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Analytical Division
Research Directorate

25 Mar 86

Analysis/Evaluation of Leaf Samples

A shipment designated 10027 CCC consisting of two leaf samples was received by the Analytical Division from FSTC 19 January 1983. [redacted] The first sample, designated 10027CCC-1 consisted of a large brown leaf with yellow spots and what appeared to be white mildew or fungal areas. (Fig 1). The second sample, designated 10027CCC-2 consisted of a smaller leaf with similar spots (Fig 2).

Vapor samples withdrawn from within each sample enclosure were subjected to analysis by gas chromatography/mass spectrometry (GC/MS). A portion of each sample was extracted with chloroform. Another portion was extracted with 1:1 methanol: water. The solvent soluble materials were analyzed by GC/MS, ion chromatography (IC), thin layer chromatography (TLC) and infrared spectrometry (IR). A portion of each leaf sample was subjected to scanning electron microscopy evaluation.

The GC/MS spectra of the vapors associated with each of the leaf samples identified the presence of diphenylamine and a series of phthalates. Each of these compounds could be from the plastic containment bags, or be a dissemination component. The GC/MS spectra of the chloroform solubles identified the presence of phthalates in each sample. IC detected no ions of interest. No detectable components were separated by TLC. IR identified the presence of water, aliphatic hydrocarbons, a carbonyl band at 1735 cm , and possible soil components. Derivatization with negative ion chemical ionization MS detection identified the possible presence of neosolaniol in sample 1 and T-2 tetraol in sample 2 at very low picagram levels. Outside laboratories were unable to confirm the presence of trichothecenes since their minimum detection level was higher than CRDEC's. SEM identified spores with an hypae overgrowth (Fig 3) and pollen, including an unusual triangular shaped pollen (tricolparate) (Fig 4) on sample 1. The same materials were identified on sample 2 in addition to a striated crystalline material resembling that of sample 10027 YY-1.

Conclusion:

No evidence of any CW agent or agent degradation product was detected. The unconfirmed detection of low levels (picagrams) of the trichothecenes neosolaniol and T-2 tetraol is of interest. The significance of possible trichothecene detection conbined with the

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ENCL 1

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presence of phthalates, and a striated crystalline structure, which could be dissemination components cannot be identified at this time.

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FIGURE 3
SPORES WITH HYPHAE OVERGROWTH

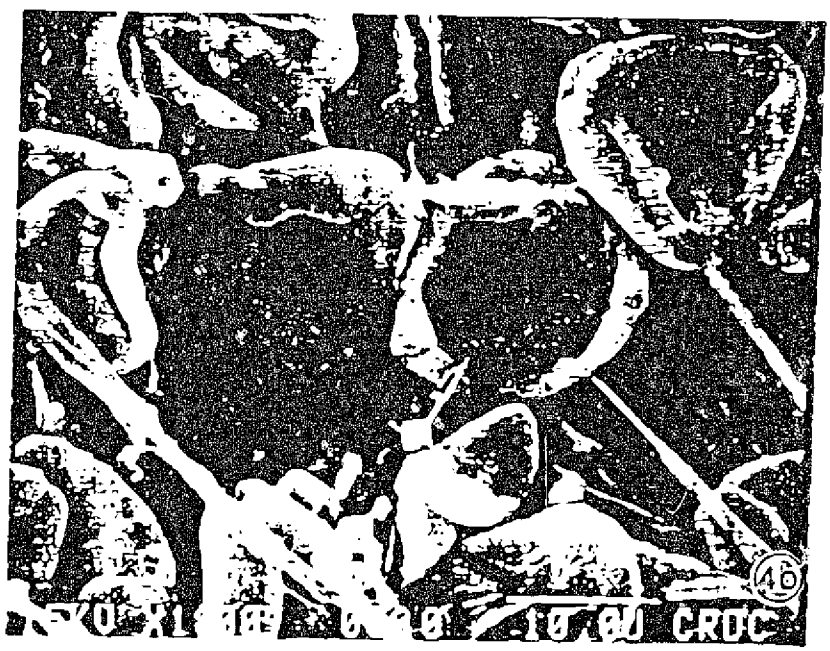

FIGURE 4
TRIANGULAR POLLEN