The "aggro" chemicals

Much concern has been expressed over the effects of agricultural chemicals on farmers' crops but little has been said about the effects such chemicals may have on the health of those people who work with them. This article looks at the possible negative effects of such chemicals on workers' health, and outlines the difficulties involved in proving this. Ways of tackling the problem are highlighted. The role of multinational companies in the production of such chemicals is also examined.

A recent controversy has raised the issue of the use of agricultural chemicals ("agro-chemicals") in South Africa. Vegetable farmers in the Tala Valley area in Natal took 17 of South Africa's chemical companies to court because they claimed that hormone herbicides being used on sugar cane and timber plantations in the area were damaging their crops. As a result of the damage, they said, they were losing millions of rands worth of production. The vegetable farmers have called on the government to impose a total ban on the importation, production and distribution of hormone herbicides in South Africa.

But while the use of these agrochemicals has been a cause of concern to farmers because of the damage to their crops and the financial losses which they suffered, throughout the controversy very little interest was taken in an issue which should perhaps be of much greater concern to us - the negative effects which these chemicals have on the health of human beings. In particular farm and forestry workers are often exposed to these chemicals in the course of their daily work.

Agrochemicals: advantages and disadvantages

Hormone herbicides are just one of a variety of chemicals, including pesticides/ insecticides, fungicides and growth regulants, which are used in agriculture. [Note: the term agrochemicals is the best collective term to use when referring to these agricultural chemicals. However often the word "pesticides" is used when it is in fact all agrochemicals that are being referred to.]

In defence of these chemicals the producers and a variety of other parties argue that they are a "necessary evil" and that the costs of outlawing them would far outweigh the advantages. They point out that these chemicals help to increase crop yields, that they are used to avert food losses to pests and to control diseases. The outcome of abandoning pesticides, they maintain, would be massive food shortages.

At work in the forests - such workers are exposed to poisoning by agrochemicals.

Those who suffer the negative effects of agrochemicals include farm workers, as well as workers in other sectors where these chemicals are used such as forestry and municipal workers, those involved in the production and distribution of chemical products, the farmers themselves, rural communities, urban household pesticide users, the consumers of chemical contaminated products and the broad community who stand to suffer in the long term as a result of damage to the environment.

Deaths from agricultural poisoning

Official figures for the period 1971 to 1982, for instance, refer to a total of 852 cases of pesticide poisoning in South Africa. But a variety of sources have cast doubts on the validity of these figures. The International Labour Organisation (ILO), for example, claim that an average of 1600 farm workers in South Africa die from pesticide and fungicide poisoning and related causes each year. [SAIRR Survey 1987; p321].

One study of deaths from pesticide poisoning in the Western Cape revealed a total of 104 deaths for the period 1977 to 1979. Of these 104 only 4 were reported to the authorities despite provisions in section 45 of the Health Act, 36 of 1977, which state that the authorities must be notified of all pesticide poisonings and that these must be investigated by the local authority concerned.

According to the study more than 70% of those who died from pesticide poisoning lived on farms. Most commonly death followed the intake of stored pesticides. The

intake of contaminated foodstuffs was also common while poisoning during the mixing and administering of pesticides was less frequent. More than 25% of those who died of pesticide poisoning were children. A certain proportion of the 104 cases were cases of suicide. For every person who dies from pesticide poisoning a number of others suffer illness as a result of exposure to pesticides. Estimates of the average ratio between these non-fatal poisonings and the number of fatal poisonings vary between 25:1 and 750:1. [Coetzee,1980/1]

The hidden costs

The problem doesn't end here. These statistics refer only to situations where clear evidence indicates that poisoning is linked to some form of exposure to or intake of a specific agrochemical. Scientific studies have however linked a variety of agrochemicals to human health problems such as forms of cancer and birth defects. In such cases an often lengthy period may separate the time when exposure to the chemical took place from that when the health problem is identified. Hard evidence proving that a specific agrochemical is responsible for the specific health problem is difficult to find. In the words of a representative of the South African Chemical Workers Union (SACWU), whose members are involved in the importation and production of certain agrochemicals, ''one is never one hundred percent sure. The evidence always relies on probabilities''. Cases involving probabilities of this kind do not, as a rule, crop up in the statistics.

