compound is systemic, an understanding of the metabolites or toxic compounds within the plant is necessary, since all crops may not metabolize the pesticide at the same rate.

Chart 10

TOXICOLOGY

AVERAGE $150,000

1. 30 DAY FEEDING PLUS OTHER LIMITED TESTS
2. 90 DAY FEEDING
3. CHRONIC FEEDING—2 YEAR (RATS)
   1 YEAR (DOGS)
4. POTENTIATION
5. METABOLISM IN ANIMALS
6. MODE OF ACTION IN ANIMALS
7. INDUSTRIAL HYGIENE

Chart 10—TOXICOLOGY data are required to establish the safety of the pesticide to animals and man. The toxicology data are needed for a first registration of a pesticide on a food crop will likely amount to $150,000. For a wide sepctrum compound like Malathion, Cyanamid has already spent at least ¼ of a million dollars on toxicology, which has been matched by equal effort from the Government Agencies.

Before the first pesticide samples are sent out for field appraisal, limited tests are run in the Research Stage to assess the hazard of using the chemical to the Experiment Station workers or others. These preliminary tests are usually concluded with a 30 day feeding study to determine what effect the pesticide will have on the test animal if fed in the daily diet.

A 90 day feeding study may follow the 30 day test or it may be delayed until the Company decides that the compound will justify registration and a chronic or two year feeding study is decided. Here, the 90 day tests are used to help the toxicologist determine the (three) best feeding levels to use in the longer test.

Chronic feeding studies normally require two years to complete; two years for feeding short lived animals such as rats, and one year study on another species—usually dogs. (Both groups would start with three feeding levels plus a control, and would involve a minimum of 400 rats and 16 dogs). After the two year feeding is complete another six months may be required for examining the organis of sacrificed anmials and summarizing results.

It may be necessary to determine if combinations with other pesticides result in a more toxic action than the sum of the two compounds alone.