medicinal substances and biologicals (E850-E858) include unintentional overdose of drug, wrong drug given or taken in error, and a drug taken inadvertently. These substances were grouped together for the purposes of analysis.

The E codes 860-869 include unintentional poisoning by other solid and liquid substances, gases and vapours. Appendix 1 lists the relevant E codes.

For each separation, information was obtained on age, sex, place of occurrence, number of bed days and average length of stay. The data were obtained from the Information Services Branch of the NSW Health Department.

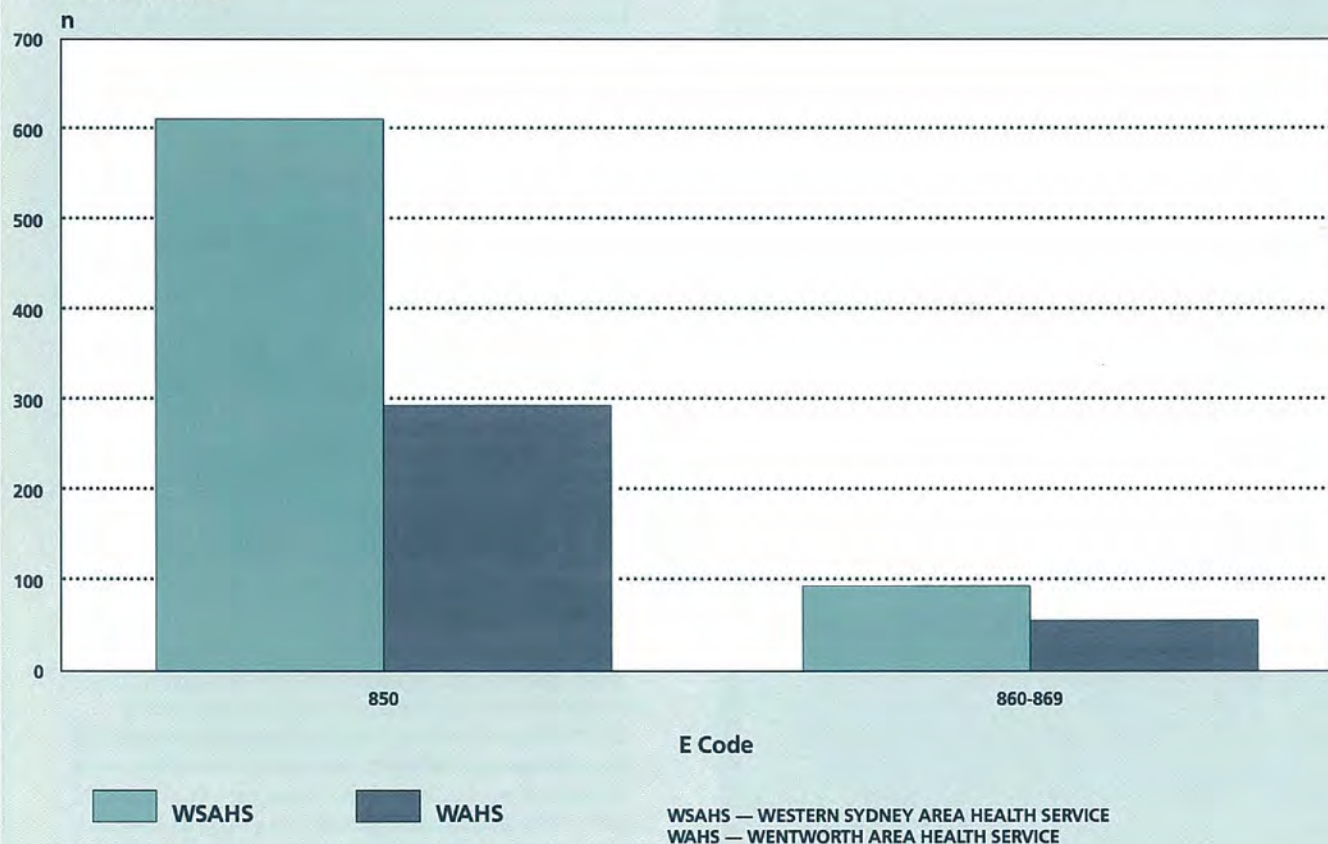
Overall, in WSAHS and WAHS in 1988-89, total separations because of unintentional poisonings accounted for about 7 per cent of all separations due to accidents and injuries (WSAHS: n=711; WAHS: n=347). Separations by E code, age-group, sex and place of occurrence were similar for the two health areas.

Just over 85 per cent of all unintentional poisonings were from drugs and medicinal substances (Figure 1), the majority of which were prescription drugs. Anti-rheumatics, analgesics, antipyretics and the tranquillisers were the most commonly implicated drugs. Other classes of substances were each implicated in only 2-3 per cent, or fewer, of all separations due to unintentional poisoning.

