Environmental Conditions Affecting The Toxicity Of Piscicides

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The piscicides rotenone and antimycin are important tools in fisheries conservation but their application is inefficient and not always effective. We examined the persistence of both piscicides in the laboratory and field to determine the causes of their detoxification. The effects of sunlight and turbulence were isolated in the laboratory and studied using 96-hr toxicity tests. Sunlight rapidly detoxified both rotenone and antimycin. Turbulence affected antimycin more than rotenone. The interactive effects of combined stream characteristics were measured in streams using a single drip station and sentinel fish at 100-m intervals. Stream characteristics were measured along the entire reach that detoxified rotenone. Environmental characteristics most abundant in the stream section that detoxified rotenone were identified using logistic regression. The abundance of substrates >150-mm diameter, total dissolved solids, and oxidation reduction potential were significantly related to the persistence of rotenone in streams. The predictive ability of models was good using reclassification procedures. However, the predictive ability of the models will need to be tested in streams before they can be used in future piscicide applications. This information will make piscicide use more efficient and effective by reducing the uncertainty associated with its application.