Over and above the threat which their use poses to human health, critics of the agrochemical industry out that in the long run pests develop resistance to pesticides which are used against them, that agrochemicals pollute the environment and disturb the balance of nature and argue that in the long term agrochemical use will lead to ecological disaster. Some argue strongly that we should rely more on ''organic'' methods of agricultural production which do not require the use of agrochemicals.

Highly dangerous chemicals

The second edition of *The Pesticides Handbook* lists a total of 44 agrochemicals of which 12 are classified by the World Health Organisation (WHO) as extremely hazardous while 9 are classified as highly hazardous to human beings. However, the WHO classifications relate only to the immediate short-term effects of these chemicals and do not address chronic long-term toxic effects such as cancer or genetic defects.

The Pesticides Action Network (PAN) International has compiled a list of highly hazardous chemicals which it describes as the ''Dirty Dozen''. According to PAN International ''these 12 "worst case" pesticides are responsible for most of the pesticide

Farm workers using pesticides face the danger of poisoning in the course of their daily work. These workers are largely unorganised and their plight, like most issues in the rural areas, is neglected.

deaths and much of the environmental damage caused by pesticides internationally every year. Accordingly, they have been banned or restricted in most industrialised countries as threats to public health and to the environment. Yet all 12 continue to be widely sold and heavily promoted in developing countries''. At least six are registered for use in South Africa although one, DDT, may only be used by the government for mosquito control - a practice accepted by WHO.

Multinationals and the "Third World"

Two dozen firms dominate virtually all sales of agrochemicals worldwide. Half of these companies are American, the rest are British, European and Japanese. Bayer, Ciba-Geigy, Shell, Monsanto and ICI alone control 50 percent of the world market.

Some of these multinational giants include amongst the agrochemical products which they produce agrochemical ones which have been banned or severely restricted by their home governments in the US, Europe or Japan. They may continue to sell these products in the largely unregulated markets of the ''Third World''. The following figures give some indication of what this implies:

During the late 1970's the US Government reported that 25% - one in every four - of all pesticides sold by US companies overseas were banned, restricted or unregistered for use inside the US. [David Weir, *Global Pesticide Issues* in The Pesticides Handbook,

pp.163-170.1986, IOCU]

A further problem concerns the research into health hazards which may be related to specific products. Such research is usually conducted under the auspices of the very company which is marketing the product. In one case, evidence pointing to the manipulation of health studies relating to the pesticides Heptachlor and Chlordane by the US chemical giant Velsicol, was revealed. Evidence indicated that the company had failed to conduct certain tests, failed to publish or misrepresented certain test data, ignored the warnings of scientific experts, made misleading statements and failed to warn of certain dangers associated with their products. The study concludes that scientific investigations which are conducted by institutions and individuals with direct or indirect economic interests in the outcome of the investigation must be regarded as suspect until proven otherwise by independent sources. [Epstein, 1989; p.29]

Government control or lack thereof

Registration

In South Africa, a company wishing to distribute an agrochemical product is required to register the product in terms of the Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 36 of 1947. Section 2(a) allows the registrar, (who is advised by an advisory committee), to refuse to register any product if it is deemed "contrary to the public interest". The registrar may also at a later stage withdraw the registration of a product that has previously been registered.

Once the product is registered it may be marketed in South Africa only if the container bears clear warnings as to the dangers associated with the use of the product and details of the chemical ingredients contained therein. Thus each of the 3 or more different products containing ethylene dibromide (EDB) [one of the "Dirty Dozen"], which are marketed by different companies in South Africa, should all carry this information in a clearly visible way.