The majority of the poisonings occurred in the 15- to 34-year group, with a smaller peak in the 1- to 4-year

FIGURE 1

UNINTENTIONAL POISONING 1988/89
SEPARATION BY E CODE



Continued on page 22 ►

LINDANE FOR HEAD LICE

Unintentional Poisoning in the west

► Continued from page 21

APPENDIX 1

CATEGORIES OF E CODES

| | |
|-----------|--|
| 8500-8589 | Unintentional poisoning by drugs, medicinal substances and biologicals |
| 8600-8609 | Unintentional poisoning by alcohol, not elsewhere classified |
| 8610-8619 | Unintentional poisoning by cleansing and polishing agents, disinfectants, paints and varnishes |
| 8620-8629 | Unintentional poisoning by petroleum products, other solvents and their vapours, not elsewhere classified |
| 8630-8639 | Unintentional poisoning by agricultural and horticultural chemical and pharmaceutical preparations other than plant food and fertilizers |
| 8640-8644 | Unintentional poisoning by corrosives and caustics, not elsewhere classified |
| 8650-8659 | Unintentional poisoning from foodstuffs and poisonous plants |
| 8660-8669 | Unintentional poisoning by other and unspecified solid and liquid substances |
| 867 | Unintentional poisoning by gas distributed by pipeline |
| 8680-8689 | Unintentional poisoning by other utility gas and other carbon monoxide |
| 8690-8699 | Unintentional poisoning by other gas and vapours |

group. There were more females than males (females: 57 per cent; males: 43 per cent), and females outnumbered males in most of the age groups except for children aged 9 and less.

In WSAHS, 52 per cent of the unintentional poisonings occurred in the home while it was 47 per cent in WAHS. In a fairly large proportion of cases the place of occurrence was not specified (WSAHS: 26 per cent; WAHS: 47 per cent).

The average length of stay generally increased with age. In WSAHS, males had longer average stays than females (males: 2.9 days; females: 2.5 days). It was the opposite in WAHS (females: 2.6 days; males: 1.5 days).

From the data reviewed it appears the emphasis on the prevention of unintentional poisoning should be directed toward the area of drugs and medicinal substances. Since the majority of poisonings occur at home, it would also be important to take this into account when planning prevention strategies.

It is intriguing that in both the health areas, the 15- to 24- and the 25- to 34-year groups have the highest number of separations due to drugs and medicinal substances. This is due to coding practices whereby some non-unintentional poisonings, such as attempted suicides, are coded as unintentional if certain criteria are met.

In both the health areas, separations due to accidental poisoning rank fifth in terms of total separations for all external causes (6-7 per cent). The vast majority of the unintentional poisonings are by drugs and medicinal substances, and in the most part occur in the home.

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Use of gamma benzene hexachloride (Lindane) for the treatment of head lice has been under discussion, but the director of the NSW Health Department's Toxicology Unit, Dr David Fox, has given an assurance that if used as intended the preparation is safe. He has sent this letter to all health areas and regions:

"The use of gamma benzene hexachloride (Lindane) for the treatment of head lice has been questioned.

The two main preparations used for this purpose have been Quellada and Lorexane and both are listed in Schedule 2 of the Poisons Act. This limits the concentration of Lindane to 2 per cent or less and its sale for the treatment of head lice is restricted to pharmacists and medical practitioners. It may also be sold by Poisons Licence holders, namely retail stores at least 20km from the nearest pharmacy.

Preparations of greater strength are Schedule 4 items, available only on doctor's prescription.

Quellada contains 1 per cent Lindane and Lorexane 0.2 per cent. For each preparation the recommended dose is 25ml per treatment. Repeat treatment in eight days is recommended for Lorexane. A second application of Quellada is said to be seldom required.

The use of Lindane was discussed recently at the Drugs and Poisons Scheduling Committee of the National Health and Medical Research Council (NH&MRC), which recommended retention of Lindane in Schedule 2.

A recent communication from the NH&MRC stated that absorption of Lindane through human skin is reported to be a maximum of 9.3 per cent of the applied dose and that there is little danger of accumulation as it has properties dissimilar to some other persistent organochlorines.

The NH&MRC also informs that published information on animal studies shows that Lindane is extensively metabolised and rapidly excreted. Even when fed continuously it does not significantly accumulate in the body.

It was also indicated that most purchasers of head lice products seek advice from pharmacists who do not recommend prophylactic use.

Most therapeutic agents have the potential to cause adverse effects if abused, and misuse is difficult to regulate. Lindane is no exception, but used as intended for head lice, it is safe."

BCG VACCINATION NOT COST-EFFECTIVE

For 40 years one of the main planks of the public health strategy against tuberculosis in many countries has been BCG vaccination for tuberculin negative schoolchildren. The risk of infection from tuberculosis now depends more on higher living standards and effective treatment rather than on vaccination. Evidence from a number of countries where routine BCG vaccination has been stopped strongly support the view that routine vaccination is no longer cost-effective and can be stopped. (Routine BCG is not carried out in most parts of Australia at the present time. This evidence confirms the correctness of that decision — reviewer.)

