FENARIMOL (192)

EXPLANATION

Fenarimol was reviewed for the first time by the 1995 JMPR and a number of maximum residue levels were estimated. Although data on the environmental fate of fenarimol in soil were submitted to the Environmental Core Assessment Group at that Meeting they were not, as would normally be expected, submitted for the consideration of the FAO Panel. The manufacturer agreed to submit the data to the FAO for consideration by the FAO Panel at the 1996 JMPR. The 1995 Meeting decided that in these circumstances the maximum residue levels should be recommended only as temporary MRLs with a requirement for the environmental fate studies. The manufacturer has now submitted data on the environmental fate of fenarimol in soil.

The 1995 Meeting concluded that a maximum residue level of 5 mg/kg for dry hops would be appropriate but, since samples in the relevant trials were stored for 13 months before analysis, decided not to recommend an MRL for hops in the absence of data confirming the stability of fenarimol in a leafy crop. A study of the stability of fenarimol residues in dried hops has now been submitted.

METABOLISM AND ENVIRONMENTAL FATE

Environmental fate in soil and water/sediment systems

The characteristics of the soils in some of the studies reviewed are given below (Table 1).

Table 1. Characteristics of soils in the studies reviewed.

Ref.	Soil description[1]	% oc	pH	% sand	% silt	% clay	Pre-study microbial activity (µg C/g soil)
Rainey, 1990	Greenfield (sandy loam)	1.5	7.1	66	21	13	
Althaus & Beaty, 1982	Coarse (sandy loam)	0.9	6.0	54	32	14	
Althaus & Beaty, 1982	Medium (silty loam)	1.3	6.1	28	57	15	
Althaus & Beaty, 1982	Fine (clay loam)	1.9	6.3	20	50	30	
Perkins, 1993	Ismaning (clay loam)	4.9	7.3	1	90	9	950
Perkins, 1993	Rohr (clay loam)	2.8	7.1	36	42	22	32
Perkins, 1993	Alsfeld (silt loam)[2]	1.5	6.5	42	32	26	
Perkins, 1993	Grebin (sandy silt loam)	1.2	5.6	47	36	17	25
Saunders & Powers, 1987	Neuces (sand)	0.3	7.7	89	6	5	
Saunders & Powers, 1987	Fox (sandy loam)	0.8	5.7	66	22	12	
Saunders & Powers, 1987	Crosby (loam)	1.0	6.5	28	48	24	
Saunders & Powers, 1987	Brookston (clay loam)	1.2	6.9	24	44	32	
Smith & Saunders, 1982	Hancock (silt loam)	1.6	6.2	24	60	16	
Sullivan & Saunders, 1976	Marion (sand)	0.6	8.1	91	5	4	
Sullivan & Saunders, 1976	Synthetic (sandy loam)	2.0	5.6	69	21	10	

Ref.	Soil description[1]	% oc	pH	% sand	% silt	% clay	Pre-study microbial activity (µg C/g soil)
Sullivan & Saunders, 1976	Hancock (loam)	1.2	7.7	40	34	26	
Sullivan & Saunders, 1976	Hancock (clay loam)	0.8	5.6	36	36	28	
Vonk & Hoven, 1981	Droevendaal (sand)[3]	2.5	5.0	86	6	4	
Vonk & Hoven, 1981	Lelystad (loam)[3]	1.7	7.5	32	36	21	

[1] UK or USA classification of sand, silt and clay used unless otherwise stated
[2] Sand >20-2000 µm, silt 2-20 µm, clay <2µm
[3] Sand 50-2000 µm, silt 2-50µm, clay <2µm

Degradation in soil - laboratory studies. In a study according to the German BBA guidelines (Jackson and Lewis, 1994) [*carbinol*-^{14}C]fenarimol (radiochemical purity 97.3%) was incubated with Marcham clay loam, Faringdon clay, Marcham sandy loam and Speyer 2.2 loamy sand at concentrations of 0.05 and 0.25 mg/kg, equivalent to 0.1 and 0.5 kg/ha, at 40% maximum water holding capacity and 20°C. Ethanolamine traps were used to collect gaseous compounds.

Single (duplicate for Speyer 2.2) samples were taken at six representative times up to 180 days after application at the low rate and at four times at the high rate. The soils were Soxhlet-extracted with 2-butanol/water and analysed by TLC. The extraction of fenarimol by this method was initially >95% and during the course of the experiment mass balances were generally 95-105%. Results are shown in Table 2.

