October 7,1953

Mr. Frank S. Low,
Westvaco Chemical Division,
Food Machinery and Chemical Corporation,
Chrysler Building East,
161 East 42nd Street,
New York 17, N. Y.

Dear Mr. Low:

I am replying to your letter of September 30, in the absence of Dr. Kehoe who is now out of the country.

I am in thorough agreement with your use of screening tests for the elimination of undesirable toxic substances before you begin your insecticidal screening, and then introducing more elaborate procedures as the need arises. This is, in general, a good approach and about the only one that can give you, without too great expense, the information that you will need in order to safeguard those who are to conduct the preliminary greenhouse and garden studies. Perhaps I should point out that some of the substances you discard on the basis of toxicity might nevertheless have valuable properties as insecticides that might be usable in practice with due precautions. Such substances as parathion and TEPP would almost certainly fail to pass a toxicologic screening test and, therefore, might not be screened as insecticides. Nevertheless, they can become economically valuable. Their introduction should be attempted only after much more thorough toxicologic study.

As to the question of peritoneal versus oral doses, there is no unanimity of opinion. We rarely, if ever, use the peritoneal route. It has the advantage of ease of administration, and absorption of water-soluble substance into the general circulation from the peritoneal cavity is very great. For this reason, some substances may appear much more toxic when so administered than when given orally. Any substance of high or low pH may set up an acute inflammatory process by irritating the large and delicate peritoneal membrane. This may be so severe as to induce a state of shock.

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Other less soluble substances may induce a reaction which causes them to be so walled off as to prevent absorption. They may be found several days or weeks after the injection.

In general, this route represents no method by which the substance may get into the tissues of exposed men. They get it either by inhalation, passage through the skin, or by ingestion. It may have value for certain materials. In choosing how to conduct a screening test, purely routine methods chosen on the basis of ease may give rise to serious errors. There can be no substitute for judgment based upon as broad a knowledge as is available in regard to the physical and chemical properties of the substances to be tested.

In screening work we use both oral and cutaneous work. When the volatility of the substance is low, inhalation need not be a part of the test. When it is known to be high a mouse under a bell jar filled with vapor may give the answer. Quantitative tests can be done later if indicated.

Sincerely yours,

/s/

Francis F. Heyroth, M.D.
Assistant Director

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cc: Dr. Robert A. Kehoe

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