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New research links Agent Orange with cancers

John Newell

THE DEFOLIANT Agent Orange could be the major cause of cancer among veterans of the Vietnam war. This is the conclusion of a study by the Massachusetts Department of Health, published last week. The study contradicts three earlier studies which had found no increase in cancers among Vietnam veterans.

Last week's announcement follows a separate investigation in New Zealand which linked the two herbicides in Agent Orange with cancer of the small bowel in sheep. This study clears dioxin, a common contaminant of Agent Orange, of causing the cancers. The main constituents of Agent Orange are the herbicides 2,4,5-trichlorophenoxyacetic acid and 2,4-dichlorophenoxyacetic acid. The results from New Zealand point to the herbicides and not the contaminants as being carcinogenic.

The researchers from Massachusetts analysed the death certificates of 800 Vietnam veterans. They compared the cause of death with a similar control sample of 2500 servicemen, all of whom had been in the armed forces, but had not served in Vietnam.

Nine of the Vietnam veterans had died of tumours in the muscles, fat or other soft tissue, compared with an expected death rate of 1·9. Although the numbers of cancer deaths are small, the probability of such a result occurring by chance is one in 10 000.

John Constable, of the Massachusetts General Hospital, said: "The study is significant because it compares veterans who were in Vietnam with those who were not. In this case there was not much difference between the two groups except that they were exposed to defoliants."

New Zealand has the world's highest incidence of cancer of the large-bowel among humans, but there is considerable variations across the country. In 1977, a conference on large-bowel cancer was told that similar variations existed in cancer of the small bowel among sheep. The small bowel in sheep performs much the same function as the large bowel in humans. It absorbs large volumes of liquid, which makes it vulnerable to dissolved carcinogens.

A research programme, headed by Professor Kenneth Newell, was set up to study the sheep cancers, and to see if it was related to human cancers. Newell now works at the School of Tropical Medicine, in Liverpool.

The research revealed a strong connection between the incidence of small-bowel cancer in sheep and the intensity of the use of herbicides that are based on phenoxy or picolinic acid. The variation in the use of herbicides explained 98 per cent of the cases of small-bowel cancer in sheep. Farms which had recently sprayed the herbicides had more cases of cancer than those farms where the spraying happened some time ago.

Both types of herbicide are liable to become contaminated with dioxin during manufacture. Because dioxin was suspected as being the cause of cancers in Vietnam, Newell compared the likely dioxin content of the herbicides with the incidence of cancer, and was surprised to discover that there was no link. The research does not prove any connection between human bowel cancer and the herbicide. Nonetheless, the results are causing considerable interest among lawyers in the United States, where several cases are pending against the US Air Force. □

Victims of Agent Orange: now there is a link with cancer

Reagan's budget squeezes America's civil science

THE HONEYMOON between Reagan's administration and America's civil science community has come to an end this year. For the first time, Reagan has cut into funding for basic civil research, allowing it to grow by only one per cent (against inflation's four per cent) during the next financial year.

Delivering the 1986 federal budget last Monday, Reagan's science advisor Dr George Keyworth repeatedly cited the "extreme austerity" caused by the record deficit of $180 billion. He noted that during Reagan's first four years, basic research thrived while most other government services were cut. Basic *military* research, however, still grows, this year by 16 per cent.

That growth is at the expense of items such as: fusion research, which is cut by over 10 per cent, while "key scientific questions" are resolved and international collaboration can be negotiated; oceanographic research; and agricultural research other than biotechnology, one of Keyworth's sacred cows. Biomedicine also fares poorly. The government plans to support only 5000, rather than the 6500, research grants expected for the next financial year (which begins on October 1) from the National Institutes of Health.

The space programme is left relatively intact, although the space station will be put back a couple of years. As for the environmental sciences, Reagan has increased aid for cleaning up toxic wastes and studying acid rain.

The budget for the National Science Foundation, the ally of American universities, will just keep pace with inflation. The foundation will continue to support the funding for computers and other scientific instruments at universities, while favouring physical, mathematical and engineering sciences.

When applied science is folded in with basic, the Department of Defense's profile stands even taller. The government spending on R&D is $58 billion (up 12 per cent), with defence accounting for almost $40 billion (up 22 per cent). The budget for research on "star wars" and other missile systems is tripled, to $3·7 billion. Binary nerve gas is high on Reagan's agenda for financial support.

Congress has yet to decide on Reagan's package. □

Australia injects money into space

THE AUSTRALIAN government is backing demands from local industry and the scientific community for the development of an indigenous commercial space industry. Money has been promised, and a study from the Australian Academy of Technological Sciences is expected to recommend the establishment of an Australian research authority in space technology.

The government realised belatedly that the country was almost totally dependent on imported space technology, and that its own industry was rundown.

As a first move, Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO), a government agency, has set up an office of space science and applications. Its express purpose is to build up skills in space research and development in Australia's own industry.

It is hoping for A$7 million from the government this year, and plans to spend at least 70 per cent on contracted work to industry. The remainder will be spent on consolidating CSIRO's own in-house space research, which is currently spread across a number of laboratories.

The aim is to improve the quality of communications, remote sensing, meteorological surveillance and radar satellites. CSIRO wants to participate in a number of overseas projects, such as the International Polar Orbiting Meteorological Satellite.

Already a contract has been signed for Australian industry to build the digital package for a British long-track scanning radiometer, which is to be flown on board the European Remote Sensing Satellite. The package will be built by British Aerospace in Adelaide, and the federal government will contribute A$1 million. □

Dairy Science
- New Faculty
- New Research Direction
- Transition between grants to maintain Base Program

Animal & Dairy Science
Full Professor - 52,000
Associate 38,000
Assist. 33,000 /12 month

18 Faculty
-3 100% Extension
-1 Dept Head

14
4 Teaching Base

1 Replacement yr

~~[illegible]~~

1 or 2 courses / year

75 : 25
Research Teaching

75 graduate Students
50% MS
" PhD

State Money
for 10 graduate assistantship

Graduate need fellowships