Table 2. Degradation of fenarimol in soil; laboratory study.

Soil	Half-life of fenarimol, days	
	Low application rate	High application rate
Marcham clay loam	473	917
Marcham sandy loam	436	889
Faringdon clay	542	1204
Speyer 2.2 loamy sand	1360	1833

The radioactivity in the ethanolamine trap accounted for <5% of the applied ^{14}C and was assumed by the authors to be $^{14}CO_2$. Unextractable residues in the soil rose to 3.3-17.2% of the applied radioactivity (AR) at 180 days. Two unidentified products were extracted from the soil, each accounting for <3% of the AR at any time.

In a further study according to USA EPA guidelines (Rainey, 1990) [*carbinol*-^{14}C]fenarimol (radiochemical purity 97.6%) was evenly mixed with Greenfield sandy loam at 75% 33 kPa moisture content to produce a final concentration of 5 mg/kg (equivalent to 9.75 kg/ha). Soil was placed in a closed flow-through system with KOH and charcoal traps to collect volatile products and incubated in the dark at 24°C for one year. After ten representative intervals aliquots of soil (15 g) were removed, extracted with methanol/water under reflux (and later samples also with butanol/water under reflux) and the extracts analysed by TLC.

The mass balance for the radioactivity in combusted soil did not change over the year and was all accounted for in the various fractions after extraction. After one year the total radioactivity collected from the KOH trap had reached 0.6% of the AR and the unextractable residues in the soil

had risen steadily to 9.4%. A single product, identified by MS as Æ-(2-chlorophenyl)-Æ-(4-chlorophenyl)-1,2-dihydro-2-oxo-5-pyrimidinemethanol, reached a maximum level of 4.1% after 6 months. Fenarimol levels were reported to have decreased to 79% after one year and a half-life of 840 days was calculated.

Althaus and Beaty (1982) added [*carbinol*-^{14}C]fenarimol (radiochemical purity 98.9%) to coarse, medium and fine soils to produce a final concentration of 5 mg/kg (equivalent to 9.75 kg/ha). The soils were adjusted to 75% of 33 kPa moisture content and kept in the dark at 20-25°C for one year. Samples were removed at ten intervals, Soxhlet-extracted with 2-butanol/water and analysed by TLC. Anaerobic degradation was investigated in a further set of soils which were prepared in the same manner but flooded with water after four weeks of aerobic degradation and incubated for a further 4-8 weeks.

In the aerobic experiment the total radioactivity recovered throughout the study was 88-113% of the AR. Over the one-year period the unextractable radioactivity rose to 3.9-5.8% of the AR. Fenarimol accounted for 78-83% of the extractable radioactivity in the one-year samples and the remaining extractable radioactivity was not attributable to any individual compounds.

In the anaerobic system 94-96% of the total radioactivity remained as fenarimol after 8 weeks incubation and only 4% of the radioactivity was in the water phase.

