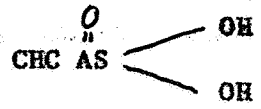
REney:rjt
2/17/69

Evaluation of Pesticide Petition No. 9F0794
for Methanearsonic Acid
Submitted by National Agricultural Chemicals Assoc.
Filed January 29, 1969

INTRODUCTION

Methanearsonic Acid is also called MAA, Methylarsonic acid and monomethylarsonic acid.

Properties



$CH_3 A_s O (OH)_2$

Mol. wt. 139.96
Melting Pt. 161°C
Colorless
Odorless
decomposes at high temperatures

Formulated as salts:

monosodium acid methanearsonate MSMA	disodium methanearsonate (DSMA)
$CH_3 A_sO(OH) (ONa)$	$CH_3 A_sO (ONa)_2$

The petitioner is proposing a tolerance of 0.5 ppm in or on cotton. Methanearsonic acid as elemental arsenic.

DIRECTIONS FOR USE

Cotton

DSMA	3 lbs.A/A
MSMA	2 lbs.A/A

Post emergence application. Apply 1-2 sprays to weeds when cotton is 3-4 inches tall. Do not apply after first bloom. Do not graze or feed forage from treated areas to livestock.

These are Registered uses under DSMA and MSMA.

ANALYTICAL METHOD

Diethyldithiocarbamate spectrophotometric method 560 mu.

Molybdate spectrophotometric method 522 mu.

Total arsenic spectrophotometric method 540 mu.

All methods previously evaluated.

GC unit TLC methods are being worked on.

DISCUSSION OF DATA

IF MAA, DSMA & MSMA are applied broadcast or after bolls open or at high residues are likely to be higher than 0.5 ppm, the proposed tolerance.

All results are calculated as elemental arsenic.

GC, TLC, Polarographic, Neutron activation methods of As analysis are being tested.

Almost all soils, plants, animal tissues and milk contain As.

No evidence of soil uptake of As in cotton.

Some surfactants enhance the photoxicity of DSMA & MSMA to cotton but did not appear to increase residues.

MAA is inactivated in soils by clays having exposed hydroxyl groups.

Mold Scopulariopsis - brevicaule (Pennicillium brevicaule) converts the Na salts of MAA to trimethylarsine by biological methylation. Trimethylarsine is volatile. The mold coverts arsenic trioxide and Na cacodylate to trimethylarsine. Other strains of Scopulariopis are effective.

The methyl group of DSMA is oxidized by soil under aerobic conditions. The rate of oxidation varies with organic matter.

MSMA is oxidized in soil to CO_2 and orthoarsenic acid by certain fungus, bacteria and actinomycetes.

Salts of MAA are absorber on plant surfaces and are bound to plant proteins without altering the chemical compossition of the MAA ion.

Johnsongrass appears to have histidine or a histidine anadygue of amino acid fraction of methanol extracts from grass treated with MAA. None found in cotton translocation and metabolism in Johnsongrass takes place about 4 hours after treatment.

If residues are found in cotton, they would more than likely result from misuse. Salts of MAA do not appear to get into cotton plants.

The residue data is that which has been submitted for NR use. If DSMA or MSMA is used as proposed and as in the USDA Summary, residues would not appear to be above 0.5 ppm.

It appears that there is a possibility of residues in chicken tissues and eggs, milk, and cow tissues. However, this is hard to judge when animals are fed 0.3 to 3.0 ppm. The background As is as high as the possible residues.

At a 30 ppm feeding, there are definite residues.

There are no real data on cotton and meal and oil.

There are no tolerance request for meat, fat and meat by-products of cattle, goats, hogs, horses, sheep and poultry (and eggs) and milk.

RECOMMENDATION

A favorable opinion is given.