

June 23, 1980

U. N. ORGANIZATION GIVES FAVORABLE EVALUATION OF THE HERBICIDE 2,4,5-T

A joint meeting of the Food and Agriculture Organization (FAO) panel of experts on pesticide residues in food and the environment and the World Health Organization (WHO) group on pesticide residues was held in Geneva, Switzerland December 3-12, 1979.

In the recently released report of this meeting the panel reviewed extensive data that has become available since 1970. The panel set a provisional maximum residue level of 0.05 mg/kg in many food crops and a temporary acceptable daily intake for humans of 0.003 mg/kg.

Several favorable quotes from the report indicate the position of the panel on this controversial herbicide.

"All of these data show that approved uses of 2,4,5-T herbicides are unlikely to give rise to residues in drinking water or in food above 0.05 mg/kg-----"

"A review of the new data available to this meeting showed that no teratogenic effects of 2,4,5-T have been reported, at the highest dose levels tested in rabbit, monkey or sheep. However at high dose levels terata can be induced in rat and mouse".

"There are no data indicating carcinogenic potential of 2,4,5-T in rat or in 3 strains of mice."

"In view of the low level of TCDD in technical 2,4,5-T and in formulated 2,4,5-T herbicides, the rate of use, of 2,4,5-T, the situations in which it is used, and the knowledge that TCDD is readily degraded in sunlight, the meeting agreed that there was no likelihood of TCDD residues occurring in food."

This recent scientific evaluation by an international panel of experts is reassuring to those concerned with the safety of the herbicide 2,4,5-T.

Sincerely,

R. Charlton

**pesticide residues
in food — 1979**

**report of the joint meeting
of the
fao panel of experts on pesticide residues
in food and the environment
and the
who expert group on pesticide residues**

held in geneva, 3 - 12 december 1979

4.37. PIRIMIPHOS-METHYL*

Residue and analytical aspects

Pirimiphos-methyl is used for the control of greedy scale on kiwi fruit in New Zealand.

Residue data reflecting different methods of application during two separate seasons have provided the basis for estimating maximum residue levels. Over 90% of the residue is retained in inedible skin, there being no significant residue in the edible pulp. These studies also confirm that the residue consists of the parent compound alone. On the basis of this information a maximum residue limit of 2 mg/kg was recommended.

4.38 PROPARGITE*

Residue and analytical aspects

The meeting examined residue data reflecting good agricultural practice using propargite on apples and pears in the United States and estimated that the maximum residue level which was likely to occur following good agricultural practice was 5 mg/kg. This is higher than the current temporary MRL of 2 mg/kg for propargite on apples and pears and the meeting recommended that the temporary limit should be raised to 5 mg/kg.

Further work or information

Required

The carcinogenicity study required by the 1977 meeting.

Desirable

The first two items listed by the 1977 meeting and the items listed by the 1978 meeting.

4.39 2,4,5-T*

Residue and analytical aspects

2,4,5-T herbicides have been used extensively for almost 30 years

for the control of woody weeds of range land, pasture, forests, some cereal crops, rice, sugar cane, as fruit setting and stop-drop sprays on certain crops such as apricots and apples and for the control of unwanted vegetation on industrial land, rights-of-way etc. Commercial 2,4,5-T contains traces of the toxic dioxin 2,3,7,8 tetrachlorodibenzo-p-dioxin (TCDD) but the meeting was assured that currently manufactured 2,4,5-T conforms to FAO specifications and contains less than 0.1 mg/kg of TCDD.

Since the review in 1970 extensive data have become available on the nature and fate of 2,4,5-T and TCDD residues in many environmental components including food crops, livestock and water. All of these data show that approved uses of 2,4,5-T herbicides are unlikely to give rise to residues in drinking water or in food above 0.05 mg/kg other than in wild mushrooms and wild vaccinium berries gathered from recently sprayed forests. Levels of up to 2 mg/kg and 5 mg/kg have been found in wild mushrooms and vaccinium berries, respectively.

