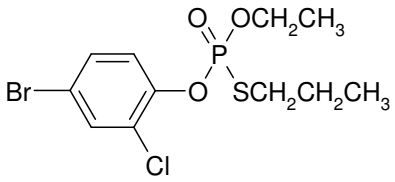
5.18 PROFENOFOS (171)

RESIDUE AND ANALYTICAL ASPECTS

Profenofos, an organophosphorus insecticide, was first evaluated by the JMPR in 1990 and has been reviewed for residue in 1992, 1994 and 1995. It was listed for periodic re-evaluation for residue evaluation at the 39th Session of the CCPR by the 2008 JMPR. The toxicology of profenofos was re-evaluated by the 2007 JMPR which estimated an ADI of 0–0.03 mg/kg bw and an ARfD of 1 mg/kg bw.

The Meeting received information on physical and chemical properties, animal and plant metabolism, environmental fate, analytical methods, storage stability, use pattern, supervised trials, processing and animal feeding studies.

O-(4-bromo-2-chlorophenyl) *O*-ethyl S-propyl phosphorothioate



In this appraisal, the following abbreviated names were used for metabolites.

CGA 55960	4-bromo-2-chlorophenol
BCPEE	4-bromo-2-chlorophenyl ethyl ether
BCPME	4-bromo-2-chlorophenyl methyl ether
THPME	2-thioethylenecarboxy-4-hydroxyphenyl methyl ether
MHPME	2-mercapto-4-hydroxyphenyl methyl ether

Animal metabolism

The Meeting received animal metabolism studies with profenofos in lactating goats and laying hens. [U-^{14}C-phenyl]profenofos was used in the metabolism studies.

When two lactating goats were orally dosed with [U-^{14}C-phenyl]-profenofos once daily for 4 consecutive days at 150 mg/animal/day, equivalent to 100 ppm in the feed, most of the administered radioactivity was excreted in the urine (59% and 79%) and faeces (1.7% and 1.2%). None of individual tissues or cumulative milk sample on day 4 contained more than 2% of the administered dose. Residue in milk reached a plateau by days 2–3. Residues of radioactivity were higher in kidney (2.5 mg/kg and 2.3 mg/kg profenofos equivalent) than in other tissues. Metabolite CGA 55960 and its sulfate and glucuronide constituted 22, 40 and 28% of the TRR, respectively in kidney, with no parent profenofos. Parent profenofos was the major component in fat (44% TRR), and was also present in liver (10% TRR). CGA 55960 sulfate was the major component identified in muscle (56% TRR), kidney (40% TRR) and milk (85% TRR). In addition, the major metabolites in liver and kidney were free CGA 55960 (25%, 22% TRR) and its glucuronide (8%, and 28% TRR), respectively.

When two groups of five laying hens were orally dosed with [U-^{14}C-phenyl]profenofos once daily for 8 consecutive days at a dose equivalent to 1 and 10 ppm in the feed, most of the

administered radioactivity was excreted in the excreta (93% and 89%). None of individual tissues or egg samples contained more than 1% of the administered dose. Highest TRR appeared in the kidney (0.12 mg/kg for the 1 ppm dose level and 1.3 mg/kg for 10 ppm dose level). Individual tissue TRR from 10 ppm dose level were approximately 10 times higher than those from 1 ppm dose group. CGA55960 was the major identified component in fat (77% and 89% TRR) and liver (75% and 71% TRR). Parent profenofos accounted for less than 5% TRR in each tissue and egg. For egg, CGA55960 sulfate was the main component of the residue: muscle (85% and 75% TRR), egg yolk (88% and 93% TRR), egg white (98% TRR).

Profenofos was rapidly metabolized following oral administration to animals. Once administered orally, profenofos underwent hydrolysis of the phosphate ester, and then formed either its sulfate or its glucuronide. TRR levels were higher in the kidney than in other tissues. Most of administered dose was rapidly excreted.

