UNDATED

TOPICAL - SUMMARY

PROPRIETARY

Accumulation 162.62-11

Laboratory studies employing radioistopic or non-radioisotopic analytical techniques are required to support the registration of all formulated products intended for field/vegetable crops uses. Two exposure systems are required-flow through (with constant concentration of pesticide in aqueous solution) and static (with ambient concentration of residues from treated soil). Soil, water and fish samples are to be taken at regular intervals during the test. Sunfish are the preferred species for the flow -through system. Catfish are required in the static system. No food chain studies are required, Elleghausen (1977) tested the uptake, transfer and degradation of metolachlor by algae, daphnia and catfish. After 90 minutes exposure to 0.1 ppm metolachlor, algae accumulated 10.4 ppm. However, with 2 hours depuration less than 0.2 ppm remained in the cells. Daphnia, exposed for 24 hours to 0.1 ppm accumulated 0.60 ppm. Eight hours depuration was needed to achieve a 50% loss. Daphnids accumulated only 20% more when exposed to both algae with 10.4 ppm metolachlor and water containing 0.1 ppm metolachlor as compared to fortified water in the absence of algae.

Catfish, exposed to 0.1 ppm ^{14}C metolachlor incorporated 1.20 ppm metolachlor in their tissues after 96 hours. However, a plateau was not reached.

Metabolites of metolachlor were noted but not identified in the algae, daphnids and catfish. At the end of the 96 hour catfish study only 1/2 of the ^{14}C activity remaining in the water was metolachlor. The re-

mainder was present as 3 unidentified degradation products. The theoretical basis for the model system used was discussed in another paper (Elleghausen, 1976b). Cannon Labs., 1977 conducted a 30 day catfish exposure study in a soil/water/fish ecosystem. At an average concentration of 0.08 ppm in the water, bioaccumulation factors were 6.5-9.0 for edible portions of the fish and 55.0 - 92.4 in the viscera. and after 14 days withdrawal these values dropped to 0.03 and 0.18 ppm respectively corresponding to a bioaccumulation factor of less than 1. The accumulated residues in the edible portions which remained relatively constant in terms of extractable vs non-extractable (about 8:1).

On days 1 and 30 there was 16 times more organically soluble activity than aqueous soluble (ethyl acetate-water system). CGA 46576 was identified as a metabolite and reached a high of 12.8% in the edible tissue on day 14. Smaller amounts of other metabolites were found in edible and/or visceral tissues but were not identified.

CGA 46576 (a cysteine conjugate of metolachlor); N-(2'hydroxy-1'-methylethyl)-2-ethyl-6-methyl chloroacetanilide (CGA-41638) and N-2 (2-hydroxy acetyl)-N-(1-methyl propane-2-yl)-2-ethyl-6-methyl aniline were all found in water along with three other unidentified degradation products.

PROPRIETARY

Bionomics, 1978, reported on a bluegill sunfish flow-through study at ^{14}C metolachlor exposure levels of 10 and 1000 ug/liter. Bioaccumulation levels at the 1000 ug/liter exposure level reached 28 ppm in edible tissues and 702 ppm in the non-edible tissues. Existence of a plateau could not be established. After 28 days depuration, residues in edible portions of fish decreased to .08 ppm for the 10 ug/liter ^{14}C metolachlor exposure and to 11.7 ppm for the 1000 ug/liter exposure. The chemical nature of the fish residues was not defined. Due to technical irregularities in the data gathering process this study was not judged acceptable by the environmental chemistry reviewer. However, when all of the above studies are considered as a composite, the Guidelines requirements for accumulation in fish can be considered to be met.