THE POSSIBILITY OF USING CYANOGEN (C_2N_2) FOR SPACE OR MILL FUMIGATION

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Cyanogen (C_2N_2) is a new potential fumigant to replace methyl bromide for certain applications. It is highly toxic to insects, fungi and bacteria. Because it also kills seeds, cyanogen is not suitable for fumigation of grain in most applications. However, where whole grain is not present or germination is not required, cyanogen may be suitable. Cyanogen was evaluated for its potential as a space or flour mill/rice mill fumigant, where rapid action, penetration through flour and effect on packaging materials and equipment are important.

Regarding the dosage, 50 mg/L, <20 min exposure was needed to completely control adult insects (*Sitophilus oryzae, Tribolium castaneum and Rhyzopertha dominica*), and 10 mg/L and 4 hours exposure was sufficient to control mixed age cultures of all tested species.

Cyanogen penetrated through a 30 cm column containing wheat flour within 5 min. Desorption of cyanogen was fast and completely removed without forced aeration. The effect of cyanogen on common materials often present in fumigation areas in mills was tested. The results showed that cyanogen had no effect on common packing papers, various plastics or metals (including aluminium and copper) under extreme condition of high temperature and relative humidity (45°C and 95% rh).

These results suggest that cyanogen should be investigated further as a potential mill fumigant to replace methyl bromide for this application.