

Title Removal of residual pesticides on vegetable using ozonated water  
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Citation Food Control, Volume 18, Issue 5 , May 2007, Pages 466-472  
Keywords Ozonated water; Pesticides; Vegetable

### **Abstract**

Degradation of the four pesticides by dissolved ozone was investigated in order to establish the effect of operational parameters: methyl-parathion, parathion, diazinon and cypermethrin. They were commonly used as broad-spectrum insecticides in pest control, and high residual levels had been detected in vegetables. In the present study, the effectiveness in pesticide oxidation in aqueous solution using low level of dissolved ozone was determined using solid-phase micro-extraction (SPME) and GC-MS. Dissolved ozone (1.4 mg/l) was effective to oxidize 60–99% of methyl-parathion, cypermethrin, parathion and diazinon in aqueous solution in 30 min and the degradation was mostly completed in the first 5 min. Trace amounts and unstable paraoxon and diazoxon were tentatively identified as primary ozonation byproducts of parathion and diazinon. The feasibilities of using low level of dissolved ozone (1.4–2.0 mg/l) for removal of the four pesticides residue on vegetable surface (*Brassica rapa*) were also tested. Ozone was mostly effective in cypermethrin removal (>60%). The removal efficiency of pesticides highly depended on the dissolved ozone levels and temperature. The present study validated that ozonation is a safe and promising process for the removal of the tested pesticides from aqueous solution and vegetable surface under domestic conditions.