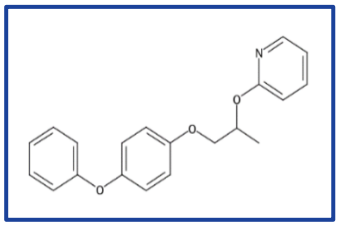
SUMMARY

Background: 2-((1-(4-Phenoxyphenoxy)propan-2-yl)oxy)pyridine (MPEP) is a pesticide used to control a variety of insects and is added to potable water in Zika virus-endemic areas to control mosquitoes. It has been proposed that MPEP might contribute to the increased incidence of microcephaly (small head) in babies born to mothers consuming MPEP in potable water. NTP studied the developmental effects of MPEP in rats and rabbits to identify potential hazards that could be relevant to humans.



Methods: In prenatal developmental toxicity studies, pregnant rats and rabbits were orally administered doses of MPEP mixed into corn oil by gavage. Groups of 25 presumed pregnant female rats were given MPEP (62.5, 125, 250, or 500 milligrams (mg) per kilogram (kg) of body weight per day) during gestation. Groups of approximately 24 presumed pregnant female rabbits were given MPEP (62.5, 125, or 250 mg/kg/day) during gestation. The final doses for rabbits were selected on the basis of preliminary dose range finding studies during the gestational period Control animals in all three studies received corn oil with no chemical added (0 mg/kg/day MPEP). All animals were assessed for maternal toxicity, reproductive toxicity, and adverse fetal findings.

Results: In the rat prenatal developmental toxicity study, one dam died during the study. Dams in the high-dose groups showed reduced body weight, indicating slight maternal toxicity. Fetal weight was slightly lower in the high-dose group. There were small increases in incidences of fetal liver discoloration in the MPEP dose groups, but no other external, visceral, head, or skeletal malformations were attributed to MPEP exposure. In the rabbit dose range finding study, dams in the highest dose groups showed reduced feed consumption, which was attributable to maternal toxicity; these groups were removed from the study. Dams in the 300 mg/kg/day group also showed maternal toxicity, as well as lower fetal and uterine weights. No external or placental observations were attributed to MPEP exposure. In the rabbit prenatal developmental toxicity study, three dams were not pregnant, four dams died, and two dams delivered before the end of the study. Litter size, early embryonic development, and fetal weight were not affected by MPEP exposure. No external, visceral, or head malformations were attributed to MPEP exposure. In exposed fetuses, there was a slight increase in the incidences of a rib cage skeletal malformations.

Conclusions: *NTP uses a four-point scale to rate the level of evidence that a substance has the ability to cause developmental toxicity in laboratory animals. Under the conditions of these prenatal developmental toxicity studies, there was equivocal (uncertain) evidence that MPEP has the ability to cause developmental toxicity in rabbits and no evidence that it has the ability to cause developmental toxicity in rats.*