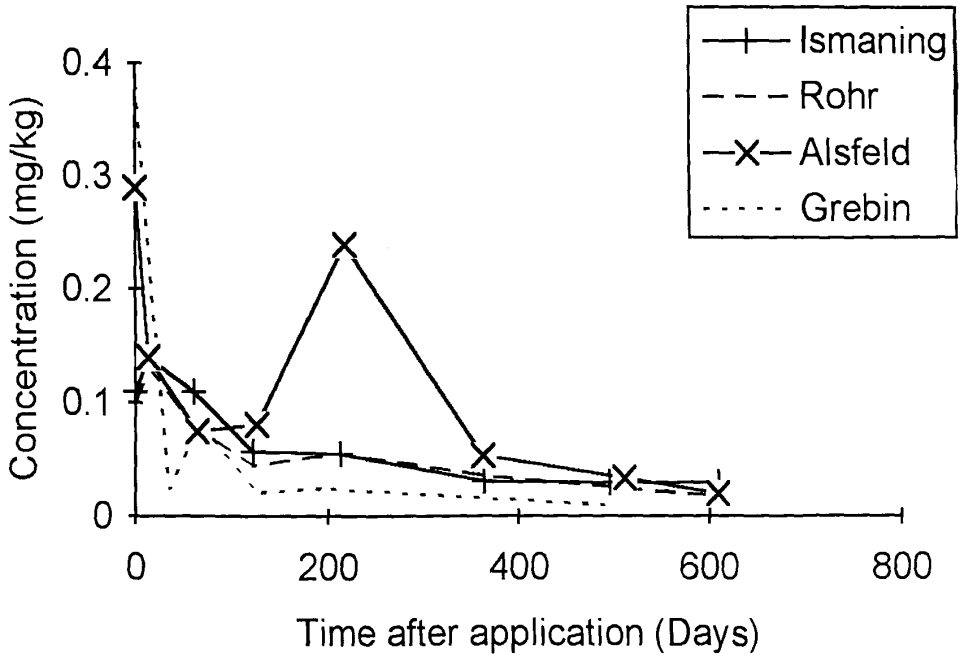
In a study by Althaus and Bewley (1978b) [*carbinol*-^{14}C]fenarimol (radiochemical purity >99%) was mixed with Crosby silt loam soil (3 kg, properties not given) to obtain a concentration of 1 mg/kg (equivalent to 1.95 kg/ha). The soil was then flooded with water and the atmosphere purged with nitrogen. The incubation temperature was not stated but after one year 98% of the AR was in the soil and 91% was extracted from soil/water samples as fenarimol.

Degradation in soil - field studies. An EC formulation of fenarimol was sprayed at 0.27 kg ai/ha on to bare soil at four German field sites (Ismaning, Rohr, Alsfeld and Grebin) in May 1990 (Perkins, 1993). Cores were taken at each site at 0, 14, 60, 120 and 210 days (100 cm depth) and at 12, 16 and 20-24 months (30 cm depth). The 100 cm cores were sectioned into depths of 0-10, 10-20, 20-40, 40-60 and 60-100 cm except in the Grebin trial where the samples from 0 to 60 days were inadvertently bulked. The 30 cores were divided into 0-10, 10-20 and 20-30 cm sections.

Each sub-section of the soil cores was mixed and sieved. Sub-samples were extracted with methanol/water, cleaned up and analysed by GLC. The LOD of the method was 0.05 mg/kg and the mean recovery was 94%.

0-10 and 10-20 cm soil cores were combined before analysis and no deeper samples were analysed. In the early Grebin cores the totals found in the 100 cm cores was assumed to be in the 0-20 cm range and concentrations were calculated accordingly. At Grebin and Alsfeld very high concentrations of fenarimol found at day 0 (three to four times those predicted from the application rate) resulted in short calculated half-life (DT50) values. The results are plotted in Figure 1 and the calculated DT50 and DT90 values are given in Table 3.

Figure 1. Concentrations of fenarimol in four German field soils.



The DT50 and DT90 values estimated from Figure 1 are shown in Table 3.

Table 3. DT50 and DT90 values for four German soils.

Soil	DT50, days	DT90, days
Ismaning	123	>610
Rohr	95	>610
Alsfeld	14	550
Grebin	21	120

In a further study according to BBA guidelines (Butcher and Rawle, 1994) an EC formulation of fenarimol was sprayed at 270 g ai/ha on to bare soil at two German field sites (Herford and Gornitz) in May 1992. Cores (20 cm long) were taken at each site and at day 0 they were sectioned into 0-10 and 10-20 cm and analysed separately. At days 14, 31-32, 90-92, 214, 361-365, 488-389 and 609 they were analysed as 0-20 cm.

The initial concentrations in the 10-20 cm sections were below the LOD at Gornitz and

0.006 mg/kg at Herford; the concentrations in the 0-10 cm sections were incorrectly calculated and should have been half those reported. The DT50 and DT90 values are given in Table 4 below.

Table 4. DT50 and DT90 values for two German soils.

Soil	DT50, days	DT90, days
Herford	60	489
Gornitz	130	>609

Crosby silt loam soil (properties not given) was used to fill steel cylinders to a height of 10 cm. [*Carbinol*-^{14}C]fenarimol (radiochemical purity >99%) was added to the surface at a nominal rate of 1.2 kg/ha and the cylinders were placed in the ground and subjected to normal weather conditions (not detailed) at Greenfield, Indiana, USA (Althaus and Bewley, 1978a). One cylinder was removed and the soil mixed at each sampling point at intervals during 511 days.

