

Mr. CÔTÉ (*Longueuil*): Through building a higher tolerance in the human body, you think there is a possibility that the human body can become immunized against the bad effects of pesticides?

Mr. COON: In experimental animals we have some evidence that there is an adaptation. I would not like to call it an immunization. There is an adaptation to the effect of quite a number of the organophosphate insecticides. We have not yet seen any evidence of this with the chlorinated hydrocarbons. I mentioned in my earlier comments, however, that some of the chlorinated hydrocarbons such as aldrein will infer a greater tolerance in experimental animals to some of the organophosphate insecticides. That is an antagonistic interaction.

Mr. CÔTÉ (*Longueuil*): Is there a change in the residue when food such as vegetables or meat which contain residues are boiled or cooked? Is the residue the same when it is cooked as when it is raw? Does cooking bring about any change in the residue?

Mr. COON: That would depend on which pesticide is involved. D.D.T., being as stable and persistent as it is, would resist cooking procedures, I believe. Most of the organophosphates, however, I do not believe would.

Mr. ROXBURGH: May I come to spinach again? If a person were to go on a diet of spinach, eating it at every meal, three times a day, what would be the final result? The only reason I am asking this is that goitre and so on were mentioned. Is the result the same as the result of eating too many fats and too much cholesterol? What does eating too much spinach do?

Mr. COON: Experimental work in rats has shown that if the diet contains 10 per cent of spinach the effect on the rat is kidney damage and a lowering of the blood calcium to an extent where hypocalcaemic tetany results. There is no reason to believe there would be any difference in human beings. Just what percentage in the diet would bring about this result we do not know. There have been reports, however, of injury by rhubarb leaves which were recommended during the war in Europe as a substitute for spinach. Fairly soon, quite a number of cases of oxalic acid poisoning occurred. This was primarily kidney injury. The recommendation, of course, was rescinded.

Mr. RYNARD: Mr. Chairman, can Dr. Coon tell us what experiments have been carried out and what are the effects on fertility of the human race, or even animals, from the use of pesticides.

Mr. COON: This is another area which requires experimental work. There has been very little done in that regard with pesticides. I believe there have been a few experimental studies on a sequence of two or three generations of mice or rats. I could not say now just which agents were involved here, but there is considerable thinking now in favour of more work of this type. Also, this was one of the recommendations of the President's science advisory committee in its report on pesticides.

The CHAIRMAN: Are there any other questions, gentlemen?

May I be allowed to ask Dr. Coon a question? Can you give the committee some idea of the amount of research that is being done in the United States, at government level or university level, in regard to the problems of insecticides and pesticides?

Mr. COON: There is quite an amount being done but there should be more. About six years ago the United States public health service at the National Institute of Health in Washington formed a new study section, the toxicology study section, for the purpose of encouraging more work of this type. This encouragement, of course, extended not only to pesticides but to environmental poisons of all kinds; and I am sure you recognize that pesticides constitute only a part of the chemical environmental hazards to which man is exposed.