Conway SP, BCG vaccination in children, *British Med J* 1990, 301, 1059-1060.

SOCIO-ECONOMIC CONDITIONS IN CHILDHOOD

Low socio-economic status is associated with increased risk for many health outcomes, including ischaemic heart disease. The reasons for these associations are not fully understood. A Finnish-based study has demonstrated that low socio-economic status in childhood is associated with a higher prevalence of ischaemic heart disease in middle age. Levels of risk factors measured at middle age did not account for this association. Although there is no hard evidence, it does appear that lifestyle factors in childhood predispose people to adult ischaemic heart disease.

Caplan GA and Salonen JT, Socio-economic conditions in childhood and ischaemic heart disease during middle age, *British Med J* 1990, 301, 1121-1123.

CAFFEINE INCREASES RISK OF HIP FRACTURE

Caffeine increases urinary calcium output and has been implicated as a risk factor for osteoporosis. As part of the famous Framingham study, a large number of individuals were followed up with respect to caffeine intake (either as coffee or tea) and risk of fracture. Overall the intake of greater than two cups of coffee a day or four cups of tea increased the risk of hip fracture. There was no increase in risk with the intake equivalent of one cup of coffee a day.

Since caffeine use may be associated with other behaviours that are risk factors for fracture, the association may be an indirect one. Accordingly, no policy guidelines should be developed from this preliminary study.

Kiel DP, Felson DT, Hannan MT, et al, Caffeine and the risk of hip fracture: The Framingham Study, *American Journal of Epidemiology* 1990, 132, 4, 675-684.

PHYSICAL ACTIVITY HELPS

Evidence for an independent role of increased physical activity in the primary prevention of coronary heart disease has grown in recent years. A review of all the published studies conducted over many years has shown that the relative risk of death from coronary heart

disease was 1.9 for sedentary compared with active occupations. The methodologically stronger studies tended to show a larger benefit of physical activity than less well designed studies.

Berlin JA and Colditz GA, A Meta-analysis of physical activity in the prevention of coronary heart disease, *American Journal of Epidemiology* 1990, 132, 4, 612-628.

X-RAY MAMMOGRAPHY-POSITIVE RESULTS

First results are available from a pilot x-ray mammography screening project has been conducted in the Central Sydney Area since 1987. The overall detection rate was seven cancers per 1000 women screened. Sixty per cent of the cancers were impalpable to the examining surgeon. These results compare well with those of the major European screening studies which have concluded that such screening programs can reduce mortality from breast cancer by about 30 per cent.

Rickard MT, Lee W, Read JW, et al, Breast cancer diagnosis by screening mammography: early results of the Central Sydney Area Health Service Breast X-ray programme, *Med J Aust* 1991, 154, 126-131.

TUBERCULOSIS STILL A PROBLEM IN AUSTRALIA

In 1986 290 new cases of tuberculosis were notified in NSW. The majority of these patients had pulmonary disease. The highest rates of infection were in people migrating from South-East Asian countries. While the current rate of 5.2 cases per 100,000 of the population is substantially less than the 57 per 100,000 in 1948, tuberculosis remains an important and serious condition in our community.

Plant AJ, Rushworth RL, Wang Q and Thomas M, Tuberculosis in NSW, *Med J Aust* 1991, 154, 86-89.

CHILD SEXUAL ABUSE

There is a huge gap in what people of good intent are talking about when they try to plan a system to protect sexually abused children. At one extreme is the child victim of a stranger. At the other is incest. The two are completely different. In the case of the stranger there is no dispute, the offender is at fault and must be caught.

With incest, the most appropriate program appears to be those along the lines adopted in Santa Clara in California. The aim is to stop the offence from continuing in the immediate future and to stop the addiction of the offender. This is done by rapid pre-trial diversion of the offender into a program. The diversion permits the offender to confess without going to prison, allows speed so the abuse is stopped immediately because the offender leaves the home. The child does not leave.

This Santa Clara program for father/daughter incest has produced a 90 per cent confession rate, has had 20 years of trial, has spread from Santa Clara to more than 150 centres and is now the recommended approach for Australia.

Gurry DL, Child sexual abuse, *Med J Aust* 1991, 154, 9-11.

Continued on page 24 ►

Public Health Abstracts

► Continued from page 23

HOW MEN CAN LIVE LONGER

Sports demanding prolonged vigorous physical exercise are increasingly popular. Cities all over the world take pride in organising marathons every year and millions of people exert themselves to participate in these events. A major study in Holland has compared the long-term survival of a group of athletes who were capable of participating in major ice-skating tours. They have shown that men who remain capable over many years of participating in such races have a substantially lower risk of early death. It is of interest that if the exercise is recreational it is a particular indicator of longevity.

Van Saase JLCM, Noteboom WMP and Vandenbroucke JP, Longevity of men capable of prolonged vigorous physical exercise: a 32-year follow-up of 2259 participants in the Dutch eleven cities ice-skating tour, *British Med J* 1990, 301, 22-29.

