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**PHOTODEGRADATION OF 2-CHLOROPHENOL IN TiO<sub>2</sub>/UV SYSTEM: PHYTOTOXICITY ASSESSMENT OF TREATED SOLUTIONS AGAINST SEEDLING GROWTH OF TURNIP AND TOMATO**

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*The photodegradation and detoxification of 2-chlorophenol (2-CP) in TiO<sub>2</sub> suspensions were studied using monochromatic UV-lamp. The effect of pH on the photodegradation of 2-CP was investigated. Removal of 98 % of initial 2-CP was achieved within 210 under optimum concentration of 2-CP (60 mg/L) and TiO<sub>2</sub> (80 mg/L). The apparent first-order rate constant  $k_{app}$  of 2-CP is estimated to be 0.0043 min<sup>-1</sup> at pH 4, while a 3-fold increase in  $k_{app}$  was observed at pH 9. Phytotoxicity effects of treated 2-CP on seed germination, root elongation and plant growth of tomato (*Lycopersicon esculentum*) and turnip (*Brassica rapa*) seeds were also carried out with the aim of water reuse and environment protection. No statistically differences have been also found to exist for seed germination of tomato and turnip between deionized water (control) and phototreated 2-CP solution, indicating a significant removal of the overall toxicity. In the 10<sup>th</sup> day of germination, the average root elongation increases at 210 min of photocatalytic degradation yielding 7.1 ± 0.9 and 5.6 ± 0.66 cm for turnip and tomato seeds, respectively. Turnip plants irrigated with the phototreated 2-CP solution grow in a similar manner as the plant irrigated with the tap water. The phototreated 2-CP can be used in the irrigation of agriculture garden but only after further treatment.*

**Keywords:** TiO<sub>2</sub>, 2-chlorophenol, root elongation, seed germination.

### Introduction

2-Chlorophenols (CP) constitute a group of serious environmental pollutants that must be eliminated [1 – 3]. As a result of their widespread use

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