To Combat Malaria, We Need DDT

A world expert on malaria and DDT explains why indoor spraying of house walls will save millions of lives. An interview with Donald R. Roberts.


USUHS

Donald R. Roberts, Ph.D., an entomologist, is Professor of Tropical Public Health at the Uniformed Services University of the Health Sciences in Bethesda, Maryland. He has conducted field studies and published scientific articles on DDT for the past 40 years, in particular showing that DDT has a unique effect: it repels mosquitoes. His work was important in the Sept. 15 decision of the World Health Organization to support the use of DDT for the spraying of inside house walls to prevent the spread of malaria.

Dr. Roberts was interviewed Nov. 16 by Marjorie Mazel Hecht.

EIR: Could you tell us about how you got into DDT, and especially your pioneering work with Indoor Residual Spraying, IRS.

Roberts: I became interested in the DDT issue in the very early days of my career as a medical entomologist, because DDT was, of course, the big topic during the 1960s. I was interested in it, but by and large I didn't have any feelings one way or the other in terms of DDT being bad for this or bad for that, or good for this or good for that. Eventually I became seriously interested in the whole issue as I worked in the field, in malaria control and malaria ecology. In those early years, we were like the young lawyer chasing ambulances. We were working in the Amazon Basin, and outbreaks were relatively uncommon, because houses were sprayed with DDT. Anyway, whenever we would have an outbreak, we would take off to go and investigate it.

We quickly learned that we needed to get there before the spray teams. If we didn't, by the time we got there, the outbreak would be over.

EIR: That fast?

Roberts: That fast, instantaneous almost. I'm not saying that there would be no cases of malaria; I'm saying that there would be no malaria transmission taking place. So the generation of new cases would end at that point in time.

I was impressed by the chemical—not by anything in the literature, not by anything in the popular press, but by my experience. So, eventually, as the opportunity presented itself, I started conducting field experiments on how DDT actually functions. And the outcome of the research was that I discovered—to my total amazement, I might say—that it wasn't functioning by killing mosquitoes. It functioned as a *repellent.* It kept them out of houses.

I actually went into the state of a recluse scientist for a number of years, as I worked on the literature, because I couldn't put my findings into the context of anything that I had been taught, or had been told. And so, I worked with the literature for a number of years, and I discovered that there were many like me—many field researchers—and you could find their papers scattered throughout the literature, dating back to the very beginning of the use of DDT. And we were all saying the same thing: DDT was functioning in ways that aren't appreciated.

Anti-malaria spraying in Guyana. Indoor residual spraying with DDT not only acts as an insecticide, killing the mosquitoes that land on walls, but also acts as a repellent that keeps mosquitoes from entering a sprayed house. Mosquitoes are repelled, whether or not they are resistant to DDT.

So, one thing led to another, and I just stayed with it over the decades.

EIR: Much to the benefit of the world—especially now with the new World Health Organization decision to use indoor spraying of DDT for malaria control.
Roberts: Well, that's what we all hope for! It has been a very encouraging change. And I think it was a very courageous act on [WHO malaria head] Dr. Kochi's part to take that position, and to go public with it. The fight is not over, because, of course, his decision has just rallied the anti-DDT folks, and so it's turning into a rather grim struggle. But, you know, you have to decide according to your own value system, what is the relevance of human health versus what is the importance of speculative harms.

EIR: It's prejudice on the part of the anti-DDT folks, really—brainwashing.
Roberts: Brainwashing, exactly, and it's everywhere. It's in the schools. It's in zoos. It's everywhere. And to a very significant extent, it's all false.

EIR: And yet, when it's so engrained in people—the generations from the 70s on—it was drummed into them as a belief system, so it's very hard to shake it.
Roberts: It's not science. To be blunt, most people know very little about the science of DDT, or the science about malaria control. But they have very strong opinions—and very loud voices. And when you see them get angry, as you mount a defense of the use of DDT, you know that you're dealing with a belief system, not science.