The metabolism of profenofos in the lactating goat and the laying hen was qualitatively similar to that described in the toxicology section of the 2007 Report of the JMPR.[39]

Plant metabolism

The Meeting received plant metabolism studies with profenofos in cotton, Brussels sprouts, lettuce and tomatoes. [U-^{14}C-phenyl]profenofos was used in the metabolism studies.

In a greenhouse cotton metabolism study, cotton plants were sprayed at a rate of 1.7 kg ai/ha once to simulate a multiple application of pesticide and maximize metabolites. Immediately after treatment the majority (91%) of the TRR was extractable with organic solvent. The extractable TRR decreased from 19.9mg/kg at day 0 to 1 and 0.55 mg/kg after 6 and 12 weeks. The parent profenofos (89%, 50% TRR) was the major component in the leaves and stems at 0 and 6 weeks after treatment, and then parent profenofos (13% TRR) and CGA 55960 (26% TRR) were identified in the leaves and stems at 12 weeks after treatment.

In a field cotton metabolism study in USA, cotton was sprayed over-the-top at a rate of 2.2 kg ai/ha three times at 2 week intervals. Mature samples of cotton were harvested 7 days after the final application. The TRR of profenofos equivalents was 8.3 mg/kg in the leaves, 0.4 mg/kg in the seeds and 0.2 mg/kg in the cotton fibre. The major compounds identified were parent profenofos (32% TRR) and CGA 55960 glucose conjugate (31% TRR) in mature leaves, and CGA 55960 glucose conjugate (15% TRR) in mature seeds.

In another field cotton metabolism study in USA, cotton was foliar sprayed 6 times at a rate of 2.2 kg ai/ha weekly. Mature samples of stalk, seed and lint were harvested at 61 and 83 days after the final application. Parent profenofos (29% TRR) and CGA 55960 glucosyl sulfate (31% TRR) were major components of the residue (TRR 14 mg/kg) in mature stalk. Mature samples of cotton seed contained parent profenofos (6.5% TRR) and CGA 55960 glucosyl sulfate (17% TRR) as the major part of residue (TRR 0.66 mg/kg).

In a Brussels sprouts metabolism study in Switzerland, Brussels sprouts received 3 foliar sprays at 2 week intervals at a rate equivalent to 1.1 kg ai/ha. In the leaves/stems sampled 21 days after the final treatment, CGA 55960 polysaccharide conjugate (30% TRR) and CGA 55960 monosaccharide conjugate (36% TRR) were major components of the residue (TRR 3.6 mg/kg). Profenofos was rapidly degraded following application to Brussels sprouts, with TRR of 0.3 mg/kg profenofos equivalents in the sprouts at maturity. Parent profenofos was present at 1.9% TRR in the leaves/stems but not found in the sprouts.

[39] In: Pesticide Residues in Food—2007. Report of the JMPR 2007, FAO Plant Production and Protection Paper, 191, pp 210.

In a lettuce metabolism study, two leaves per lettuce plant were treated by smearing 1 mg of ethanol solution of [U-^{14}C-phenyl]profenofos evenly over each leaf surface. Lettuce leaves were sampled at 0, 7, 14 and 21 days after treatment. Parent profenofos was the major component (68–92% TRR) on lettuce leaves, and no metabolite exceeding 3% of the TRR was identified at 0, 7 and 14 days. Parent profenofos (61% TRR) and CGA 55960 (10%) were the major part of the residue on leaves at 21 days after treatment.

In a tomato metabolism study, tomato plants received three foliar applications at a rate of 0.72, 0.82 and 0.81 kg ai/ha, with a week intervals. Mature tomato fruits as well as tomato leaves were harvested just after the last application, and 4, 7 and 14 days. The TRR was 1.1 mg/kg in tomato fruits and 29 mg/kg in leaves at 14 days. About 42% of the TRR was washed off the tomatoes harvested just after treatment, and 6% TRR at 14 days by rinsing with methanol. The parent was the major component of residue amounting to 0.67 mg/kg (63% TRR) in tomato fruits at 14 days later. Other identified components of the residue in tomato fruits were CGA 55960, CGA 55960 disaccharide conjugate and polysaccharide. Although the parent was the major component of residue (72% TRR) just after application in tomato leaves, it decreased to 6% TRR at 14 days later. Metabolite CGA 55960 was the major residue component in the leaves (20% TRR) at 14 days.

