

In an invention report dated _____, Professor Paul Lichtenstein has advised the Surgeon General of his discovery relative to an insecticidal activity in parsnips. It is the purpose of this statement to acquaint the Surgeon General with certain facts which indicate that the public benefit from this discovery will more certainly be realized if disposition is made under 8.2(b) of the Department of Health, Education & Welfare regulations. In this instance, a determination permitting assignment to the Wisconsin Alumni Research Foundation is requested.

1. Lichtenstein has discovered that an extract of the food crop, parsnips, has an insecticidal activity of considerable promise. The fact that this activity has been part of the diet of man for many years is good evidence of either a low level or complete lack of mammalian toxicity when ingested in reasonable quantities. Prior to his identification of the active ingredient as myristicin, Lichtenstein established that the compound was an active insecticide, a knock-down agent, a repellent to some species, as well as a synergist for carbamate insecticides.
2. It is interesting to note that after identification of the active agent as myristicin, it was found, in the literature, that myristicin had previously been evaluated as an insecticide.* In spite of this early disclosure, no companies, as far as is known, have seen fit to develop and market insecticidal combinations based on myristicin.
3. It has been established that the synergistic activity with carbamate insecticides is of considerable interest and in the opinion of patent attorneys, is a discovery which should be patentable.
4. Preliminary discussions with Union Carbide Corporation which presently markets the carbamate insecticide most widely used in the U.S., have indicated that this company has a desire to proceed with the further evaluation of myristicin and would hope ultimately to be able to register its use as a synergist for its insecticide. "If an exclusive position under patent protection is not available, Union Carbide will not undertake to develop the invention." This is the statement of Dr. Richard Wellman of Union Carbide.

* Kerr, R.W., Australia, Commonwealth Sci. Ind. Res. Organ. Bull. 261, (1951)

5. The work required to secure registration of this material as a synergist for carbamate insecticides will include the following steps. A university should not, and in some instances, cannot perform these functions.
 - a. Confirm and replicate the Lichtenstein observations.
 - b. Determine species and sex selectivity.
 - c. Determine range of conditions best suited for the control of each susceptible species.
 - d. Product quantities of myristicin.
 - e. Conduct toxicity tests of myristicin, alone and in combination with other ingredients. (Some tests may run two years in duration.)
 - f. Initiate and correlate field studies and results.
 - g. Conduct formulation studies to prove stability of products expected to move through commercial channels of sales and nationwide distribution.
 - h. Obtain registration.

6. Dr. John P. Frawley, Chief Toxicologist, Hercules Powder Company, in his paper presented to the 18th Annual Pesticide Conference with Industry, Madison, Wisconsin, January 8-9, 1964, used the attached illustration to demonstrate the costs involved in such a program. Incidentally, his chart also exhibits one estimate of the probable chance of any given compound being useful and commercially valuable. Myristicin, as a synergist, is now at the point of secondary screening. According to Dr. Frawley, there is 1 chance in 150 that it will be successful and if it does reach the market, some company will have invested some \$900,000 in it.

7. The President's Science Advisory Committee Report of May 1963 has called for safe and more precise methods of insect control. Myristicin gives promise of reducing the quantitative requirements of at least one carbamate insecticide by a factor of 300, when used against flies. This finding seems worthy of aggressive effort to confirm and, if possible, achieve the promised benefit. The knowledge that myristicin has insecticidal activity has existed for at least 13 years, yet no company has exploited this potential. There appears reasonable doubt, that the public will benefit by the Lichtenstein discovery unless the patent system is used to provide an incentive for a commercial interest to make the necessary expenditure and investment to achieve this goal.

8. The Wisconsin Alumni Research Foundation has attempted to serve the public through the commercial development of worthwhile inventions made in the course of the research programs at the University of Wisconsin. The Foundation was established, quite deliberately, as an organization completely separate from the University in order that commercial dictates would neither direct nor alter the course of the basic quest for knowledge which should motivate research at the University level. Furthermore, income obtained as a result of successful commercial application of inventions voluntarily brought to the Foundation has been invested and the income from that investment returned to the University of Wisconsin in the form of completely unfettered grants for the support of basic research in the natural sciences.

It is widely recognized that this arrangement has worked well and has served at least two desirable purposes: (1) it has been instrumental in making some inventions, the basis of products of outstanding importance and value to the public--in at least two cases these products have been, literally, life-saving drugs, and (2) it has provided many millions of dollars over the years to support basic research at the University.

9. Discoveries made in University research are usually embryonic in relation to the degree of understanding necessary to commercially utilize inventions. Consequently, the Foundation has invested many thousands of dollars in the development of inventions thought to have either (a) genuine value to the public regardless of commercial potential, i.e., certain drugs, and (b) good commercial possibilities and value to the public, i.e., rodenticides, vacuum pumps.

Through its licensing relationship with industrial partners, a small percentage of the inventions in which such investment has been made, have proven to be not only of benefit to the public, but also have returned, through royalties, money which has ultimately benefited the University. Net income to the Foundation has traditionally been shared with the inventor(s), the Foundation receiving 85% and the inventor(s) 15%. Where multiple inventors are involved, the inventor's 15% is shared among them.