

Title The mortality of stored product insects following exposure to gaseous ozone at high concentrations.
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Abstract

Ozone as a toxicant was evaluated against the stored product pests *Plodia interpunctella* and *Tribolium confusum*. Ozone was introduced into the continuous air stream flowing through a chamber made of high-density polyethylene and polycarbonate. By decreasing the flow of ozone and/or air in the chamber, various concentrations of ozone were obtained. The eggs, larvae and pupae were exposed to ozone at varying duration (1 to 18 h). The developmental stages exhibited delayed reactions to toxicity. Even high concentrations of 200-500 ppm (v/v) required up to 18 h to kill the insects. Mortality was first observed among the adults, followed by larvae, pupae and eggs. Carbon dioxide and reduced pressure were also evaluated for the stimulation of the opening of the spiracles of the insects as a means to increase the penetration of ozone into the insects. All the stages responded to the treatment except the eggs, which were unaffected. The pupal and larval stages were the most susceptible.