Profenofos is slowly absorbed and metabolized. Profenofos was the major residue when harvested several weeks after the last application, and then profenofos underwent hydrolysis of phosphate ester to form CGA 55960 and its sugar conjugate.

Environmental fate in soil

The Meeting received information on aerobic soil metabolism and rotational crop study.

Aerobic soil metabolism studies were conducted using [U-^{14}C-phenyl]profenofos applied to various soils which were then incubated under aerobic conditions at 21 or 25 °C. Aerobic soil degradation rates were influenced by the nature of the soil, temperature, moisture status of the soil and dose applied. Under aerobic conditions, profenofos applied to soil was rapidly degraded. After 28–30 days, only small amounts (< 0.1–1.6%) of applied profenofos remained as the parent. CGA 55960, BCPEE, THPME, MHPME and BCPME were formed and then degraded during study. Unextracted radioactivity, 1.0% of the applied dose in sandy loam on day 0, increased steadily to 10% of the applied dose on day 270. These results indicate that profenofos is not persistent in soil. Under sterile conditions, CGA 55960 was formed as the only degradate, reaching a maximum level of 93% of the applied dose by 360 days.

In confined rotational crop study, mustard, radish and wheat were planted at 30, 60, 90, 180 and 365 days following the application of maximum seasonal use rate of [U-^{14}C-phenyl]profenofos. Profenofos as an 8E formulation was applied to bare ground at the maximum seasonal rate of 6.7 kg ai/ha. Crops were harvested at maturity, and wheat forage was also harvested at intermediate stage.

TRRs for all crops were 0.026–0.157 mg/kg at 30-day plant back interval. Residue levels were slightly lower at 60, 90 and 180-day intervals. Intact profenofos was positively identified only in the mature root of the 30-day radishes, albeit at very low levels (0.001 mg/kg). For all planting intervals, the majority of the residues in rotational crops were in the post-extraction solids and aqueous-soluble fraction. The aqueous soluble residues were characterized as a mixture of neutral, basic and acidic components. A total hydrolysis method indicated these components were CGA 55960 sugar conjugates.

Profenofos residues are not expected to occur in succeeding crops.

Methods of analysis

The Meeting received description and validation data for analytical methods for residues of parent profenofos in raw agricultural commodities, processed commodities, feed commodities, animal

tissues, and milk and eggs. In most of the methods for determination of profenofos, homogenized samples were extracted with methanol or a mixture of methanol and water, and the extract was cleaned up with liquid-liquid partition followed by solid phase column chromatography using silica and florisil singly or in combination. The final residue may be determined by gas chromatography with NPD, FPD or ECD. LOQs were typically in the 0.01–0.05 mg/kg range.

Methods were provided also for residues of parent profenofos, CGA 55960, its sulfate and glucuronide determined as CGA 55960 in raw agricultural commodities and animal tissues, feed commodities, and milk and eggs. Homogenized samples were extracted with methanol or acetonitrile, and the extract was subjected to an acid and a base hydrolysis. The solutions were cleaned up with liquid–liquid partition followed by solid phase column chromatography using silica. The final residue may be determined by gas chromatography with ECD. LOQs were typically in the 0.02–0.05 mg/kg range.

Analytical recovery data were satisfactory for profenofos and total residues determined as CGA 55960 for numerous commodities.

DFG Method S19 (extended version) also demonstrated to be suitable for analysis of profenofos in plant material and foodstuffs of animal origin.

Stability of pesticide residues in stored analytical samples

Information was received on the freezer storage stability of profenofos residues in plant commodities, and of total residues of profenofos determined as CGA 55960 in plant and animal commodities.