EIR: Like many environmental views that are based on fear. . . . To go back to your early work with IRS, what impressed me was the statistics you had compiled about Ibero-America, where you can see that the countries that stopped using DDT had enormous increases in the rates of malaria incidence, and those where DDT was still used, did not have malaria increases.
Roberts: Right. And where the use of DDT has been initiated or restarted, you find that malaria rates decline rather quickly, precipitously in fact.

EIR: On the question of resistance, can you take up a couple of the usual objections that environmentalists raise to DDT, such as why bother to spray with DDT, because mosquitoes have become resistant to it. Yet, what you discovered is that the mosquitoes are repelled even if they are resistant.
Roberts: I am a scientist, and the whole question about resistance and mechanisms of resistance is really important, and those lines of research should be pursued. But resistance to DDT, and there is evidence in the literature to back up my belief, is largely a product of use of DDT in agriculture.

There was a study carried out by Dr. Georghiou in Central America back in the 1970s, and he showed the distribution of resistance to DDT in malaria mosquitoes corresponds *precisely* with the geographical areas in which DDT was being heavily used in agriculture. Not only did he find that its distribution was determined by the use of DDT in agriculture, but he found that seasonality was influenced. In other words, the

proportion of mosquito populations and levels of resistance within a mosquito population varies by time of year, and that variance correlates with the time of the year that DDT is being used in agriculture.

So the basic mechanism that I'm talking about here is that when you put DDT on a wall, mosquitoes land on walls, and they become exposed to DDT on the wall, because they enter a house, and they enter a house because they want to bite a human being. The mosquito has an option. It can *not* enter the house, and if it doesn't enter the house, it stays away from the insecticide.

If you take the DDT and spread it broadly in the environment, the mosquito can't avoid it. The fact that DDT is a powerful repellent is irrelevant if it's everywhere; it can't be avoided.

Secondarily, DDT is a powerful contact irritant. But again, if you can't avoid it, it doesn't matter that it's an irritant. And of course, since it's sprayed everywhere in agriculture, it would wind up in pools of water, where the mosquito lays its eggs, and the selection for a resistance mechanism in those circumstances, is powerful. And so that is the basic mechanism of resistance selection that I'm talking about.

On the other hand, if you spray it inside houses, there are options; the mosquito can stay out of the house, and therefore there is no selection for resistance. But in addition, if it stays out of the house, it's not going to be transmitting disease.

EIR: And so when you spray the inside walls of a house, it repels all of the mosquitoes, whether they are resistant to DDT or not.

Roberts: The research that we have conducted up to this point in time suggests to us that toxic and repellent actions are entirely separate mechanisms of action. Toxicity is one mechanism of action and death is a contact response. The mosquito is not going to die unless it lands on a surface where the DDT is, and furthermore, you really do not get significant levels of mortality of mosquitoes unless they remain in contact with DDT for several minutes, on the order of 20 minutes.

EIR: Isn't it part of the behavior of mosquitoes that they rest on walls for that long?

Roberts: They rest. They rest before they take a blood meal, and they rest after they take a blood meal. That is part of their behavior.

