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QUANTIFICATION OF POTENTIAL ENVIRONMENTAL LOADING
BY THE ACARICIDE ALMATIX USED IN CATTLE DIPPING IN
UASIN GISHU DISTRICT, KENYA

By

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ABSTRACT

The use of acaricides in cattle dips for the control of tick and tick-borne diseases is a routine practice in Kenya, despite their well-known adverse effects on the environment and health of dip operators. This study analysed the negative impact of acaricides on the environment and on those who apply it in order to suggest suitable methods of safe pesticide application. There were four specific objectives: (1) to quantify the total amount of acaricide directly entering the environment through waste disposal methods and carry-over by dipped cattle; (2) to study biodegradation rate, leachate movement and persistence of acaricides in a wastewater disposal pond; (3) to determine the level of awareness concerning health effects and safety practices by dip operators and public health officers and (4) investigate precautionary measures being taken by users to minimise human exposure to these acaricides. The study obtained empirical data collected from selected cattle dips in Uasin Gishu District, which was used to generate information on the amount of acaricide loading on the environment.

It was found that in the district an estimated 84 million liters of dip wastewater enter the environment annually through livestock dipping and dip wastewater disposal. The natural degradation rate of Almatix was found to have a half-life ($t_{1/2}$) of 18 days in ambient environmental and climate conditions of the test site. Almatix leachate movement towards the groundwater system was found from ground level to 24cm deep in a loam soil and 38cm in a sandy loam soil. Dip operators and their assistants were found to take minimum precautions in handling and using the acaricides. It was found that human exposure to acaricides are due to ignorance, poor occupational safety management and pure negligence by the concerned authorities, the public, dip operators and public health officers.

The study recommends that areas of further studies should cover safe use of acaricides and suitable methods to reduce amount of acaricides entering the environment. Studies on bioaccumulation of these acaricides in animal tissues including consumers are recommended. Amount of acaricide residues on food products such as dairy products and meat from slaughtered cattle, need more detailed investigation. Research is also necessary to establish any immediate and long term health problems in human as well as livestock due to the use of acaricides