Profenofos residues were stable in the following plant commodities for the intervals tested for 1–2 years: cotton seed, cotton seed hulls, cotton seed oil, soap stock and grapes.

Total residues of profenofos determined as CGA 55960 into animal tissues, milk and eggs were stable when stored under freezer storage conditions (approximately –20 °C) for 1 year.

Residue definition

The current residue definition of profenofos is parent profenofos for plant and animal commodities. Parent profenofos is the major component of the TRR in most crops until 2–3 weeks after application. In tomato fruits, profenofos represented 63% of the TRR at 14 days after the last application. Also in lettuce, profenofos (61% TRR) is the major residue component at 21 days after treatment, although CGA 55960 was identified 10% of TRR. No metabolite was found to be more than 10% of the TRR in lettuce leaves and tomato fruits. In Brussels sprouts, however, no parent profenofos was detected in sprouts at 21 days after the last application. Although CGA 55960 and CGA 55960 sugar conjugate were identified in sprouts, concentrations of the metabolites were below the LOQ level.

In cotton seed, parent profenofos and CGA 55960 glucosyl sulfate were identified as the major residue components at 83 days after the final application, although each TRRs were less than 20%. No other metabolites were present higher than 5% of the TRR. Methods of analysis are available for determination of parent profenofos and these metabolites in plants. However, concentrations of these metabolites are expected to be below the LOQ level.

The Meeting decided that parent profenofos is a suitable analyte for enforcement purposes and dietary risk assessment in plant commodities.

Profenofos is rapidly absorbed and eliminated after oral administration in farm animals and is only found in significant amount in goat kidney and hen kidney, liver and eggs. In the lactating goat study, the main components of residue were CGA 55960 sulfate in milk, kidney and muscle, parent profenofos in fat. In the laying hen study, the major residue components were CGA 55960 in fat and liver, CGA 55960 sulfate in muscle and eggs. Methods of analysis are available for determination of parent profenofos and these metabolites in animal tissues, milk and eggs. The metabolites determined

as CGA 55960 by hydrolysis procedure are expected to be detectable as the major compounds in animal tissues, milk and eggs. However, according to farm animal feeding studies, the parent and the metabolites are expected to be present below the LOQ.

The Meeting decided that parent profenofos is suitable analyte for enforcement purposes and dietary risk assessment in animal commodities.

Profenofos may be fat-soluble as it has log P_{ow} of 4.44 at 25 °C. In animal metabolism studies, the TRR in fat (0.07 mg/kg) was much lower than in kidney (2.3 mg/kg), liver (0.51 mg/kg) and milk (0.41 mg/kg). The study results indicated that the parent was rapidly decomposed to water-soluble metabolites, and those metabolites were excreted. Therefore, the Meeting decided the residues would not be fat-soluble.

The Meeting recommended the following as residue definitions for profenofos.

For plants and animals:

Definition of the residue (for compliance with the MRL and for estimation of dietary intake): *profenofos*.

Results of supervised residue trials on crops

The Meeting received supervised trial data for profenofos uses on tropical fruits (mango, mangosteen), cabbages, watermelon, fruiting vegetables (chilli peppers, tomatoes), soya beans and cotton seed. Residue data were also provided on cotton meal and hulls.

Labels (or translation of labels) were available from Australia, Brazil, Chile, Colombia, Indonesia, Malaysia, Philippines, South Africa and USA describing the registered uses of profenofos, and GAP information was also provided from Thailand.

Since no residue data were provided for sweet peppers and potato, the Meeting withdraws its previous recommendations for maximum residue levels for these crops.

Mango

In Thailand, profenofos may be applied to mango trees four times at a spray concentration of 0.075 kg ai/hL, with a 21 days PHI. In six Thai trials conducted in accordance with Thai GAP, profenofos residue in mango whole fruits, were: < 0.01, 0.05, 0.05, 0.06, 0.06 and 0.07 mg/kg. No data were available for residue in edible portion.

