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Environmental Engineering ▾ Air Pollution and Control

**Effect of Designated Pollutants on Plants**

Authors: [A. L. Granett](#); [O. C. Taylor](#); [CALIFORNIA UNIV IRVINE](#)

**Abstract:** The phytotoxicity of hydrogen chloride (HCl) gas and **aluminum oxide** (A12O3) particulates was studied in special plant exposure chambers. Seedlings watered with a salt-enriched (850 ppm NaCl) nutrient solution were more tolerant to damage from HCl than were controls. Seeds germinated after exposure to HCl had reduced seedling lengths compared to controls although germination was not affected. A12O3 alone was not toxic under present test conditions and there was no significant change in plant damage by A12O3 + HCl damage alone. Damage response was more repeatable if humidity was held constant. A single short exposure to moderate levels of HCl gas affected a significant loss in final yield if exposure occurred when the plant was a certain age. Plants exposed weekly at sub-phytotoxic concentrations suffered yield reductions in some cases. Mycorrhizal fungi are root symbionts on higher plants. There was no effect on the fungus when mycorrhizal plants were exposed to HCl although ozone-exposed plants experienced reduced mycorrhizae production. A number of plants exposed to HCl were compared using linear regression or probit analysis of the fumigation data. ED50's estimated that concentration necessary to produce injury on 50% of the total leaves exposed.

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