Ministerial regulations

The Minister of Agriculture also has the power to issue various regulations forbidding or restricting the use of specific agrochemicals. In 1983, for instance, the acquisition, disposal, sale and use of DDT, BHC, mercury, dieldrin and aldrin was prohibited. [Government Gazette, R384]. At present DDT may only be used under special licence for mosquito control. More recently the spraying of the hormone herbicides 2,4D and 2,4,5T was forbidden in certain areas of Natal. This prohibition is only of effect for a limited time period pending the outcome of an investigation being conducted by the

Department of Agriculture.

Despite these provisions, at least six of the "Dirty Dozen" are contained in products which are registered for use in South Africa. One source indicates that Lindane/BHC, banned in South Africa since 1983, is used in South Africa's sawmills and forestry industry (Technical Advice Group). It is also interesting to note that the ban on pesticide use in Natal only came into force in the midst of intense controversy relating to the use of these chemicals in the Tala Valley area.

With the above cases in mind it would not be inappropriate to ask what use these government officials have made of their authority to refuse to register or to restrict such products. 2,4,5T for instance has been in the spotlight internationally for some years as a serious hazard to human health. Yet it seems that it is only when the production levels and profits of farmers have been threatened, and as a result of public protest, that they have chosen to act to prevent its use.

The Machinery and Occupational Safety Act

Sections of the Machinery and Occupational Safety Act (MOSA) are also relevant to the position of workers who are directly involved in working with dangerous chemicals. In particular, regulations 5(f) and 5(h) place a particular responsibility on employers to ensure that effective precautionary measures are taken and to make information about hazards and safety precautions available to workers.

MOSA also makes provision for government inspections and the election of health and safety officers from amongst the ranks of workers. But the official factory

Little concern has been expressed for the possible effects of agrochemicals on the health of workers.

inspectorate lacks the personnel to monitor even urban factories effectively, let alone remote rural farms. In effect, the government controls over the use of poisons on farms are non-existent. Regulations exist to govern the registration and marketing of pesticides but once on the farm, there are absolutely no restrictions on the way they are used.(Weekly Mail, 7 April, 1989)

Once they reach the farms, the agrochemicals may be used or stored in ways which increase the risk of people suffering negative effects on their health. This may be as a result of ignorance or minor acts of negligence. In other instances it may be as a result of a blatant or even malicious disregard for those who will suffer these effects. In one case Orange-Vaal General Workers' Union members reported that white farmers were making use of black workers as beacons for aircraft spraying crops with pesticides. [SAIRR,1989; p.321-2] In another case a forestry worker reported that she had been issued with a mask, rainsuit and gloves while spraying but that her colleagues who worked nearby were left fully exposed to the spray from the 2;4;5T she was using and had never been told of the dangers of the herbicide. [Weekly Mail,18 December 1987].

The question of proof: 2,4,5T, 2,4D and the Everton Forest

When the criticism is raised that certain agrochemicals are available and are being used in this country, the agrochemical companies often argue that there is no conclusive proof that the agrochemical concerned actually causes any of the health problems which are referred to.

One person who has collected information on the matter is Natal's Kat Channing-Pearce. Her work revolves around linking the use of hormone herbicides to the incidence of a variety of human health problems in Natal. As she points out: ''the question of proof depends on what you call proof. What I would call proof someone else doesn't. While it is easy to take a thousand cabbages and test the effects of agrochemicals on them you obviously won't get even one human volunteer for such tests. All you can do is collect people's stories and try to use these to build up a convincing case''.

Channing-Pearce refers to the case of the Everton forest at Waterfall just outside Durban. To facilitate the process of ''stumping'' (removing) the trees from the area the chemical 2,4,5T was used. At a later stage, when sugar cane was planted in place of the trees, the chemical 2,4D was used to prevent the growth of weeds.

Effects of 2,4,5T and 2,4D

The use of 2,4,5T is restricted in 18 overseas countries and in about half of these the chemical is actually banned. TCDD (dioxin), a contaminant found in all 2,4,5T produced, causes liver and kidney damage, cancer, birth defects and chloracne (a skin

disease) in test animals.

On the other hand, a number of research studies have been inconclusive in linking 2,4D to the occurrence of any specific human health problems. However, at least one study, conducted by the US National Cancer Institute, has linked the use of 2,4D to the occurrence of a form of cancer, known as non-Hodgkin's lymphoma.

