

# 2016 SCIENTIFIC REPORT



MINISTRY OF FOOD AND DRUG SAFETY

National Institute  
of Food and Drug Safety Evaluation

---

## Risk Assessment of Phosmet

Phosmet is an organophosphorous pesticide not yet registered in Korea, but is used on crops such as citrus fruits, pome fruits, and potato in different regions around the world including Europe. Its domestic MRL is set at 0.05 mg/kg for potato, corn, and other agricultural products (MRLs for Pesticides in Foods, May 31, 2016).

The ADI of phosmet at 0.01 mg/kg bw/day was established by applying the safety factor 100 (differences between species and individual entities) to the NOAEL of 1.3 mg/kg bw/day drawn in relation to the inhibition of activation of cholinesterase in red blood cells, its most representative toxicity endpoint, from multi-generation study on rats.

The intake amount of phosmet was estimated based on the results of the analysis of 2,082 samples of 52 foodstuffs including rice in the Monitoring of Agricultural Products in Korea (2011–2015) by the National Institute of Food and Drug Safety Evaluation. The results of the monitoring showed that the pesticide level was below the LOQ, and thus, phosmet was not detected in any of the samples. Concerning data lower than the LOQ, in case more than 60% of data were below the LOQ, estimation was made by applying 0 (non-detection) as the lower exposure limit or LOQ (upper exposure limit), according to the “evaluation of low level contamination of foods” recommended by the WHO. Food consumption was calculated through SAS 9.4 using the tertiary food code data from the KNHANES conducted for five years (2010–2014). For the average weight of all age groups, 60 kg, the weight currently (as of 2016) being applied for establishment and revision of pesticide residue standards, was used. Risk characterization was made by calculating the HI in consideration of the EDI calculated in the exposure assessment and the ADI, the safe level of human exposure.

In general, when HI is 1 or higher, the adverse effects of toxicity may be expected from the

# 2016 SCIENTIFIC REPORT



MINISTRY OF FOOD AND DRUG SAFETY

National Institute  
of Food and Drug Safety Evaluation

exposure, and when HI is lower than 1, adverse effect is not expected. The results of the risk assessment of phosmet in all age groups revealed HI between 0 (non-detection data 0 applied) and 0.008 (non-detection data LOQ applied), as shown in the table below, and that its concentration is within the safe level of human exposure.

**Table 1.** ADI and HI of phosmet

Age	EDI (mg/person/day)		Average weight (kg)	EDI (mg/kg bw/day)		ADI (mg/kg bw/day)	HI	
	0	LOQ (mg/kg)		0	LOQ (mg/kg)		0	LOQ (mg/kg)
All	0	$4.7 \times 10^{-3}$	60	0	$0.1 \times 10^{-3}$	0.01	0	0.008

**Key words:** Phosmet, Risk Assessment, Organophosphorus insecticide, ADI, Monitoring, Pesticide