The Meeting estimated a maximum residue level, an STMR value and an HR value for profenofos in mango of 0.2, 0.06 and 0.07 mg/kg respectively.

Mangosteen

In Thailand, profenofos may be applied to mangosteen trees three times at a spay concentration of 0.15 kg ai/hL with a 21 days PHI. In four Thai trials conducted in accordance with Thai GAP, profenofos residue in mangosteen whole fruits were 1.9, 1.9, 2.3 and 3.7 mg/kg. No data were available for residue in edible portion.

The Meeting estimated a maximum residue level, an STMR value and an HR value for profenofos in mangosteen of 10, 2.1 and 3.7 mg/kg respectively.

Cabbages

In South Africa, profenofos may be applied to cabbages at a rate of 0.38–0.5 kg ai/ha with a 7 days PHI.

In a South African trial conducted in accordance with South African GAP, profenofos residues were < 0.02, 0.09, 0.13 mg/kg.

The Meeting agreed that insufficient data were available to estimate a maximum residue level for cabbages.

The Meeting withdraws its previous recommendation of 1 mg/kg for cabbages.

Watermelon

In the Philippines, profenofos may be applied to watermelon at a spray concentration of 0.1–0.15 kg ai/hL with a 7 days PHI. Six trials were conducted in the Philippines (0.014–0.075 kg ai/hL with a 13 day PHI) but the spray concentration and PHI did not correspond to Filipino GAP.

The Meeting was unable to estimate residue level as the residue trails conducted do not match the GAP.

Chilli peppers

In Indonesia, profenofos may be applied to chilli pepper crops at a spray concentration of 0.025–0.15 kg ai/hL with no required PHI.

In a Malaysian trial conducted in accordance with Indonesian GAP, profenofos residues on 0 days after the final application was 12 mg/kg. The Meeting agreed that the data matching GAP were insufficient to propose a maximum residue level for chilli peppers.

The Meeting withdraws its previous recommendation of 5 mg/kg for chilli peppers.

Since the Meeting withdraws a maximum residue level in chilli peppers, a maximum residue level in dried chilli peppers, which is estimated using a processing factor of dehydration of chilli peppers, is withdrawn.

Tomatoes

In South Africa, profenofos may be applied to tomato crops at a rate of 0.25–0.75 kg ai/ha with a 4 day PHI. In nine South African trials conducted in accordance with South African GAP, profenofos residues in rank order were 0.18, 0.39, 0.40, 0.81, 1.3, 1.8, 1.9, 4.2 and 4.7 mg/kg. The trials where the samples from control plots contained residues were disregarded.

In Indonesia, profenofos may be applied to tomato crops at a rate of 0.38–1.2 kg ai/ha with no required PHI. In two Indonesian trials conducted in accordance with Indonesian GAP, profenofos residues on 1 day after the final application were 1.3 and 1.6 mg/kg.

Based on the South African trials, the Meeting estimated a maximum residue level, an STMR value and an HR value for profenofos in tomatoes of 10, 1.3 and 4.7 mg/kg respectively.

The Meeting withdraw its previous recommendation of 2 mg/kg for tomato.

Soya beans

In Brazil, profenofos may be applied to soya bean crops at a rate of 0.08–0.1 kg ai/ha with a 21 days PHI. In three Brazilian trials conducted with conditions in line with Brazilian GAP, profenofos residues (ranked order, median underlined) were < 0.02 (3) mg/kg.

In the Philippines, profenofos may be applied at a rate of 0.5–0.75 kg ai/ha with a 7 days PHI. None was conducted in accordance with Filipino GAP.

The Meeting agreed that the data in accordance with GAP were insufficient to propose a maximum residue level for soya beans.

Cotton seed

In Australia, profenofos may be applied to cotton crops at a rate of 0.25–1.0 kg ai/ha, PHI 28 days. In tree Australian trials conducted in accordance with Australian GAP, profenofos residues were 0.04, 0.14 and 0.70 mg/kg.

