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894 MEASURING POTENTIAL DERMAL TRANSFER OF SURFACE PESTICIDE RESIDUE GENERATED FROM INDOOR FOGGER USE. J. H. Ross, T. Thongsinthusak, H. Fong, R. I. Krieger. California Department of Food and Agriculture, Worker Health and Safety Branch, Sacramento, CA.

A study to measure potential dermal and inhalation exposure to a chlorpyrifos/allethrin home fogger was conducted with five human volunteers. Following label indicated fogging treatment and venting at identical carpeted hotel rooms, human subjects in dosimeter clothing were led through a routine of Jazzercise™ exercises. Dosimeter clothing consisted of cotton gloves, socks, tights and shirts. Following exercise in each room the subjects removed the contaminated dosimeter clothing and put on fresh clothes. In addition to clothing, floor deposition was monitored with gauze and aluminum foil corner pads. Clothing and corner pads were extracted with ethyl acetate and extracts analyzed by electron capture gas chromatography. A majority (55-61%) of the fogger insecticides were deposited on the floor. The coefficients for transfer of chlorpyrifos and allethrin from floor to clothing were virtually identical ranging from 5% on shirts to 29% on socks. By summing the area under the curve with respect to time it was possible to calculate upper limit cumulative dermal exposure as if contact had been continual. Calculated absorbed dosages were 6.8 ug/kg for adults with the assumption that no clothes were worn.

896 BACILLUS THURINGIENSIS ISRAELENIS CYTOLYTIC TOXIN: MAPPING THE SITE IMPORTANT FOR BINDING. E. Chow, S. Liu, and S. Gill. Department of Entomology, University of California, Riverside, CA.

The parasporal protein crystals produced by *Bacillus thuringiensis israelensis* have been used effectively against certain insect vectors such as the mosquitos and black flies. The 28kDa protein is an important component of the protein crystal and can be broken down to an active 25kDa polypeptide. Monoclonal antibodies had been raised against both the denatured and native forms of this 25kDa toxin. The binding of ¹²⁵I labeled 25kDa toxin to cells could be decreased by certain monoclonal antibodies raised against the native toxin. Twelve different hybridomas producing such antibodies were selected and cloned. Four of these antibodies could not recognize heat denatured toxin while the other eight could. The toxins were fragmented by treatment with various proteases and gaseous cyanogen bromide. The smallest fragments detected by the antibodies on a western blot were the 6kDa fragments generated by chymotrypsin and V-8 protease. Treatment with cyanogen bromide produced more precise breaks and fewer bands. The 15kDa and 17kDa bands were the predominant ones from a 16 hr cyanogen bromide reaction and were recognized by these antibodies. Partial characterization of the 15kDa peptide has been achieved. The 15kDa peptide contains one cystein moiety. These studies confirm the importance of the sites around the cystein moiety in cell binding and toxicity as also demonstrated by chemical modification studies.

895 EPIDEMICS OF POISONING CAUSED BY THE CONTAMINATION OF FOODS WITH PESTICIDES. A. Ferrer^a, J. R. P. Cabral^b. ^aServicio de Toxicologia, Hospital Clinico, Zaragoza, Spain, and ^bInternational Agency for Research on Cancer, Lyon, France.

Pesticides are used almost universally; many of them have high acute and chronic toxicities. These two facts have led to a growing number of poisoning incidents. Such incidents may occur at the individual or group level and may be voluntary or accidental. From the point of view of public health, accidental epidemics occurring periodically are of most interest. Contamination of food is a typical source of chemical accidents. We perused the literature for reports of epidemics due to contamination of foods with pesticides. Clinical and epidemiological aspects of these epidemics were studied. The 62 cases chosen are divided into four groups on the basis of implications for prevention: (a) food contamination during transport or storage - 16 cases; (b) consumption of seed dressed for sowing - 10 cases; (c) accidental addition of pesticides to food - 20 cases; and (d) food contamination due to bad agricultural practices - 16 cases. Specific regulatory measures can be taken to prevent each type of incident. In addition, structures should be set up in advance so that such episodes can be quickly and efficiently detected and stopped.

897 MECHANISM OF TOXICITY OF A UNIQUE PESTICIDE N-ETHYLPERFLUOROCTANE SULFONAMIDE (NEPFOS), AND ITS METABOLITE PERFLUOROCTANE SULFONAMIDE (PFOS) TO ISOLATED RABBIT MITOCHONDRIA (RCM). T. J. Cross and R. G. Schnellmann. Dept. Physiol./Pharmacol., Coll. Vet. Med., University of Georgia, Athens, GA.

NEPFOS is currently being evaluated as a pesticide for the red imported fire ant. Previous studies from this laboratory showed that an early effect of NEPFOS and PFOS on rabbit renal proximal tubules was a concentration-dependent (5-200 uM) increase in ouabain-insensitive respiration (RESP). The goal of this study was to determine whether the increased RESP resulted from uncoupling of oxidative phosphorylation (OX PHOS). NEPFOS (5-100 uM) and PFOS (0.5-50 uM) increased state 4 RESP of RCM respiring on pyruvate/malate or succinate in the absence of a phosphate acceptor or in the presence of oligomycin, an inhibitor of FOF1-ATPase. The effect of NEPFOS (200 uM), PFOS (100 uM), and the known protonophore FCCP (1 uM), on proton movement by RCM was examined. Immediately on addition, PFOS and FCCP, but not NEPFOS, dissipated the proton gradient. These results show that PFOS acts as a protonophore and uncouples OX PHOS by this mechanism. The lack of proton movement by NEPFOS suggests that NEPFOS may need to be metabolized to PFOS to produce cytotoxicity and uncoupling of OX PHOS. (Supported by VMES, Univ. Georgia).

Exhibit
1403
State of Minnesota v. 3M Co.,
Court File No. 27-CV-10-28862