RECENT DEVELOPMENTS IN THE USE OF ALDRIN, DIELDRIN AND 2,4,5-T IN THE USA

B. B. WATTS

Agricultural Chemicals Board, Wellington

Summary

A brief review of the current situation in the USA with regard to aldrin, dieldrin and 2,4,5-T is given and a history of the cancellation and suspension proceedings is outlined. Apart from a few minor uses, aldrin and dieldrin use is suspended (banned) whereas the proposed cancellation hearing for 2,4,5-T on rice and other registered uses has been withdrawn.

INTRODUCTION

The US Law concerning registration and control over pesticides is the Federal Insecticide, Fungicide, Rodenticide Act (FIFRA) as amended. The Act is administered by the Environmental Protection Agency (EPA).

It is necessary to understand some definitions used in FIFRA.

Cancellation: If it appears to the Administrator of the EPA that the pesticide generally causes "unreasonable adverse effect on the environment" he may issue a notice of intent either

1. To cancel its registration or
2. To hold a hearing to determine whether its registration should be cancelled

The person who is affected by the cancellation can request a public hearing within 30 days of the notice being issued. While the hearing is in progress, sales of the pesticide are permitted.

Suspension: If the Administrator feels that action is necessary to prevent an "imminent hazard" during the time required for cancellation proceedings he may suspend the registration of the pesticide. There is provision for a hearing provided this is lodged by the registrant within 5 days of the suspension order being issued. Sales may be prohibited during the hearing.

An imminent hazard to the Public: A situation which exists when the continued use of a pesticide during the time required for cancellation proceedings would be likely to result in "unreasonable adverse effects on the environment", which is any unreasonable risk to man or the environment taking into account the economic, social and environmental costs and benefits of the use of any pesticide.

ALDRIN AND DIELDRIN CANCELLATION/SUSPENSION

Cancellation: In December 1970 the EPA received a petition from the Environmental Defence Fund (EDF) requesting the cancellation and immediate suspension of all uses of aldrin and dieldrin. In March 1971 the Administrator issued a cancellation notice for the major uses of aldrin and dieldrin but declined to order suspension of the compounds as the evidence available to him did not demonstrate an imminent hazard.

Proc. 28th N.Z. Weed and Pest Control Conf.

Topical Issues and Aquatic Weeds

Appeal: The EDF filed a petition to the US Court of Appeals against this decision and the Court in May 1972 referred the matter to the EPA for further consideration. In June 1972 the Administrator reaffirmed the notice of cancellation for nearly all the uses of aldrin and dieldrin. Permitted uses were as a dip for non food crops, subsurface ground insertions for termite control and moth-proofing by processes which utilise the pesticide in a closed system. In December 1972 following a reappraisal of scientific evaluation the Administrator again announced that he could see no reason which would justify suspension.

Cancellation Hearing: A year after the cancellation hearings on aldrin and dieldrin began, the Administrator issued a notice of suspension designed to prevent the manufacture of 4 500 tonnes of aldrin and dieldrin products.

Suspension Hearing: On August 6 1974 the registrants filed objections to the notice of suspension and hearings which covered the use patterns of the insecticide, carcinogenicity and need to use in the production of food or fibre commenced on August 14. Chief Administrative Law Judge Perlman in his summary of findings stated that aldrin and dieldrin are carcinogens in the mouse. He quoted cancer experts as saying "we can reasonably expect that in a population of human beings exposed to aldrin or dieldrin, cancer of *some* kind will occur in *some* individuals and that these individuals would not have been affected in the absence of these compounds". The Judge stated that it was generally accepted by the experts that most chemical carcinogens that have been adequately tested in different species show that they can produce tumours in all or several of them. While the target organ may vary from species to species the concept of species - specific carcinogens is not well supported. The Judge gave little weight to the comments by the 1973 Joint FAO/WHO Expert Committee on Pesticide Residues who stated that "there is a serious lack of knowledge regarding the processes involved in the development of liver tumours by mice and that it would be unwise to classify a substance as a carcinogen solely on the basis of evidence of an increased incidence of tumours of a kind which may occur spontaneously with such a high frequency . . .

Carcinogenicity tests in two species other than the mouse would be regarded as appropriate where it was evident that man might be exposed through food to a dose level close to one that increased incidence of liver tumour in mice . . . The Meeting agreed that . . . it would be essential for each pesticide to be considered and assessed individually."

Dieldrin has not been shown to be carcinogenic in any other species of animal but the Judge placed considerable emphasis on the evidence supplied that dieldrin produced tumours in five strains of mice. Notwithstanding rebuttal evidence by the registrant, the Judge found that aldrin and dieldrin pose a high risk of causing cancer in man. The Judge stated that it appears from the record that the necessity for aldrin in the production of corn and the consequences of its unavailability have been exaggerated. The Judge did not agree with the estimates of reduction in yield of corn if aldrin was not available and felt that not more than 1% loss in yield would result in this case.

Decision: The Judge issued an order upholding the Administrator's original decision on suspension which the Administrator reaffirmed on October 1 1974. He did invoke the "special rule" provision which allows the sale and use of existing stocks of registered products containing aldrin and dieldrin which were formulated prior to August 2, 1974.

Appeal: The US Department of Agriculture filed on December 30 1974 an appeal against the decision to suspend. The main points of issue were the validity of whether tumour forming effects on mice could be reasonably extrapolated to man and also the adverse effect which

Topical Issues and Aquatic Weeds

American farmers would suffer if aldrin and dieldrin were not available. Shell Chemical Company also filed an appeal. The EDF also protested that the suspension notice did not go far enough in that it allowed farmers to use the aldrin and dieldrin which they were holding.