In a Brazilian trial conducted in accordance with Brazilian GAP (0.25–0.5 kg ai/ha with a 15 day PHI), profenofos residues was < 0.02 mg/kg.

In the USA, profenofos may be applied 2–4 times at a rate of 0.14–0.86 kg ai/ha with a 14 day PHI. In 11 US trials conducted with condition in line with US GAP, profenofos residues in rank order were < 0.05 (2), < 0.10, 0.25, 0.34, 0.35, 0.60, 0.60, 0.92, 0.95 and 1.2 mg/kg.

Based on the US trials, the Meeting estimated a maximum residue level, an STMR value for profenofos in cotton seed of 3 and 0.35 mg/kg respectively.

The Meeting withdraws its previous recommendation of 2 mg/kg for cotton seed.

Animal feedstuffs

Cotton gin trash

In two US trials conducted in accordance with US GAP (0.86 kg ai/ha, PHI of 14 days), profenofos residues in cotton gin trash were 24 and 53 mg/kg respectively.

The Meeting was unable to estimate residue level as the data matching GAP were insufficient to propose a maximum residue level for cotton gin trash.

Fate of residues during processing

The Meeting received information on processing of cotton seed to crude oil and refined oil.

Processing factors were calculated for cotton seed (hulls, meal, crude oil and refined oil) and are shown in the Table below.

Mean processing factors and STMR-P for food and feed

Commodity	Processing factor	Median or best estimate	STMR-P mg/kg
Cotton seed			0.35
Hulls	0.90, 1.1, 1.5, 2.1	1.4	0.49
Meal	0.12, 0.18, 0.35, 1.5	0.54	0.19
Crude oil	1.0, 1.4, 1.5, 1.8, 1.9, 2.0, 2.3, 2.6, 2.7, 3.9, 4.8, 6.5	2.2	0.77
Refined oil	< 0.08, < 0.14, 0.13, 0.15, 0.18, 0.28, 0.40, 0.43, 0.52, 1.2, 1.2, 3.5, 3.6	0.40	0.14
Bleached deodorized oil	< 0.06, < 0.06, < 0.08, < 0.08, 0.08, 0.08, 0.23, 0.33, 0.65, 0.75,	0.08	0.03

Cotton seed oil must be refined to remove a naturally occurring toxin. Therefore the refined oil residues should be used to estimate an STMR for dietary intake.

The Meeting withdraws its previous recommendation of 0.05(*) mg/kg for cotton seed oil, edible.

Farm animal feeding studies

The Meeting received a lactating dairy cow feeding study and a laying hen feeding study, which provided information on likely residues resulting in animal commodities, milk and eggs from profenofos residues in the animal diet.

Lactating dairy cows

Groups of 3 lactating dairy cows were dosed once daily via feed with profenofos at 0.25, 0.75 and 2.5 ppm in the diet for 28 consecutive days. One cow was dosed with profenofos at 25 ppm for 28 days. Milk samples for residue analysis were collected from each cow at 0, 3, 5, 7, 10, 21 and 28 days and samples of liver, kidney, perirenal fat, omental fat, round steak, tenderloin and blood were collected on 14, 21 and 28 days.

Parent profenofos residues did not occur above LOQ in any tissue and milk samples for any of the test doses.

Laying hens

Three groups of 15 laying hens were fed rations treated with profenofos at 0.10, 0.30 and 1.0 ppm for 28 consecutive days. Samples of eggs for residue analysis were collected at 0, 1, 3, 7, 10, 14, 21 and 28 days and samples of liver, fat, breast and thigh were collected.

Parent profenofos residue was not present in the tissues and eggs.

Farm animal dietary burden

The Meeting estimated the dietary burden of profenofos in livestock on the basis of the diets listed in Annex 6 of the 2006 JMPR Report (OECD Feedstuffs Derived from Field Crops). Calculation from highest residue, STMR (some bulk commodities) and STMR-P values provides the levels in feed suitable for estimating MRLs, while calculation from STMR and STMR-P values for feed is suitable for estimating STMR values for animal commodities. The percentage dry matter is taken as 100% when the highest residue levels and STMRs are already expressed as dry weight.