ANIMAL FAT DIET AND COLON CANCER

Nutritional factors have been strongly suspected of being important as causes of colon cancer. In western countries the rates of the disease are up to 10 times those of many eastern and developing nations. A large prospective study conducted among more than 88,000 middle-aged US women has shown that an intake of animal fat is positively associated with the risk of colon cancer. A low intake of fibre from fruits appears to contribute to the risk of colon cancer.

This study provides evidence for the hypothesis that a high intake of animal fat increases the risk of colon cancer and supports existing recommendations to substitute fish and chicken for meats high in fat.

Willett WC, Stampfer MJ, Colditz GA, et al, Relation of meat, fat and fibre intake to the risk of colon cancer in a prospective study among women, *New England J Med* 1990, 323, 1664-1672.

TANNING WITH ULTRAVIOLET SUNBEDS SHOULD BE DISCOURAGED

A review of the studies conducted on this issue has strongly suggested that such exposure may be harmful. The problems include increased skin fragility and blistering and a slight increase in the risk of inducing melanoma. Accordingly, their use should be discouraged and there are several groups which should not use them at all: children, people who burn easily and do not tan, and those with a history of skin cancer.

Diffey BL, Tanning with ultraviolet A sunbeds, *British Med J* 1990, 301, 773.

GENERAL PRACTITIONERS AND FIRST NAMES

For many years the way the doctors have addressed their patients has been a topic of discussion. A formal British study has shown that most patients liked or did not mind being called by their first names. A minority disliked it. Most of this group were aged over 65 years. Most patients did not want to call the doctor by his or her first name.

McKinstry B, Should general practitioners call patients by their first names?, *British Med J* 1990, 301, 795-796.

WEIGHT CONTROL SUCCESS

A new paper in the *Community Health Studies* describes the successful experience on the North Coast of NSW in the recruitment, training and supervision of community educators for weight control programs. The programs appear to be effective and they also provide sound satisfaction for the group leaders. (Similar widespread experiences exist in Sydney with the weight control programs conducted in a similar fashion. These were established by Norma Dembecki in the early 1970s and preceded the now familiar commercial programs — editor.)

James R, van Beurden E, Steiner C, Tyler C and Fardon K, The Role of Community Educators in Achieving Australian Health Goals: a Public Health Approach to Weight Control on the North Coast, NSW, *Community Health Studies* 1990, XIV, 2, 146-152.

SEVERE MEASLES AND VITAMIN A

Measles remains a devastating disease for which specific therapy is lacking. Hopes for its control rest on immunisation, but measles kills about two million children each year and cripples an untold number through blindness and lung disease. The disease is most devastating in developing countries where children have poor nutritional levels.

The idea that vitamin A may have a protective effect in measles was suggested more than 50 years ago but recent trials have confirmed its value. That vitamin A should be of benefit in measles is biologically plausible because measles depresses serum levels of vitamin A and vitamin A is known as an anti-infective vitamin, a conclusion based on many studies.

A new randomised double blind trial in South Africa has shown that treatment with vitamin A reduces morbidity and mortality in measles and a recommendation has been made that all children with severe measles should be given vitamin A supplements whether or not they are thought to have a nutritional deficiency.

Hussey GD and Klein M, A Randomised Controlled Trial of Vitamin A in Children with Severe Measles, *N Eng J Med* 1990, 323, 3, 160-164.

STRESS IN WOMEN JUNIOR HOUSE OFFICERS

A British study has shown that while both male and female junior house officers may be stressed, there are particular problems for the women. Overwork was perceived as creating the most difficulty followed by effects on personal life, serious failures of treatment and talking to distressed relatives. Six sex-related sources of stress were conflicts between career and personal life (this was the major problem), and to a much lesser degree sexual harassment at work, lack of female role models and prejudice from some patients.

The author has recommended that as 50 per cent of medical graduates are female, substantial changes need to be made in the career paths of women doctors.

Firth-Cozens J, Sources of Stress in Women Junior House Officers, *Brit Med J* 1990, 301, 89-91.

Continued on page 25 ►

Public Health Abstracts

► Continued from page 24

FAMILY HISTORY REQUIRES EARLY SURVEILLANCE

Several new studies from the United States have shown that some forms of breast cancer are familial. Where the onset of breast cancer occurs at a young age the risk in relatives is substantially increased. Accordingly, for such individuals an intensive surveillance program is required which includes an annual breast examination by a physician and at age 25 they should begin annual mammographic screening.

Lynch HT and Watson P, Early Age at Breast Cancer Onset—a Genetic and Oncologic Perspective, *Am J Epidemiology* 1990, 131, 6, 984-986.

SEVERE HEAT STROKE IN AN EXPERIENCED ATHLETE

In spite of many warnings severe environmental heat injury continues to occur. In early 1988 a 28-year-old athlete ran in an Australian 'fun run' when the temperature was 31 degrees and humidity 40 per cent. (These are both relatively high.) He led the race until 0.5km from the finish when he collapsed. He suffered extreme heat stroke with severe damage to many body systems including the nervous system. Muscle breakdown meant he required a hind-quarter amputation of one leg. After five months in intensive care he slowly recovered and was able to return to work.

