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EFFECT OF WATER PH ON THE CHEMICAL STABILITY OF PESTICIDES

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ABSTRACT

Several types of pesticides require water as a carrier, including dry flowables, emulsifiable concentrates, and wettable powders. A water pH greater than 7 which provides alkaline circumstances might cause certain pesticides to undergo disintegration or chemical breakdown, a process known as hydrolysis. In general, pesticides are far more vulnerable to hydrolysis than are fungicides, herbicides, defoliants or growth regulators. Pesticides containing organophosphates and carbamates are more vulnerable than those containing chlorinated hydrocarbons. In some cases, hydrolysis might be an issue for pyrethroids. Data documenting the pH of water sources around the U.S. mention just a few states that have water with a pH below 7 which is in the acid range. Each of the other categories derives from sources with variable alkalinity. Natural alkalinity present in both surface and subsurface water sources often results in pH values between 7 and 9. Fast hydrolysis is possible with several insecticides. At the pH range of 8 to 9, the hydrolysis rate might be quite high. The rate of hydrolysis multiplies by around a factor of 10 for each unit of increase in pH. The quantity of alkalinity in the water, the pesticide's sensitivity, the length of time the pesticide is in contact with the water, and the temperature of the combination all have a role in how much of a loss may be expected from alkaline hydrolysis.