HEPTACHLOR (43)

EXPLANATION

Heptachlor has been evaluated several times by the JMPR, first in 1963 and most recently in 1991. The 1987 Meeting noted that all the limits were Extraneous Residue Limits. The 22nd Session of the CCPR (1992) considered withdrawing the ERL for vegetables, but decided to wait for further data. Information on use patterns was supplied to the 1991 JMPR as a brief summary but no registered uses on vegetables were reported. Residue data were also provided from monitoring heptachlor and heptachlor epoxide. The 1991 Meeting recommended that the ERLs for heptachlor in carrots, tomatoes and other vegetables should be converted to temporary limits and required more information on the possible occurrence of residues in food in commerce or at consumption.

Monitoring data were received by the present Meeting from The Netherlands, Sweden and the USA.

USE PATTERN

No information was supplied on the registered or recommended uses of heptachlor on edible crops or animals.

RESIDUES IN FOOD IN COMMERCE OR AT CONSUMPTION

Data from monitoring residues of heptachlor in plant crops and animal products were received from the governments of The Netherlands, Sweden and the USA.
All residues of heptachlor in the Tables are the sum of heptachlor and heptachlor epoxide, in conformity with the Codex definition.

In The Netherlands agricultural plant products are routinely analysed for residues of heptachlor and heptachlor epoxide. In the period 1987-1991 about 15,200 samples of fruits, vegetables and cereal grains were analysed. Analyses with the limit of determination of 0.01 mg/kg detected residues in 13 samples of which 3 were apples. In two samples (apple and wheat) residues were higher than the maximum residue limit in The Netherlands.

In the period 1990-1992, samples of fat from the following domestic animals were analysed for residues of heptachlor epoxide: 180 veal calves, 144 dairy cows, 143 broilers, 143 fattened bulls, 324 pigs, 72 sheep, 48 goats and 37 horses, together with 24 samples of egg powder. No residues were found in any of the samples, with a limit of determination of 0.02 mg/kg.

In Sweden domestic and imported vegetables were analysed for residues of heptachlor and heptachlor epoxide in 1990-1992. The limit of determination was 0.01-0.02 mg/kg. No residues were detected in 360 samples of carrots from 10 countries or in 1249 samples of tomatoes from 21 countries. Residues of heptachlor were present at the level of 0.03 mg/kg in one of 301 samples of imported melons from 19 countries, and at 0.04 and 0.05 mg/kg in two of 71 samples of imported squash from 9 countries.

Information was supplied from the USA on residues of heptachlor found in monitoring carried out in 1991 and 1992. Results were reported on citrus fruits, carrots,

pineapples, sugar beet and tomatoes, and on other fruit and vegetables as a group. Data were also available for residues in crude soya bean oil, cereal grains and animal products. Results for fruit, vegetables and cereals are shown in Table 1.

Table 1. Residues of heptachlor from monitoring fruit, vegetables and cereal grains in the USA, 1991-1992.

Commodity	No. of samples	No. of samples with residues[1]	90th percentile, mg/kg	Heptachlor, mg/kg, max. residue
Domestic				
Carrots	227	0		
Citrus fruit	408	0		
Pineapples	37	0		
Sugar beets	36	0		
Tomatoes	227	0		
Other fruits and vegetables	6132	13	0	0.05
Soya bean oil (crude)	8	0		
Whole cereal grain	573	5	0	0.03
Imported				
Carrots	126	0		
Citrus fruit	302	0		
Pineapples	143	0		
Tomatoes	717	0		
Other fruits and vegetables	6459	5		0.07

[1] Limit of determination 0.01 mg/kg.

In monitoring domestic animal products in the USA in 1991-92, 748 samples of milk and 621 samples of eggs were analysed for residues of heptachlor epoxide. No residues were found in any of the samples with the limit of determination at 0.01 mg/kg. In domestic animals heptachlor epoxide was found in one sample of veal at 0.15 mg/kg, in three samples of pigs at the level of 0.03-0.13 mg/kg and in two samples of geese at 0.04-0.06 mg/kg.

Imported meat products analysed in the USA in 1991-92 comprised 3934 samples of cattle fat, 2181 samples of pig fat, 738 samples of fat from sheep, lambs and goats, and 73 samples of fat from poultry. Residues of heptachlor epoxide were not detected in any of the samples.

APPRAISAL

Information on use patterns of heptachlor was supplied to the 1991 JMPR, but only in a summarized form and no registered or recommended uses on vegetables were available. Residue data from monitoring heptachlor and heptachlor epoxide in fruits and vegetables and animal products were also reported. The 1991 Meeting recommended that the existing Extraneous Residue Limits for heptachlor in carrots, tomatoes and other vegetables should be converted to temporary limits until more information was available on the possible occurrence of residues in food in

commerce or at consumption.

Monitoring data were received by the present Meeting from The Netherlands, Sweden and the USA.

Residues in fruit and vegetables occurred only to a very limited extent. In 15,300 samples of fruit, vegetables and cereal grains examined in The Netherlands residues were present in only 13 samples. In Sweden residues occurred in only 3 of about 9000 samples analysed, including many samples of carrots and tomatoes. In the USA residues of heptachlor were present in 18 of 14,800 samples of fruit and vegetables and 5 of 573 samples of cereal grains. The monitoring in the USA as well as in Sweden included the analysis of carrots and tomatoes. No residues were present in any of about 700 samples of carrots and 2200 samples of tomatoes analysed. The limit of determination in the three countries was 0.01-0.02 mg/kg.

In animals heptachlor is metabolised to heptachlor epoxide. This compound was not present in the animal products examined, with a few exceptions. No residues were detected in about 800 samples of domestic animal products examined in The Netherlands. In the USA no residues were found in milk, eggs or imported meat. Residues occurred at a level of 0.03-0.13 mg/kg in only three samples of domestic pigs and at 0.04 and 0.06 mg/kg in two samples of geese.

With this very low incidence of heptachlor in carrots, sugar beets, tomatoes and other vegetables the Meeting was of the opinion that there is no further need for ERLs for heptachlor in vegetables.

RECOMMENDATIONS

On the basis of the residue data received from monitoring in three countries the Meeting concluded that the TERLs and the ERL listed below should be withdrawn.

Definition of the residue: sum of heptachlor and heptachlor epoxide.

Commodity		Recommended MRL (mg/kg)	
CNN	Name	New	previous
VR 0577	Carrots	withdrawn	0.2 E T
VR 0596	Sugar beets	withdrawn	0.05 E
VO 0448	Tomato	withdrawn	0.02 E T
AO1 0002	Vegetables	withdrawn	0.05 E T