This distressing example again indicates the need for athletes to be thoroughly acclimatised, to run in the cool time of the day or year and for officials to force athletes suspected of having heat stroke to stop for immediate treatment.

Lee RP, Bishop GF and Ashton CM, Severe Heat Stroke in an Experienced Athlete, *Med J Aust* 1990, 153, 100-104.

COLORECTAL CANCER — WE ARE NOT READY FOR MASS SCREENING

The epidemiology of colorectal cancer appears to favour screening. But a review of the costs, practicality and dangers of screening programs has demonstrated that despite increasing interest, such a program is not appropriate at present. Australia should await the results of major overseas trials which will become available in three to five years before proceeding with mass screening.

Woodward A and Weller D, Colorectal Cancer: Implications of Mass Screening for Public Health, *Med J Aust* 1990, 153, 81-88.

FEWER SPERM IN SUMMER

Demographers have repeatedly noted reductions in the birth rate during spring in non-equatorial regions with warm climates. An American-based study has shown that semen quality deteriorates during the summer. This phenomenon may account, at least in part, for the reduction in the birth rate during spring in regions with warm climates. The reason for this is not the heat of the summer. Other factors may include increased exposure to light during the summer. This is similar to several

other animal species. These studies are relevant to the need to increase fertility in men with fertility problems.

Levine RJ, Mathew RM, Chenault CB, et al, Differences in the Quality of Semen in Outdoor Workers During Summer and Winter, *N Eng J Med* 1990, 323, 12-16.

FLUORIDATION — DOWN BUT NOT OUT

In recent years studies have challenged a long-standing belief that fluoridation is responsible for large reductions in dental decay in the past three decades. The latest review is by John Colquhoun from New Zealand. He challenges the methodology of Dean's work in the United States, which formed the basis for the widespread introduction of fluoride to water supplies in many countries. He also refers to the range of papers by Diesendorf, a Canberra-based researcher who has long challenged the value of fluoridation.

Colquhoun J, Flawed Foundation: A Re-examination of the Scientific Basis for a Dental Benefit from Fluoridation, *Community Health Studies* 1990, XIV, 3, 288-296.

PESTICIDES IN BREAST MILK

Pesticides have been widely used in agriculture to enhance food production, and pesticide residues are found in most human breast milk samples taken in industrial countries. A new survey from Victoria has confirmed this, but has also shown there has been a decline in the content of pesticides in human breast milk in the past 15 years with the important exception of dieldrin which has remained low, but similar since 1970-71.

Although there is no difficulty in agreeing that exposure to high levels of pesticides can cause acute toxicities and even death, their effect at low levels is unclear. Doll and Peto, in their authoritative book *The Causes of Cancer*, examined the causes of all cancers and concluded that the occurrence of pesticides as dietary pollutants seems unimportant.

But the matter needs to be kept under review, particularly with the introduction of new pesticides on a regular basis.

Monheit BM and Luke BG, Pesticides in Breast Milk — a Public Health perspective, *Community Health Studies* 1990, XIV, 3, 269-273.

COFFEE, CAFFEINE AND CARDIO-VASCULAR DISEASE IN MEN

For many years an association has been suspected between coffee drinking and cardio-vascular disease, but studies have been inconsistent. It is known that coffee may raise serum cholesterol levels, although this effect is probably influenced by the brewing method. In a large American trial involving more than 45,000 men, it has been shown that coffee and caffeine consumption does not increase the risk of coronary heart disease or stroke. (This is not in accord with a recent Scandinavian study which has shown that boiled coffee does raise the blood serum cholesterol levels, probably because boiled coffee leeches out the lipids from the coffee beans — editor.)

Grobbee DE, Rimm EB, Giovannucci E, et al, Coffee, Caffeine and Cardio-Vascular Disease in Men, *N Eng J Med* 1990, 323, 1026-1032.

INFECTIOUS DISEASES

- The tabulations of notified diseases have been altered slightly in three respects — (i) Central Sydney and Southern Sydney are now listed consecutively, (ii) interstate (I/S) and overseas (O/S) are combined as "OTH", and (iii) Mycobacterial disease (Not Otherwise Stated) appears instead of tuberculosis as this entry relates to presumptive diagnoses of tuberculosis which contain a proportion of atypical mycobacteria. Leprosy continues to be listed separately.
- The lower number of notifications for Mycobacterial disease (NOS) in 1991 compared to 1990 is due to delays in receipt of notifications. Updated figures are available from Epidemiology and Health Services Evaluation Branch. This branch is undertaking several measures to improve the notification of Mycobacterial disease.
- The increased testing for hepatitis C is the most likely reason for the apparent increase in notifications for this condition. All notifications came from laboratories. Epidemiology and Health Services Evaluation Branch is producing a statewide strategy for hepatitis C. (Also refer to PHB 1990;1:39-40.)
- Measles cases have been reported from four Public Health Units. The Hunter AHS still reports cases — for the seventh consecutive month.
- We report the third case of tetanus since December, 1990. As in the two previous notifications, the case was of an elderly person — an unimmunised 72-year-old female. The source of infection is not known. Advice from our previous reports must be restated: ten-yearly immunisation against tetanus and diphtheria should be routine; where primary immunisation has not been undertaken, it should be begun.
- Ross River Virus notifications are rising seasonally — notifications have been received from four Regional PHUs. Orana and Far West reported RRV at a rate of 3.6/100000/month, and New England reported it at a rate of 3.7/100000/month.

