THE STUDY OF THE ORIGIN AND ROUTE OF ENTRY OF

CADMIUM IN SHII-TAKE MUSHROOMS (Lentinus edodus)

PERMANENT REFERENCE

BY

PARAMSOTHY YOHALINGAM

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APPROVED BY

Supervisor Head, Division of Chemical and Environmental Technology 26542 CISIR Colombo 7

Dr.T.Mahendran B.Sc(Cey); Ph.D(U.K) Head, Dept. of Agronomy **Faculty of Agriculture** Eastern University, Sri Lanka Chenkalady, Batticaloa

18.4.97 DATE:

Dr. A.M.Mubarak B.Sc(Cey); Ph.D (Cantab)

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DR. A M ARAK HEAD, CHEMICAL ALL - NVIRONMENTAL TECENOLOGY DIVISION CISIR, COLOMBO 07.

ABSTRACT

Cadmium residues have been detected in **Shii-Take Mushrooms** exported from Sri Lanka. This was confirmed by analysing several fresh samples collected from a factory producing Shii-Take mushrooms. Rubber wood saw-dust, the growth medium used in the cultivation of Shii-Take mushroom when analysed, indicated the presence of cadmium residues ranging from 0.035 to 0.140 mgkg⁻¹ (wet basis). Cadmium entry into mushroom is therefore most probably via rubber wood saw-dust, and at the above levels present in saw-dust, it is shown that cadmium residues can accumulate in mushroom above the tolerance limit of 0.05 mgkg⁻¹, stipulated in developed countries.

Cadmium can enter the rubber plants from soil contaminated either by parent rocks beneath the soil which contain cadmium or via anthropogenic sources, by industrial emissions/effluents/solid wastes containing cadmium residues and by the application of phosphate fertilizers which invariably contains cadmium as an impurity.

Since majority of the rubber plantations are away from major industrial zones and since cadmium residues were found in all saw-dust samples analysed irrespective of the locations, phosphate fertilizer and/or naturally occurring parent rocks appear to be the probable sources of cadmium contamination.

Analysis of several samples of rock phosphate fertilizers both imported and local and triple super phosphate indicated the presence of cadmium residues ranging from 5 to 15 mgkg⁻¹, suggesting that phosphate fertilization as one of the sources of cadmium contaminant in rubber soils.

Analysis of soil samples from contaminated and non-contaminated of cadmium did not however show any detectable cadmium (minimum detectable limit is < 0.01 mg/kg), probably due to the technique used for the analysis. However a more sensitive analytical techniques such as ETAAS or ICP-AES is needed before one can rule out any contamination as parent rock.

Since phosphate fertilizers contain very high level of cadmium than soils, and available evidence however precludes the presence of such parent rocks in rubber growing areas in Sri Lanka, at present phosphate fertilizer appears to be the most probable source for rubber soil contamination.

Since imported phosphate fertilizers have been in use in tea, rubber, coconut, tobacco, other food crops, export agricultural crops and other agricultural crops including fruits and vegetables for a considerable period of time, a detail study is necessary to asses both the cadmium levels and its source in agricultural soils and its possible entry to crops grown on such soils.

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