Final Decision: This was made in March 1975 when the US Court of Appeals upheld the EPA decision to suspend production and sale of aldrin and dieldrin.

2,4,5-T CANCELLATION/SUSPENSION

In October 1969 the Agricultural Chemicals Board was advised of the proposed action to be taken in USA following the results of findings from a laboratory study conducted by the Bionetics Research Laboratories which indicated that off-spring of mice and rats, given relatively large oral doses of 2,4,5-T during early stages of pregnancy showed a higher than expected number of deformities.

Suspension/Cancellation: In April 1970 suspension of liquid 2,4,5-T for use around the home and over water was announced by the US authorities. Notification of proposals to cancel use of non-liquid formulations of 2,4,5-T around the home and on all food crops intended for human consumption was made. The above actions did not affect the use of 2,4,5-T for control of weeds on range, pastures and forests. In May of that year the cancellation notice regarding the use of 2,4,5-T on food crops and remaining uses around the home was filed, by the US Department of Agriculture (the Regulatory Authority before EPA). This decision was appealed within a month by three companies. It was agreed that an Advisory Committee would be established which would be appointed by the USDA from a panel of scientists selected by the National Academy of Science.

Appeal: In January 1971 the US Court of Appeals delivered a judgement regarding a petition for a review of the cancellation order issued by USDA. The petitioners asked for a total ban (suspension) on all granular 2,4,5-T around the home and recreation areas and all 2,4,5-T used on food crops intended for human consumption. The Administrator who was ordered to consider whether the registration of 2,4,5-T should be suspended for any uses, invited interested parties to submit written comments.

In a press release issued in March the Administrator announced that after careful review of the petitioners' allegations and of all other relevant factors he had determined that those uses of 2,4,5-T that had not been suspended posed no imminent threat to the public and should be permitted to continue during the term of the administrative proceedings in progress.

Advisory Committee: In May 1971 the 2,4,5-T Advisory Committee reported its findings to the Administrator, but these were not released until the end of July. This Committee recommended by an 8 to 1 vote that —

- (a) the registration status of 2,4,5-T should be restored to that existing prior to April 1970.
- (b) A maximum residue limit of 0.1 mg/kg of 2,4,5-T in crops and in water should be set.
- (c) A limit of 0.5 mg/kg of the contaminant 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) to be set for existing stock of 2,4,5-T to be reduced to 0.1 mg/kg for new stock.
- (d) a warning regarding possible danger to pregnant women and animals and directions for use to keep exposure to an absolute minimum be on the label.

Topical Issues and Aquatic Weeds

- (e) specific research on TCDD should be conducted to determine possible accumulation in the environment.
- (f) additional post-registration monitoring for adverse effects of agricultural chemicals should be established.

Decision: The Administrator decided in August 1971 to continue the cancellation hearings for 2,4,5-T for use on food crops and called for a public hearing to "afford registrants and the public the opportunity to present the pertinent economic and other data relating to the balance that the law requires to be struck between benefit and risk". Dow Chemical Company objected to the decision and requested the Administrator to write a proper determination of fact based on all data before him. This was rejected by EPA and in June 1972 a suit was brought by the Dow Chemical Company against the Administrator regarding a procedural matter, — whether or not EPA had followed proper legal procedures in calling for a public hearing on 2,4,5-T. The Judge directed the Administrator to set forth his findings of fact and his ultimate conclusions and state specifically what information was required to be considered at the hearing.

Cancellation Hearings: In July 1973 a notice of intent to hold a hearing on all registered uses of 2,4,5-T to start in April 1974 was issued by the Administrator.

The starting date of April was established to permit the Agency to complete an environmental and human monitoring project on the presence of the dioxin impurity found in 2,4,5-T and the extent to which the dioxin may adversely affect human and animal health. Dow Chemical Company responded indicating that they wished to be a party to the hearing.

Withdrawal of Proposed Hearings: On June 24 1974 the Administrator issued a notice of withdrawal of cancellation of 2,4,5-T on rice and notices of withdrawal of intent to hold hearings on all registered uses of 2,4,5-T. All suspensions already in force would remain. The major reason given for the withdrawal of the hearings was the problem encountered in methodology, particularly in analysis. The EPA would continue its monitoring programme and will take further action as appropriate once the results of this programme are available. The Deputy Administrator in a press release, said that the continued use of 2,4,5-T on rice, rangeland and rights of way — the only permissible uses "should not result in detectable residues of the herbicide if it is used according to label instructions. Thus the health implication of these uses are believed to be minimal".

SOURCES OF INFORMATION

Letter from American Embassy, November 4 1969.
Telegram from American Embassy, April 17 1970.
US Public Law 92-516.
Federal Register Vol. 36 No. 13, January 20 1971.
Press Release by EPA, March 18 1971.
Industrial Vegetation Management Vol. 4 No. 1, 1971.
Report of Advisory Committee on 2,4,5-T, May 7 1971.
Federal Register Vol. 38 No. 14, July 24 1973
Pesticide Residues in Food — Report of 1973 Joint FAO/WHO Meeting.
EPA Environmental News, June 24 1974.
Federal Register Vol. 39 No. 126, June 28 1974.
Federal Register Vol. 39 No. 203, October 18 1974.
Washington Post, April 1975.