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THE PHOTO DEGRADATION OF PENTACHLOROPHENOL (PCP) UNDER DIFFERENT LIGHT ENERGIES FROM THE SPINACH LEAVES' SURFACE

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ABSTRACT

The aim of the current study was to investigate the photo-degradation of pentachlorophenol by incandescent light bulbs and fluorescence light on the surface of spinach leaves. Most of the research that has previously been done in pesticides show that insecticides, herbicides and fungicides tend to persist in the environment mainly in the soil, water, or air, for a long duration of time. Therefore, it is necessary to determine their possible degradation using different light sources and intensities at different exposure times.

The research was done by applying 0.01g of each pesticide on 5cm by 5cm spinach leaf surfaces. The applied pesticide on each surface was shaken thoroughly for five minutes and thereafter exposed to 40w and 100w incandescent bulbs, 9w and 40W fluorescent bulbs at 2, 4, 6, 8 and 10 minutes after which the set-ups were allowed to stabilize for an hour. The stabilized set-ups were washed with 3ml of analytical grade acetone, and were analyzed for pesticide level using HEWLETT PACKARD Gas chromatography/Mass spectrophotometer. The procedure was done in duplicate for statistical purpose and the data obtained was recorded, analyzed and interpreted using Microsoft Excel 2013 and Minitab software. Photo-degradation of pentachlorophenol depends on the light intensities, surface of exposure, temperature, among other factors. The fluorescent bulbs emitted less heat as compared to incandescent bulbs thus; photo-degradation in fluorescent bulbs had lower values as compared to incandescent bulbs. For example, the 40w fluorescent bulb degraded 100µg of