In another experiment at the same site (Althaus and Bewley, 1978b) was incorporated into the top 7.6 cm of a Crosby silt loam field plot at application rates of 1.1 and 5.6 kg/ha. Soil cores (depth at least 15 cm) were taken at each sampling point at intervals for 129 weeks.

In both experiments soil was Soxhlet-extracted with methanol and sometimes also butanol/water and analysed by TLC. In the experiment in which fenarimol was applied to the surface the half-life was 112 days and after 511 days 35% of the AR was extractable as fenarimol, 13% was unextractable, and unidentified extractable radioactivity accounted for 9% of the AR with no discrete region >5%. The rest of the radioactivity was reported as being dissipated but was not otherwise accounted for. Where fenarimol was incorporated into the soil no radioactivity was lost from the 0-15 cm core, but at times after 27 weeks 7-28% of the AR was found in the 7.6-15 cm section. No difference in the rate of degradation was observed between the two application rates. After 189 days extractable residues other than fenarimol individually accounted for <5% of the AR and after 903 days 65% of the AR was still fenarimol.

A long-term field dissipation study was carried out at locations in California, Florida, Indiana, and Maryland, using a WP formulation of fenarimol (Day, 1982). The soils were described as loam, sand, clay loam and silt loam although no detailed soil analysis was reported.

Two studies were conducted at each location. In the first, bare soil plots were divided to receive applications of fenarimol at 3.4 or 6.7 kg ai/ha in either the first year only, the first two years only, or for three years. In the second, bare soil plots were treated six to eight times with fenarimol at 0.56 kg ai/ha at biweekly intervals.

Soil samples were taken according to a defined schedule from all plots, in a few cases for as long as four years after application. Dissipation constants and DT50 values averaged from both investigations are shown in Table 5.

Table 5. Dissipation constant and DT50 values at four locations in the USA.

State	Average dissipation constant per day	DT50, days
California	0.00106	651
Florida	0.00722	98

Indiana	0.00217	322
Maryland	0.00167	413

The rate of dissipation was reported to be correlated with the moisture history of the area. Shorter half-lives were observed where the rainfall or supplemental irrigation was heavier.

Adsorption, desorption and mobility in soil

In a study according to US EPA guidelines, [*carbinol*-^{14}C]fenarimol (>99% radiochemical purity) dissolved in dilute $CaCl_2$ solution was added to four different soils in triplicate and equilibrated for 22 h at 25°C (Saunders and Powers, 1987). After centrifugation, supernatant (22 ml) was removed and desorption measured by equilibrating the soil with fresh dilute $CaCl_2$ solution for 22 h. This step was then repeated. The radioactivity present in the solutions was quantified by LSC. A further experiment showed that there was no adsorption to the glass centrifuge tubes. The results shown in Table 6 differ slightly from those given in the study which were calculated without converting the organic matter content to the organic carbon content. The slopes of the desorption isotherms were found to be less than those of the adsorption isotherms.

Table 6. Freundlich adsorption constants for fenarimol in four soils.

Soils	Adsorption			Desorption
	K_d	Slope 1/n	K_{oc}	K_d
Neuces (sand)	1.5	0.901	500	1.4-2.6
Fox (sandy loam)	5.1	0.858	634	5.1-11.5
Crosby (loam)	8.1	0.873	810	8.2-17.3
Brookston (clay loam)	11.9	0.861	992	12.7-28.7

Air-dried, sieved soils (Marion sand, synthetic sandy loam, Hancock loam, Hancock clay loam) were packed into 30 cm columns. [*Pyrimidine*-^{14}C]fenarimol (radiochemical purity 98%) was added (326 µg, equivalent to 1 kg/ha) to triplicate columns of each soil in a minimal amount of benzene which was allowed to evaporate overnight (Sullivan and Saunders, 1976). The columns were leached with water (2 litres, 64 cm) for 2-4 days. After extraction, the radioactivity in the soil and water was determined by LSC.

Depending on the soil, the first 250-400 ml water added was required to bring the soil to water capacity before leaching began. Recovery of the applied radioactivity was only 67-83%. In the four soils 0-0.4% of the recovered radioactivity was found in the leachate whilst 91-100% remained in the top 10 cm of the soil. By comparison, atrazine leached in the same soils showed 3.4-43% in the leachate and an even spread of the compound throughout the soil.

