Using Acute Oral Toxicity Data to Estimate Acute Dermal Hazard Classification and Labeling of Pesticides

M Paris[1], J Strickland[1], D Allen[1], W Casey[2]

[1]ILS/NICEATM, RTP, NC, USA; [2]NIH/NIEHS/DNTP/NICEATM, RTP, NC, USA

The U.S. Environmental Protection Agency (EPA) requires acute dermal systemic toxicity testing for hazard classification and labeling of pesticides to protect human health and the environment during the handling and use of chemicals. This study considered whether acute oral LD_{50} data could be used to determine EPA acute dermal hazard classifications. Oral and dermal LD_{50} data were collected for 225 pesticide active ingredients. Two approaches were used to predict dermal hazard classifications. First, oral hazard categories based on oral LD_{50} were compared to dermal hazard categories based on dermal LD_{50}. Concordance with the reference dermal hazard categories was 65% (146/225), overclassification was 31% (70/225), and underclassification was 4% (9/225). In the second approach, the oral LD_{50} was used directly to assign the dermal hazard category. Concordance with the reference dermal hazard categories was 43% (96/225), overclassification was 56% (126/225), and underclassification was 1% (3/225). For substances in EPA Category IV the predictivity was 100% (22/22) with either approach. These data suggest that if only acute oral toxicity data are used for predicting both oral and dermal hazards, the dermal acute toxicity of many pesticide actives and formulations could be overstated. *This project was funded in whole or in part with Federal funds from the NIEHS, NIH under Contract No. HHSN27320140003C.*