

# RAINFALL RUNOFF CHARACTERISTICS AND RISK ASSESSMENT OF AGRO-CHEMICALS USED IN GOLF LINKS

(골프장 사용 농약의 강우 유출 특성과 Risk 평가)

조현서 · T. Morioka\*

여수수산대학교 해양학과, \*일본 오사카대학 환경공학과

A rainfall runoff model described in this paper which is based on Basin-wide Ecological Model(BAWEM) calculates the fate of agro-chemicals in a watershed located in golf links. The rainfall runoff coefficients of agro-chemicals, which are the dominant parameters to predict the movement of agro-chemicals from soil and turfgrass to downstream water, are estimated.

Also, the model is used to estimate the level of health risks the residents around golf links are exposed to. The fidelity of rainfall runoff model of agro-chemicals was validated by the observed data obtained during rainy period. The calculated results from this model were found to be in the same order of that of observed. The rainfall runoff coefficients of four agro-chemicals used in golf links were  $5.4 \times 10^{-3}$ ,  $1.9 \times 10^{-3}$ ,  $3.0 \times 10^{-4}$  and  $4.4 \times 10^{-2}$  for flutolanil, idoprothiolane, chlpyrifos and simazine, respectively.

The health risk level to the residents around golf links is evaluated to be rather low: the ratio of estimated dose through drinking water to the 10% of ADI value or VSD for  $10^{-6}$  life time risk varied in the range of 0.005~0.04 and 0.003~0.11, respectively, for both the annual mean and maximum monthly mean cases.