Columbus sandy loam soil (stored air-dried and water added one month before incubation to re-establish biological activity) maintained at 75% of 1/3 bar moisture content was incubated at 23-24°C in the dark for 30 days with a mixture of [*carbinol*-^{14}C]fenarimol (radiochemical purity 96%), [4-*chlorophenyl*-^{14}C]fenarimol (radiochemical purity >99%) and [2-*chlorophenyl*-^{14}C]fenarimol (radiochemical purity >99%) (Saunders *et al*., 1983).

Dry soil (Marion sand, Columbus sandy loam, Greenfield loam or Greenfield clay loam) was packed to a height of 25 cm in glass columns (1 cm diameter) and 5 cm of the aged soil containing

fenarimol was added. The columns were leached with water (40 ml, 51 cm) and the radioactivity in the soil and leachate determined by LSC.

After ageing the soil was found to contain 93% of the AR and after leaching recoveries of ^{14}C were 79.7-93.7% of the AR; some losses were considered to be due to volatilization during soil drying processes. Radioactivity in the leachate was 0.24-0.32% of the AR and almost all the radioactivity in the soil was in the top 12 cm. K_d values based on the distance moved by the ^{14}C were reported to be 2.7-7.3.

[*Carbinol*-^{14}C]fenarimol (radiochemical purity not stated) was photochemically degraded by exposure to natural sunlight for 50 h (Vonk and Hoven, 1981). This was then dissolved in methanol and found to contain 80 % of the AR of which 57.5% (46% of the AR) was fenarimol. Solutions of the degraded fenarimol were mixed with Droevendaal sand and Lelystad loam (10 g) at concentrations stated to be equivalent to 0.4 and 1.6 kg/ha. Columns 4.3 cm diameter were packed to a depth of 25 cm with air-dried, sieved soils and saturated with 25 mM $CaSO_4$ solution. The treated soil was added to the columns which were then leached with 25 mM $CaSO_4$ (30 cm) for 3 days. The levels of radioactivity in the leachates and soils were determined by LSC and its nature investigated by TLC.

The total recovery of the radioactivity applied to the columns was 88-100%. In the sand soil 1.7% was detected in the leachate whilst 80-92% remained in the top 5 cm of the columns and in the loam soil the corresponding figures were 5.5% and 89% (both soils). At the higher application rate slightly more radioactivity (4.5-9%) was found in the leachate and the major component was *o*-chlorobenzoic acid (34-50% of the radioactivity present). The remainder of the radioactivity was associated with a complex mixture of very polar compounds.

Photolysis in soil. [^{14}C]carbinol-, [^{14}C-]*p*-chlorophenyl- or [^{14}C]*o*-chlorophenyl-labelled fenarimol, or a mixture of the three, (radioactive purities >99%) were deposited in baking dishes by evaporation of a dichloromethane solution and exposed to natural sunlight in Indiana, USA, between December and February (the maximum temperature during this period was 18°C). After 100 days the dishes were thoroughly washed with methanol, and the extract purified by column chromatography and analysed by TLC (Althaus, 1984).

At the conclusion of the photolysis period 72-85% of the AR remained, suggesting that 15-28% had been lost by volatilization. Fenarimol accounted for 33-38% of the AR. Many products were observed but none individually accounted for >6%. The major product (3.1-5.7% of the AR) was *o*-chlorobenzoic acid and only one additional compound was seen by labelling in the phenyl rings (<1% of the AR).

In a further briefly summarized study (Althaus and Donoho, 1977) the examination of mixtures irradiated with natural or artificial light in which 40-50% of the [^{14}C]fenarimol had been degraded indicated the formation of more than 50 photodegradation products, but the most abundant products detected were less than 3% of the AR.

Comparisons of the TLC profiles and autoradiograms of the photolysis mixture and soil extracts indicated that the photodecomposition products were present in the soil, but the most abundant degradation product in soil accounted for less than 2% of the AR. The main compound in the soil extract, confirmed as fenarimol, accounted for 92% of the radioactivity.

Fenarimol formulated as either an EC or WP was added dropwise to 0.4 mm layers of silt

loam soil in petri dishes (Smith & Saunders, 1982a). Samples were exposed to natural sunlight in Indiana, USA, for periods up to 32 h. Soil was extracted by boiling with methanol/water and, after clean-up, analysed by GLC. There was no degradation of fenarimol after 32 h.