TABLE 1

INFECTIOUS DISEASE NOTIFICATIONS, NSW To end of February, 1991

| CONDITION | Number of Cases Notified | | | | | |
|-----------------------------|--------------------------|--------------|------------|--------------|--------------|------------|
| | Period | | | Cumulative | | |
| | January 1990 | January 1991 | Feb. 1991* | January 1990 | January 1991 | Feb. 1991* |
| AIDS | 35 | 11 | N/A | 35 | 11 | N/A |
| Amoebiasis | - | - | - | - | - | - |
| Ancylostomiasis | - | - | - | - | - | - |
| Anthrax | - | - | - | - | - | - |
| Arboviral infection (NOS) | 1 | - | - | 1 | - | - |
| Brucellosis | - | - | - | - | - | - |
| Campylobacter infection | 192 | 116 | 48 | 192 | 116 | 48 |
| Chancroid | - | - | - | - | - | - |
| Chlamydia infection (NOS) | 57 | 36 | 3 | 57 | 36 | 3 |
| Cholera | - | - | - | - | - | - |
| Congenital rubella syndrome | - | - | - | - | - | - |
| Diphtheria | - | - | - | - | - | - |
| Donovanosis | - | - | - | - | - | - |
| Encephalitis (NOS) | - | - | - | - | - | - |
| Food poisoning (NOS) | - | - | - | - | - | - |
| Genital herpes | 88 | 59 | 2 | 88 | 59 | 2 |
| Giardiasis | 51 | 39 | 5 | 51 | 39 | 5 |
| Gonococcal ophthalmia neo. | - | - | - | - | - | - |
| Gonorrhoea | 49 | 13 | 1 | 49 | 13 | 1 |
| Hepatitis A | 3 | 6 | 1 | 3 | 6 | 1 |
| Hepatitis B | 40 | 61 | 15 | 40 | 61 | 15 |
| Hepatitis C | 2 | 15 | - | 2 | 15 | - |
| Hepatitis unspecified | 2 | - | - | 2 | - | - |
| HIV | 137 | 85 | N/A | 137 | 85 | N/A |
| Hydatid disease | - | - | - | - | - | - |
| Infantile diarrhoea (NOS) | 10 | 6 | 1 | 10 | 6 | 1 |
| Legionnaires' disease | 9 | 1 | - | 9 | 1 | - |
| Leprosy | - | - | - | - | - | - |
| Leptospirosis | 5 | 1 | - | 5 | 1 | - |
| Lymphogranuloma venereum | - | - | - | - | - | - |
| Malaria | 20 | 3 | - | 20 | 3 | - |
| Measles | 5 | 18 | 4 | 5 | 18 | 4 |
| Meningococcal infection | 4 | 5 | - | 4 | 5 | - |
| Mycobacterial disease (NOS) | 68 | 2 | - | 68 | 2 | - |
| Non specific urethritis | 140 | 97 | 1 | 140 | 97 | 1 |
| Ornithosis | - | - | - | - | - | - |
| Pertussis | 50 | 4 | - | 50 | 4 | - |
| Plague | - | - | - | - | - | - |
| Poliomyelitis | - | - | - | - | - | - |
| Q fever | 12 | 2 | 1 | 12 | 2 | 1 |
| Rabies | - | - | - | - | - | - |
| Ross River fever | 10 | 25 | 5 | 10 | 25 | 5 |
| Salmonella infection | 174 | 166 | 55 | 174 | 166 | 55 |
| Shigella infection | 23 | 13 | 3 | 23 | 13 | 3 |
| Syphilis | 19 | 8 | 4 | 19 | 8 | 4 |
| Tetanus | - | 1 | - | - | 1 | - |
| Trachoma | - | - | - | - | - | - |
| Typhoid & paratyphoid | 2 | 1 | 3 | 2 | 1 | 3 |
| Typhus | - | - | - | - | - | - |
| Vibrio infection (NOS) | 1 | 2 | 1 | 1 | 2 | 1 |
| Viral haemorrhagic fevers | - | - | - | - | - | - |
| Yellow fever | - | - | - | - | - | - |
| Yersinia infection | 16 | 18 | 5 | 16 | 18 | 5 |

