

Abstract

The objective of this study was to determine the effectiveness of chlorinated and ozonated washes in the dissipation of pesticides in solution and on and in fresh and processed apples.

Laboratory studies were conducted in a model system to determine the effects of calcium hypochlorite (50 and 500 ppm) and ozone (0.25 ppm) at pH 4.5, 7.0, 10.7 and at 21 °C and 44 °C on the degradation of each pesticide in solution over a 30 minute period. Apple fruits spiked with the three pesticides were also used to determine the effectiveness of chlorine and ozone washes on the removal and degradation of the pesticide residues. All samples were analyzed for residues by gas chromatography or high performance liquid chromatography.

Chlorination and ozonation were effective in degrading azinphosmethyl, captan and formetanate-hydrochlorite in solution. Rate of degradation generally increased at higher pH and temperature. Pesticide residues on apple fruits and in processed products were reduced by the chlorine and ozone washes. The 500 ppm chlorine wash was the most effective wash treatment.