Photolysis in water. [*Carbinol*-^{14}C]fenarimol (radiochemical purity >99%) was dissolved in distilled water, sealed in ampoules and irradiated at 28°C under artificial light for 4 h (Smith and Saunders, 1982b). Analysis by GLC showed fenarimol to have decreased to 52% of its initial concentration and the tentatively identified 2′-chloro-2-(5-pyrimidinyl)-4-chlorobenzophenone to have increased to 17%. TLC and LSC showed ten other photodegradation products but none individually accounted for >3.3% of the AR.

A further study in which aqueous photolysis half-lives of fenarimol were calculated (Saunders, 1991) was submitted but not reviewed.

Stability of pesticide residues in stored analytical samples

Samples of two varieties of hops were fortified at 1 mg/kg and stored below -16°C for nearly two years. Samples were taken at intervals and analysed by GLC with an ECD. The procedural recoveries were in the range 73-96%. Residues of fenarimol (uncorrected for recovery) ranged from 0.66 to 0.91 mg/kg during the storage period as shown in Table 7.

Table 7. Concentrations of fenarimol in fortified hops (Target and Golding varieties) following storage at <-16°C.

Storage time, days	Residue, mg/kg	
	Target	Golding
0	0.79	0.76
161	0.78	0.86
276	0.66	0.84
371	0.75	0.70
463	0.83	0.91
666	0.72	0.66
706	-	0.83

APPRAISAL

Fenarimol was reviewed for the first time by the 1995 JMPR and a number of maximum residue levels were estimated. Although data on the environmental fate of fenarimol in soil were submitted to the Environmental Core Assessment Group at that Meeting they were not, as would normally be expected, submitted for the consideration of the FAO Panel. The manufacturer agreed to submit the data to the FAO for consideration by the FAO Panel at the 1996 JMPR. The 1995 Meeting decided that in these circumstances the maximum residue levels should be recommended only as temporary MRLs with a requirement for the environmental fate studies. The manufacturer has now submitted data on the environmental fate of fenarimol in soil.

The 1995 Meeting concluded that a maximum residue level of 5 mg/kg for dry hops would be appropriate but, since samples in the relevant trials were stored for 13 months before analysis, decided not to recommend an MRL for hops in the absence of data confirming the stability of

fenarimol in a leafy crop. A study of the stability of fenarimol residues in dried hops has now been submitted.

The rate of aerobic degradation in the laboratory was examined in five soils in the dark in two studies. These showed that at 20-24°C the degradation of fenarimol was very slow with a half-life of 436-1833 days. The production of CO_2 was low (<5%) over the 180- and 365-day studies, as were the levels of unextractable residues which amounted to 3.3-17.2% of the applied radioactivity (AR). The levels of degradation products were also low (up to 4.1%) and only one of the compounds was identified, Æ-(2-chlorophenyl)-Æ-(4-chlorophenyl)-1,2-dihydro-2-oxo-5-pyrimidinemethanol.

Dissipation under field conditions was investigated in two recent studies at six sites across Germany. Although samples were taken from several depths at some of the sites, only 0-20 cm cores were analysed in all the trials. At two sites (Grebin and Alsfeld) very high concentrations of fenarimol at day 0 (three to four times those predicted from the application rate) resulted in short DT50 values. Over all the trials the DT50 values ranged from 14 to 130 days (60-130 days excluding the Grebin and Alsfeld sites). Fenarimol persists in the soil and in five of the studies the DT90 value was more than one year. An earlier study in the USA gave a half-life of 112 days for fenarimol applied to the surface. When fenarimol was incorporated into the soil the half-life was >903 days with 35% of the AR as fenarimol, 13% unextractable and 9% extractable but unidentified after 511 days.

In further studies at four US sites fenarimol was lost slowly from bare soil with average DT50 values ranging from 98 to 651 days. The rate of dissipation appeared to increase with increasing soil moisture.