Vietnam veterans and the Dow chemical company

Both 2,4,5T and 2,4D achieved notoriety during the Vietnam war as a component of the defoliant "Agent Orange". When former US soldiers sued the "Agent Orange" producing Dow chemical company, alleging they had contracted certain diseases as a result of their exposure to "Agent Orange", the company chose to settle out of court rather than be faced with the "strict liability" test in terms of which it would have had to prove that "Agent Orange" was not the cause of the above mentioned ailments. The use of "Agent Orange" has been linked to diseases including forms of cancer and skin disease contracted by former servicemen. But, Kat Channing-Pearce points out, in South Africa the party claiming the specific chemicals are responsible for the ailments concerned has to prove this, and this is more difficult.

The difficulties of proof

The information collected in the Everton forest area highlights the difficulties involved in obtaining proof. Within about a year of 2,4,5T and 2,4D being sprayed in the area at least 9 children were born with a variety of abnormalities. One had no brain, one had an enlarged brain, 2 were born with heart deformities. But in the normal course of events birth defects of one kind or another occur in approximately 2,5% of children born while on average 3 out of every 10 000 babies are born with gross abnormalities. So how then can one prove that the deformities suffered by these 9 specific babies were the result of the use of chemicals in the area and not merely a coincidence or the result of some other unidentified external factor?

Innocent until proven guilty?

As one researcher states "in cases involving human health, the data will always be tenuous and will probably be unrepeatable." Genuine human health problems may be overlooked or at best, difficult and slow to solve because "proof" is unobtainable,and people may suffer disease and death in the interim.The idea that a registered agrochemi-

cal is "innocent until proven guilty" needs to be carefully reconsidered. [Laing,1990; p.42]

Dealing with the problem: hitting back at the "aggro" chemicals

Certain questions need to be asked in relation to a range of agricultural chemicals posing hazards to human health:
- is the chemical imported, produced, distributed or being used in South Africa?
- is the use of the chemical legally permitted in South Africa?
- if the use of the chemical is not permitted, are effective steps being taken to prevent the illegal use of the chemical?
- if the use of the chemical is permitted, should its use continue to be permitted and, if so, what effective measures are being taken and what further measures can be taken to minimise the dangers posed by the chemical concerned to human health?

The problem on the ground

Part of the potential solution to the problem will involve demanding a much greater level of concern for health and safety at the point where the chemicals are actually in use. This could involve calling for:

- health before profits. In particular the demand that safer chemicals are used as opposed to those which are cheaper.
- adequate protective clothing and masks for those working with the chemicals, clean overalls and showers for those who have been exposed to them.
- full information about chemical products being used.
- information material to create an awareness of health and safety and to guard against negligence.
- safe working conditions e.g. liquids to be pumped rather than poured out of containers and wood to be treated and dried in tanks.
- adequate health-care facilities and regular medical check-ups

Such issues may serve as points of focus around which workers involved in the use of these products could be organised. While working with agrochemicals will always have dangers associated with it, a dual strategy at the point where these chemicals are used can help minimise these dangers. On the one hand one needs to ensure that farmers take direct responsibility in ensuring that suitable standards of safety are observed. On the other hand those who are involved in working with these substances need to take a more direct role in protecting their own health and that of their communities.

The problem of information

Another problem is the lack of information on the subject. Apart from the recent outcry regarding the situation in the Tala Valley there seems to have been very little attention paid to the issue. Work that can be done includes:

- identifying particular dangerous chemicals that are available in South Africa and evaluating appropriate responses to dealing with their availability. Are they particularly useful or necessary to the community or would it be best to outlaw their use completely? If from an overall perspective it is preferable not to prohibit their use then what is the best way of ensuring that their negative effects on our society are minimised?
- identifying in what way legislative and administrative controls on agrochemical use can be improved e.g. the possibilities and practicalities of maintaining an effective inspectorate to ensure that health and safety standards are maintained.
- ensuring that public officials are accountable to the public particularly in relation to special information which they have at their disposal. During the course of the recent Tala Valley controversy it was shocking to see officials of the Department of Agriculture refusing to disclose recorded data on chemical contamination of the environment to parties who were involved with the issue.

