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RESIDUE REMOVAL OF GRANULAR FORMULATION ATRAZINE AND ITS DUST FROM WORKERS' PROTECTIVE CLOTHING BY LAUNDERING

REFERENCE: Kim, C. J. and Wang, Q., "Residue Removal of Granular Formulation Atrazine and Its Dust from Workers' Protective Clothing by Laundering," Performance of Protective Clothing: Fourth Volume, ASTM STP 1133, J. P. McBriarty and N. W. Henry, Eds., American Society for Testing and Materials, Philadelphia, 1992.

ABSTRACT: During manufacturing and application, pesticide granules and dust can adhere to and be caught by portions of work clothing such as pockets, collars, cuffs, or other wrinkled areas. Laundering may remove some of the residues; however, when incompletely cleaned clothing comes in contact with the skin the pesticide residue can be absorbed into the body, causing potentially serious health hazards. Appropriate after-use care methods need to be identified to reduce the risk of pesticide exposure. Both warm and hot wash water with a commercial heavy-duty liquid detergent removed at least 99% of atrazine in granular or dust formulation from an initial 0.9 g contamination. The main mechanism of pesticide removal was by atrazine dissolution in water. Hot wash at 60°C was more effective than warm wash at 49°C. The amounts of atrazine residue did not differ significantly by agitation, drying method, or atrazine formulation. A considerable amount of residue transferred to swatches washed together with contaminated swatches.

KEYWORDS: pesticide, atrazine, contamination, residue, granules, dust, formulation, laundering, drying, removal, transfer

The purpose of this research was to determine significant laundering variables for maximum removal of a granular formulation of atrazine and its dust from protective clothing worn by agricultural-chemical plant workers. In addition, the study attempted to determine if there is a risk of transferring the contaminant chemical to other clothing in the same wash load.

Safe production and use of agricultural pesticides are important for plant workers who produce them and to individual applicators and their families who use them. The protective clothing is assumed to protect workers from exposure to pesticides. Most reusable protective clothing is cleaned and worn again. Studies have shown that typical cleaning procedures do not necessarily remove all the pesticide

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