Four soils were examined to determine sorption, and K_{oc} values in the range 500-992 g/ml were calculated. In column leaching experiments with four soils the overall recovery of radioactivity was not high, but only 0-0.4% of the recovered radioactivity was found in the leachate after about 1.7 litres had been collected. Most of the of the radioactivity (91-100%) was recovered from the top 10 cm of the soil column. When fenarimol was incubated in soil for 30 days before leaching 0.28-0.32% of the AR was found in the leachates from columns of four different soil types. Slightly more radioactivity (1.7-9% of the AR) was leached when fenarimol-soil mixtures were aged in sunlight and the degraded fenarimol applied to a soil column. The majority of this radioactivity was found to be from *o*-chlorobenzoic acid.

In a photolysis experiment in Indiana, USA (maximum temperature 18°C), in which fenarimol was deposited in baking dishes and exposed to natural sunlight, 33-38% of the initial fenarimol was still present after 100 days. In a further study of irradiated mixtures in which 40-50% of the [^{14}C]fenarimol had been degraded, more than 50 low-level photodegradation products were separated but no major products were detected. In contrast a further experiment in Indiana showed no photolysis of fenarimol on a soil surface after 32 h exposure.

In a study of aqueous photolysis the major tentatively identified photodegradation product was 2′-chloro-2-(5-pyrimidinyl)-4-chlorobenzophenone, which accounted for 17% of the AR after 4 h incubation. Ten other unidentified products were observed, each accounting for <3.3% of the AR.

The Meeting considered these data on environmental fate to be satisfactory and recommended the use of the maximum residue levels estimated by the 1995 Meeting as MRLs, which should no longer be temporary.

Data on the stability of fenarimol in stored analytical samples of dry hops were reviewed. Residues were stable up to 2 years in dry hops fortified at 1 mg/kg and stored at <-16°C. The Meeting decided to recommend the maximum residue level of 5 mg/kg provisionally estimated by the 1995 JMPR for use as an MRL.

The Meeting noted the high persistence of fenarimol in soil, and recalled that the 1995 Meeting had listed as desirable a study to assess the likely residues in relevant succeeding or rotational crops. The 1995 JMPR report (Section 2.5.2) referred to the need to submit data on the uptake of compounds by crops from the soil.

The Meeting was informed that no data were available on the uptake from soil by crops, the bioavailability of fenarimol, or residues in rotational/succeeding crops, but a rotational crop study would be completed by 1997 and the data from it would be made available to a future Meeting.

RECOMMENDATIONS

The maximum residue levels shown below are recommended for use as MRLs.

Definition of the residue for compliance with MRLs and for estimation of dietary intake: fenarimol

Commodity		Recommended MRL, mg/kg		PHI on which based, days
CCN	Name	New	Previous	
AB 0266	Apple pomace, dry	5	5 T	-
VS 0620	Artichoke, Globe	0.1	0.1 T	7
FI 0327	Banana	0.2	0.2 T	0
MO 1280	Cattle, kidney	0.02*	0.02* T	-
MO 1281	Cattle, liver	0.05	0.05 T	-
MM 0812	Cattle meat	0.02*	0.02* T	-
FS 0013	Cherries	1	1 T	0
DF 0269	Dried grapes (= Currants, raisins and sultanas)	0.2	0.2 T	-
FB 0269	Grapes	0.3	0.3 T	14
DH 1100	Hops, dry	5	-	10
VC 0046	Melons, except Watermelon	0.05	0.05 T	1
FS 0247	Peach	0.5	0.5 T	7
TN 0672	Pecan	0.02*	0.02* T	30
VO 0445	Peppers, Sweet	0.5	0.5 T	7
FP 0009	Pome fruits	0.3	0.3 T	14-28
FB 0275	Strawberry	1	1 T	1

FURTHER WORK OR INFORMATION

Desirable

1. Full details of the methods of analysis used in all the residue studies where this information was not given. Validation of the methods of analysis for which validation data were not submitted (repeated from 1995 JMPR).

2. Information on the melting point, octanol/water partition coefficient, solubility and specific gravity of pure fenarimol (repeated from 1995 JMPR).

3. Submission of the study reports supporting the trials on apples, gooseberries, currants, gherkins and strawberries conducted in The Netherlands (repeated from 1995 JMPR).

4. Submission of the study on residues in rotational crops which the Meeting was informed would be completed in 1997.

5. An investigation into the uptake and translocation of fenarimol residues into crops from soil and their translocation. If the data indicate that measurable residues could occur in rotational crops, then a study to assess the nature of the residues in representative rotational crops.

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(All unpublished)

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