* Preliminary data only

TABLE 2

**INFECTIOUS DISEASE NOTIFICATIONS,
BY HEALTH AREA & REGION
For January, 1991**

| CONDITION | CSA | SSA | ESA | SWS | WSA | WEN | NSA | CCA | ILL | HUN | NCR | NER | OFR | CWR | SWR | SER | OTH | U/K | TOTAL |
|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| AIDS | 1 | - | 5 | - | 2 | 1 | 1 | - | - | - | - | - | - | - | - | - | - | 1 | 11 |
| Campylobacter inf. | 3 | 13 | 1 | 22 | 6 | 24 | 7 | 1 | 2 | 1 | 14 | 11 | 1 | 3 | - | - | 7 | 1 | 116 |
| Chlamydia inf. | 1 | - | 21 | - | - | - | 1 | - | - | - | 11 | 2 | - | - | - | - | - | - | 36 |
| Cytomegalovirus | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| Genital herpes | 9 | 2 | 34 | - | 2 | 2 | - | - | - | - | 7 | 3 | - | - | - | - | - | - | 59 |
| Giardiasis | - | 4 | - | 2 | 2 | 2 | 1 | - | - | 5 | 22 | 1 | - | - | - | - | - | - | 39 |
| Gonorrhoea | - | 1 | 9 | - | - | - | - | - | - | - | 1 | - | 2 | - | - | - | - | - | 13 |
| Hepatitis A | 2 | - | - | 1 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | 6 |
| Hepatitis B | 27 | 3 | 4 | 1 | 6 | 2 | 4 | - | 1 | 4 | 3 | 2 | 1 | - | - | 2 | 1 | - | 61 |
| Hepatitis C | 12 | 1 | - | 1 | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | 15 |
| HIV | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 85 | 85 |
| Infantile diarr. (NOS) | 2 | - | 1 | - | - | - | - | - | - | - | 3 | - | - | - | - | - | - | - | 1 |
| Legionnaires' disease | - | - | - | - | - | 1 | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| Leptospirosis | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 |
| Malaria | - | - | - | - | 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | 18 |
| Measles | - | - | - | - | - | 1 | - | - | - | 11 | 5 | - | - | - | - | 1 | - | - | 5 |
| Meningococcal inf. | - | 1 | - | - | - | - | - | - | - | 1 | 2 | - | - | - | - | 1 | - | - | 97 |
| Nonspecific urethritis | - | - | 96 | 1 | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | 4 |
| Pertussis | - | - | - | 1 | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| Q Fever | - | - | - | - | - | - | - | - | - | - | 2 | 9 | 5 | - | 4 | - | 5 | - | 25 |
| Ross River virus | - | - | - | - | - | - | - | - | - | - | 2 | 9 | 5 | - | 4 | - | 5 | - | 25 |
| Salmonella inf. | 11 | 18 | 5 | 23 | 19 | 11 | 13 | 1 | 6 | 8 | 19 | 6 | 6 | 4 | 2 | 6 | 5 | 3 | 166 |
| Shigella inf. | 1 | - | 3 | - | - | 1 | - | - | 1 | - | 3 | 4 | - | - | - | - | - | - | 13 |
| Syphilis | - | - | 7 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | 8 |
| Tetanus | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | 1 |
| Mycobacterial disease (NOS) | - | 1 | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 |
| Typhoid & paratyphoid | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | 1 |
| Vibrio Parahaemolyticus | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Vibrio SPP | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | 1 |
| Yersinia inf. | 2 | 5 | - | - | 3 | 2 | 2 | - | - | - | 1 | 1 | - | 1 | - | - | 1 | - | 18 |

Abbreviations used in this Bulletin:

CSA Central Sydney Health Area, SSA Southern Sydney Health Area, ESA Eastern Sydney Health Area, SWS South Western Sydney Health Area, WSA Western Sydney Health Area, WEN Wentworth Health Area, NSA Northern Sydney Health Area, CCA Central Coast Health Area, ILL Illawarra Health Area, HUN Hunter Health Area, NCR North Coast Health Region, NER New England Health Region, OFR Orana & Far West Health Region, CWR Central West Health Region, SWR South West Health Region, SER South East Health Region, OTH Interstate/Overseas, U/K Unknown, NOS Not Otherwise Stated

Please note that the data contained in this Bulletin are provisional and subject to change because of late reports or changes in case classification. Data are tabulated where possible by area of residence and by the disease onset date and not simply the date of notification or receipt of such notification.

