This is provisional English translation of an excerpt from the original full report.

Risk Assessment Report

Profenofos

(Pesticides)

Food Safety Commission of Japan (FSCJ)
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ABSTRACT

FSCJ conducted a risk assessment of profenofos (CAS No. 41198-08-7), an organophosphate insecticide, based on results from various studies.

The data used in the assessment include fate in animals (rats and lactating goats), fate in plants (Brussels sprouts and tomates), residues in crops, acute/subacute neurotoxicity (rats), delayed neurotoxocity (hens), subacute toxicity (rats and dogs), chronic toxicity (dogs), combind chronic toxicity/carcinogenicity (mice), carcinogenicity (rats and mice), two- and three-generation reproductive toxicity (rats), developmental toxicity (rats and rabbits), developmental neurotoxicity (rats), immunotoxicity (mice) and genotoxicity, and on the studies of choline esterase (ChE) activity in adult and juvenile rats exposed to single dose, and blood choline esterase activity in humans, dogs, and rats in vitro.

Major adverse effects of profenofos observed are inhibition of brain and erythrocyte ChE activities and anemia in many species, and binuclear hepatocytes in the periportal area of the liver in dogs. Profenofos showed no carcinogenicity, adverse effects on reproduction, teratogenicity, delayed neurotoxicity, developmental neurotoxicity, immunotoxicity and genotoxicity.

Based on the results from fates in animals and plants and residues in crops, profenofos (parent compound only) was identified as the relevant substance for a residue definition for dietary risk assessment in agricultural and livestock products.

The lowest no-observed-adverse-effect level (NOAEL) obtained in all tests was 0.05 mg/kg bw per day based on following 3 studies in dogs: a 90-day or a 180-day study based on erythrocyte ChE inhibition (>20%) at 0.51 or 2.88 mg/kg bw/day, respectively and one-year chronic toxicity study based on erythrocyte ChE inhibition (>20%) and binuculear hepatocytes in the liver at 1 mg/kg bw/day. FSCJ specified an acceptable daily intake (ADI) of 0.0005 mg/kg bw/day, applying a safety factor of 100 to the NOAEL.

The lowest NOAEL for potential adverse effects of single oral administration was 0.5 mg/kg bw in a single oral dose study of ChE activityt in adult rats based on erythrocyte ChE inhibition (>20%) at 25 mg/kg bw/day, the study showing wide range between the lowest-observed-adverse-effect level (LOAEL) and the NOAEL. The same LOAEL was obtained from a single oral dose study of ChE acitivity in juvenile rats

based on the the same endpoint, and the NOAEL of this study was 5 mg/kg bw/day. FSCJ concluded that the juvenile rat study was appropriate to set an acute reference dose (ARfD). Therefore, FSCJ specified the ARfD of 0.05 mg/kg bw/day, applying a safety factor of 100 to the NOAEL.