This view is confirmed by extensive monitoring programmes in several countries which have failed to detect residues of 2,4,5-T in foodstuffs or water at levels above the limit of determination. Sensitive methods for the determination of TCDD in technical 2,4,5-T and formulations have recently become available with a limit of determination of about 0.01 mg/kg. These are being used to monitor the quality of 2,4,5-T herbicides on the world market.

In view of the low level of TCDD in technical 2,4,5-T and in formulated 2,4,5-T herbicides (< 0.1 mg/kg), the rate of use of 2,4,5-T, the situations in which it is used and the knowledge that TCDD is readily degraded in sunlight the meeting agreed that there was no likelihood of TCDD residues occurring in food.

The meeting agreed that in the case of food crops to which 2,4,5-T is applied the maximum residue limit should be set at or about the limit of determination of the analytical method. Straw from treated cereals may contain up to 2 mg/kg of 2,4,5-T but levels of 2,4,5-T in meat or other animal products from animals grazing treated pasture or fed straw from treated cereals did not exceed the 0.05 mg/kg, the limit of determination.

Toxicology

A review of the new data available to this meeting showed that no teratogenic effects of 2,4,5-T have been reported, at the highest dose levels tested, in rabbit, monkey or sheep. However, at high dose levels,

terata can be induced in rat and in mouse.

There are no data indicating carcinogenic potential of 2,4,5-T in rat or in 3 strains of mice. In a fourth strain a questionable increase in tumour incidence occurred in females.

Pharmacokinetic and pharmacodynamic data indicate that dog is an inappropriate species for toxicological extrapolation to man. The rat is therefore utilized. A rat carcinogenicity study performed with 2,4,5-T containing 0.05 mg/kg 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) demonstrated a "no observable effect" level of 3 mg/kg body weight/day.

The meeting felt minimal concern regarding food residues of 2,4,5-T. Nevertheless it could not ignore the toxicological problems associated with TCDD and a high safety margin was utilized in setting the temporary ADI.

Level causing no toxicological effect

Rat: Dietary administration of 3 mg/kg/bw/day

Estimate of temporary acceptable daily intake for man:
0 - 0.003 mg/kg bw

Further work or information

Required (by 1981)

1. Information on the level of 2,3,7,8-tetrachlorodibenzo-p-dioxin in 2,4,5-T from a wide range of manufacturers.
2. Studies on the potential for bioaccumulation of the 2,4,5-T contaminant 2,3,7,8-tetrachlorodibenzo-p-dioxin in mammalian tissues.

Desirable

1. Studies to investigate the possibility of interaction between 2,4,5-T and 2,3,7,8-tetrachlorodibenzo-p-dioxin with respect to carcinogenic potential.
2. Data on epidemiological studies with 2,4,5-T.

Pesticides and the year of previous evaluations see list on p.65 - 68	ADI mg/kg body weight	Commodity	MRL or ERL mg/kg	Remarks
pirimiphos-methyl 1975, 1977, 1978	0.01	*kiwi fruit	2	
propargite 1978	0.08 (1981)	apples pears	5 5	Both MRLs for propargite are provisional until 1981.
2,4,5,-T 1971	0.003 (1982)	*apples *apricots *barley *carcase meat *cereal straw *eggs *meat by-products *milk *oats *rice *rye *sugar cane *wheat	0.05** 0.05** 0.05** 0.05** 2 0.05** 0.05** 0.05** 0.05** 0.05** 0.05** 0.05** 0.05**	All MRLs for 2,4,5,-T are provisional until 1982.
thiabendazole 1971, 1972, 1973, 1976, 1978	0.3	strawberriess tomatoes	1 2	
thiometon 1970, 1974, 1977	0.003	*egg plants *mustard seed *rape seed	0.5 0.05** 0.05**	Temporary ADI converted to ADI at lower level. Previous temporary MRLs converted to MRLs.

MRLs are for the
sum of thiometon, its
sulphoxide and its
sulphone, determined
as thiometon sulphone
and expressed as
thiometon.