TABLE 3

**INFECTIOUS DISEASE NOTIFICATIONS*,
BY HEALTH AREA & REGION, NSW
January, 1991**

| HEALTH AREA/REGION | DOCTOR NOTIFICATIONS | RATE** PER 100,000 | LABORATORY NOTIFICATIONS | RATE** PER 100,000 | TOTAL NOTIFICATIONS | RATE** PER 100,000 |
|---------------------------|----------------------|--------------------|--------------------------|--------------------|---------------------|--------------------|
| Central Sydney Area | 1 | 0.3 | 65 | 19.5 | 66 | 19.8 |
| Southern Sydney Area | 8 | 1.5 | 41 | 7.8 | 49 | 9.3 |
| Eastern Sydney Area | 8 | 2.5 | 178 | 55.1 | 186 | 57.5 |
| South Western Sydney Area | 8 | 1.3 | 43 | 7.0 | 51 | 8.3 |
| Western Sydney Area | 4 | 0.7 | 41 | 7.0 | 45 | 7.6 |
| Wentworth Area | 9 | 3.4 | 38 | 14.2 | 47 | 17.6 |
| Northern Sydney Area | 5 | 0.7 | 28 | 3.9 | 33 | 4.5 |
| Central Coast Area | 0 | 0.0 | 2 | 0.9 | 2 | 0.9 |
| Illawarra Region | 1 | 0.3 | 10 | 3.4 | 11 | 3.7 |
| Hunter Region | 13 | 2.7 | 15 | 3.1 | 28 | 5.9 |
| North Coast Region | 25 | 7.3 | 75 | 22.0 | 100 | 29.3 |
| New England Region | 1 | 0.4 | 38 | 15.4 | 39 | 15.9 |
| Orana & Far West | 6 | 4.3 | 9 | 6.5 | 15 | 10.8 |
| Central West Region | 0 | 0.0 | 8 | 4.9 | 8 | 4.9 |
| South West Region | 1 | 0.4 | 5 | 2.0 | 6 | 2.4 |
| South East Region | 8 | 4.2 | 3 | 1.6 | 11 | 5.8 |
| Unknown | 0 | 0.0 | 86 | 1.5 | 98 | 1.7 |
| Total† | 98 | 1.7 | 685 | 12.0 | 795 | 13.9 |

†Notifications on interstate and overseas residents visiting NSW accounted for an additional 20 cases
**Rate per 100,000 population

NEWS AND COMMENT

VIBRIO VULNIFICUS DEATH

A 60-year-old man died on February 4 from septic shock after he lacerated his leg while collecting oysters. A full report on the case will be published in a future Public Health Bulletin. Health Department pamphlets on vibrio vulnificus are available from Public Health Units.

MARCH PHU MEETING

The March 7 Public Health Unit meeting in the level 10 conference room of the Health Department at North Sydney heard reports from the sub-committees on infectious disease and environmental health. Details will be published in the next Bulletin. After a morning meeting of Unit directors there was a general meeting at which a new sub-committee on reproductive health was formed.

CUTTING INJURIES — AND COSTS

A Sydney seminar on March 13 heard how hospitals and health care organisations in NSW could reduce workplace injuries and make immediate workers compensation savings by initiating better health management of their employees.

The seminar — Australia's health industry: reducing injuries, reducing costs — provided guidelines and case studies on how to protect health workers from hazards arising from sharp instruments, back injuries, stress, dangerous substances, shiftwork and assault. It pointed out that tackling occupational health and safety problems faced by health workers was urgent as public health care organisations faced greater requirements for accountability and private organisations grappled with the pressures of recession.

NSW Health Minister Peter Collins opened the seminar, which was organised by Sydney Hospital Occupational Health and Safety Service and Newsletter Information Services. Chief executive of the National Association of Nursing Homes and Private Hospitals, Kerry Jones, gave the keynote address on how to cost OH&S programs to ensure the best value for time and money spent.

This article has been extracted from Lancet in response to a request from the Infectious Diseases Special Interest Group.

The High Court in England has suggested that pertussis vaccine actually *protects* against encephalopathy — in contrast to earlier estimates that the vaccine is implicated in brain damage in 1 in 310,000 immunisations. The National Childhood Encephalopathy Study (UK 1981) was reanalysed in the light of various selection biases within that study and that the previously held results refer to an interim report.

The Canadian immunisation guide has been changed to read: "Although there may be an increased risk of acute, severe neurological illness (including encephalopathy) occurring within 72 hours of the administration of pertussis vaccine to previously healthy infants, the majority of such illnesses observed in the National Childhood Encephalopathy Study were prolonged or complex convulsions. **All such children were normal on follow-up 12-18 months later.**"

PUBLIC HEALTH EDITORIAL STAFF

The Bulletin's editorial advisory panel is as follows:

Dr Sue Morey, Chief Health Officer, Department of Health; Professor Stephen Leeder, Professor of Community Medicine, University of Sydney; Professor Geoffrey Berry, Professor of Epidemiology & Biostatistics, University of Sydney; Dr Robert Reznik, Acting Director, Department of Community Medicine, Royal Prince Alfred Hospital; Professor Ian Webster, Professor of Community Medicine, University of NSW; Dr Christine Bennett, Acting Associate Director, Service Development, Department of Health; Dr Michael Frommer, Epidemiologist, Epidemiology & Health Services Evaluation Branch; Ms Jane Hall, Research Officer, Department of Community Medicine, Westmead Hospital; and Mr Michael Ward, Manager, Health Promotions Unit, Department of Health.

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Suggestions for improving the reporting of infectious diseases are most welcome.