Imidacloprid photolysis under temperature.

Imidacloprid is a systemic insecticide belonging to a class of chemicals called the neonicotinoids which act on the central nervous system of insects. It was approved for use in the United States by the Environmental Protection Agency in 1994, also is mostly used nicotinoids pesticide in the market. Though uses of imidacloprid become so popular in agriculture recently study show the effect of neonicotinoids include imidacloprid in environment and ecology for instance imidacloprid is classified as very highly toxic to adult honeybees. In this study we checked the degradation of imidacloprid solution of 7 pH by UVB radiation under different temperatures (4°C, 24°C and at 50°C).The 7pH solution is made by mixed 1.4g MOP and 2ml of NaOH of 1 molarity in 500 ml of deionized water, the solution used to make imidacloprid solution of 7pH.The 10 ppm of imidacloprid solution placed at 4,24, and 50° C temperature, exposed under UVB radiation of intensity (0.75mW cm2) at different time range from 0 minute to 120 minute with gap of 15 minute each, 1.5ml sample of imidacloprid solution taken at every 15 minutes, mixed with 8.5ml of acetonitrile then filtered before putting into vials, at on temperature experiment done three time. Finding at the 50°C temperature imidacloprid shown the first kinetic order reaction, the half-lives were 57.7 ,46.3,53.3 minute and average were 53.3 minute also at 24°C shown the first kinetic order reaction as well, the half-lives 63, 57.7, 57.7 minute and average were 57.7 minute, then at 4°C didn't show the first kinetic order reaction also the imidacloprid concentration was almost stable. The 50°C temperature has a higher degradation rate of imidacloprid under the UVB than 24°Cand 4°C temperature respectively and same to 24°C and 4°C, conclude that the temperature has great contribution on the photodegradation of imidacloprid, the technique can be used on purpose of degradation imidacloprid though in real life to get and retain high temperature it can be challenge.