



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.

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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
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NSW Health Department

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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.

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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