Estimated maximum and mean dietary burdens of farm animals

Dietary burden calculations for beef cattle, dairy cattle, broilers and laying poultry are provided in Annex 6 of the 2006 Report of the JMPR. The calculations were made according to the livestock diets from US-Canada, EU and Australia in the OECD Table (Annex of the 2006 JMPR Report).

	Livestock dietary burden, profenofos, ppm of dry matter diet					
	US-Canada		EU		Australia	
	Max	mean	Max	Mean	Max	mean
Beef cattle	0.11a	0.11b	0.01	0.01	0.11	0.11
Dairy cattle	0.08	0.08c	0.01	0.01	0.05	0.05
Poultry – broiler	0.04d	0.04e	0.01	0.01	0.02	0.02
Poultry – layer	0.04	0.04	0.01	0.01	0.02	0.02

a - Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian meat and milk

b - Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian meat

c - Highest mean dairy cattle dietary burden suitable for STMR estimates for milk

d - Highest maximum poultry dietary burden suitable for MRL estimates for poultry meat and eggs

e - Highest mean poultry dietary burden suitable for STMR estimates for poultry meat and eggs

Animal commodity maximum residue levels

For MRL estimation, the residue in the animal commodities is profenofos.

In a feeding study, in which profenofos equivalent to 0.75 ppm in the diet was dosed to lactating cows for 28 consecutive days, no total profenofos residues were detected in tissues (< 0.05 mg/kg) and milk (< 0.01 mg/kg). Therefore no residues are to be expected at the maximum estimated dietary burden of 0.11 ppm feed for beef cattle and dairy cattle.

The Meeting estimated a maximum residue level of 0.05(*) mg/kg in mammalian meat and mammalian edible offal, and 0.01(*) mg/kg in milk. The Meeting confirmed its previous recommendations for mammalian meat and milk.

The mean estimated dietary burden for dairy cattle is 0.08 ppm. No profenofos residues (< 0.01 mg/kg) were found in any samples of milk at the 0.75 ppm feeding level. Therefore the Meeting estimated an STMR of 0 mg/kg in milk.

The mean estimated dietary burden for cattle is 0.11 ppm. In muscle, fat, kidney and liver, no profenofos residues (< 0.05 mg/kg) were detectable at the 0.75 ppm feeding level. The Meeting estimated STMRs and HRs of 0 mg/kg in meat, offal and fat.

In a feeding study, in which profenofos equivalent to 0.30 ppm in the diet was dosed to laying hens for 28 consecutive days, no profenofos were detected in any tissues (< 0.05 mg/kg) and eggs (< 0.02 mg/kg). Therefore no residues are to be expected at the maximum estimated dietary burden of 0.04 ppm feed for poultry.

The Meeting estimated a maximum residue level of 0.05(*) mg/kg in poultry meat and edible offal, and 0.02(*) mg/kg in eggs. The Meeting confirmed its previous recommendation for eggs.

The Meeting estimated STMRs and HRs of 0 mg/kg in poultry meat, offal, fat and eggs.

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Dietary Intakes (IEDIs) of profenofos were calculated for the 13 GEMS/Food cluster diets using STMRs/STMR-Ps estimated by the current Meeting (Annex 3 of the 2007 Report of the JMPR). The ADI is 0–0.03 mg/kg bw and the calculated IEDIs were 1–10% of the maximum ADI (0.03 mg/kg bw). The Meeting concluded that the long-term intakes of residues of profenofos, resulting from the uses considered by current JMPR, are unlikely to present a public health concern.

Short-term intake

The IESTI of profenofos calculated on the basis of the recommendations made by the current Meeting represented 0–10% of the ARfD (1 mg/kg bw) for children and 0–6% for the general population. The Meeting concluded that the short-term intakes of residues of profenofos resulting from the uses considered by the Meeting are unlikely to present a public health concern.