The problem in context

The issues involved here relate to a whole range of questions which are relevant to workers, particularly to agricultural workers, in this country. Questions of organisation, questions of the availability and financing of health services, questions of the monitoring of, and legislative controls on, agrochemical distribution and use, questions of the relationship between private profit, the maintenance of productivity, the protection of the environment, and the call for health and health care for all.

Perhaps the central question relates to the lack of emphasis placed on the predicament of rural workers and rural communities in our society. ❑

References

Coetzee GJ . *The Epidemiology of Pesticide Mortality in the Western Cape*. Unpublished paper. Department of Community Health, UCT.

1. Cooper, D. *Working the Land: a review of agriculture in South Africa.* EDA Johannesburg, Westro.

2. Department of Agriculture and Water Supply - *A Guide to the Use of Pesticides and*

Fungicides in the Republic of South Africa.1988.
3. Epstein, S.S. *Corporate Crime: Can we Trust Industry-derived Safety Studies?*'' The Ecologist, Vol.19, No.1, 1989. Reproduced in Marquardt (below).
4. Gunn & Stevens (eds.) *Pesticides & Human Welfare.*
5. International Organisation of Consumer Unions (IOCU). *The Pesticide Handbook - Profiles for Action.* 2nd edition. Malaysia, 1986.
6. Johnston, M. *Pesticides - A Necessary Poison.* Green Pages, June 1990.
7. Koch, E. *Junkyard, South Africa.* Weekly Mail, 15 July, 1988. p.11.
8. Koch, E. *Government tests reveal abuse of `Agent Orange'.* Weekly Mail, 23 March, 1989. p.9.
9. Koch, E. *A mass poisoning highlights flaws in farm health codes.* Weekly Mail, 7 April, 1989. p.9.
10. Koch, E. *DDT linked to mystery disease in Kosi Bay.* & *Natal's sea of toxic waste: Industry blamed for the death of dolphins.* Weekly Mail, 4 August, 1989. p23
11. Koch, E. *Chemical groups try to silence allegations about crop devastation.* Weekly Mail, 20 April, 1990. p.1
12. Laing, M. *Jekyll-and-Hyde Herbicides.* in Rotating the Cube, Indicator SA, 1990.pp.41-45.
13. Louw, K. *Our Killing Fields.* Femina, August 1989. p.45
14. Marquardt, S. *Exporting Banned Pesticides - A case study of Velsicol Chemical Corporation's export of Chlordane & Heptachlor.* Greenpeace, 1989.
15. National Occupational Safety Association - *Safety Aspects of Pesticides.* Arcadia, TVL.
16. Pesticides Action Network (PAN) International - *The ''Dirty Dozen''.*
17. Sideris, E., & Ngomane, S. *Used in our forests: A weed killer akin to Agent Orange.* Weekly Mail, 11 December, 1987.
18. Sideris, E., & Ngomane, S. *It's raining bits of Agent Orange over mid-Natal.* & *The menace hidden in the forest winds.* Weekly Mail, 18 December,1987.
19. South African Institute of Race Relations - *Annual Survey* 1987/88.
20. Technical Advice Group - *Health and Safety in Sawmills and Forests.*

Acknowledgements

A variety of organisations and individuals were consulted in the writing of this article. Thanks to Phillip Masire, Dave Cooper, Chris Albertyn, Eddie Koch, Kat Channing Pearce, Humphrey Ndaba, Sakhela Buhlungu, Dr. Murray Coombs, Kim Goodman, the South African Farm Workers Education Project, Earthlife, Chemwatch (which is now amalgamating with Earthlife) the Environmental Development Agency, the Farm Workers Research and Resource Project, the South African Chemical Workers Union, the Printing, Paper, Wood and Allied Workers' Union and the Workplace Information Group.