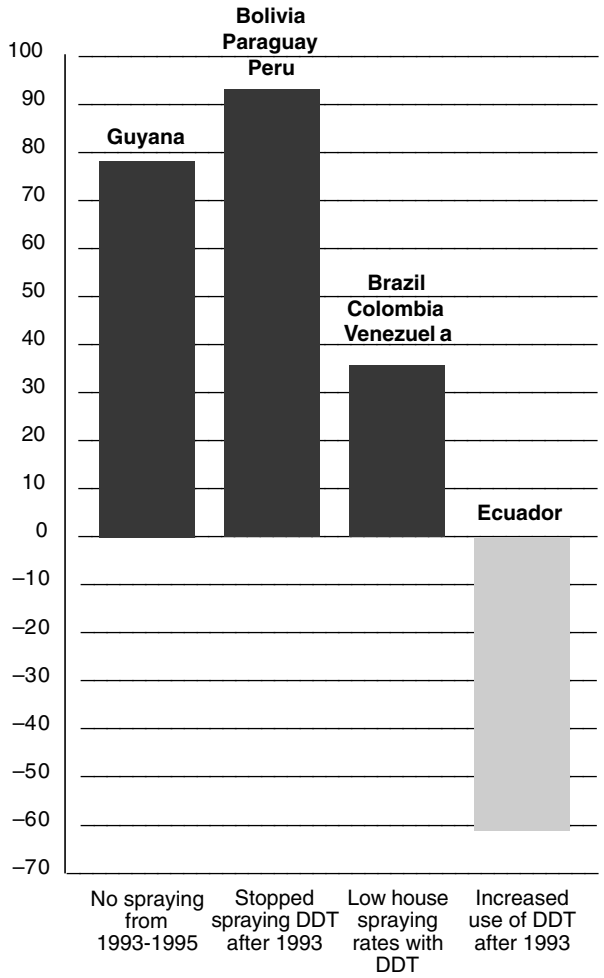
So, toxicity requires contact, the absorption of the chemical. Repellancy is entirely different. Repellancy is a vapor phase—no contact. The mosquitoes detect it, probably through receptors on the antennae; that's my best guess. They can detect molecules of DDT in the air, and the probabilities are that they can detect a gradient of molecules. And once they detect that gradient of molecules in air, they go in the opposite direction.

EIR: What do you mean by gradient?

FIGURE 1

Increases in Malaria for Countries in South America, 1993-1995

(Percent Increase in Numbers of Malaria Cases)



Source: Adapted from D. Roberts et al., *Emerging Infectious Diseases,* July-September 1997, p. 300.

When countries stopped spraying the inside walls of houses with DDT, the incidence of malaria soared. But when spraying was increased, there was a fast, dramatic drop in malaria cases.

Roberts: Increasing numbers of molecules in air.

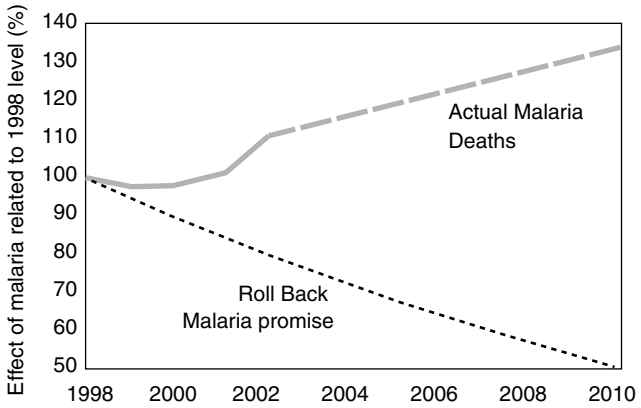
EIR: So, as they approach the wall, they sense they are getting closer to the DDT and they leave.

Roberts: Right. It's the same mechanism that you would use if you smelled smoke. Our sense of smell is acute enough that we can actually rely on it to direct us in a particular direction if we are smelling something. I think we're talking about a very similar kind of phenomenon here. The mosquito can detect a gradient of chemical and responds, "Whoa, I'm not going there."

FIGURE 2

Malaria Deaths Since Roll Back Malaria Program, As Percentage of 1998 Level

(1998 = 100%)



Source: Adapted from the *British Medical Journal,* May 8, 2004.

The Roll Back Malaria program, a partnership of the WHO and United Nations organizations, which has pointedly avoided any use of DDT, has been an abysmal failure. Since the RBM founding in 1998, deaths from malaria have steadily increased.

EIR: I think that's been very important in the decision by the WHO to begin the indoor spraying with DDT.

Roberts: I certainly hope that it has been, because frankly, there's no other chemical like DDT. We know that—we've tested hundreds of chemicals.

EIR: What about the alternative pesticides that are promoted, the pyrethroids, for example, to which mosquitoes have become resistant?

Roberts: There is a growing problem of resistance to the pyrethroid insecticides. This problem is being taken very seriously by the World Health Organization. I know for a fact that there is great concern about it. The issue with the pyrethroids is that they're not used for public health programs alone; they are used extensively in agriculture, and so the resistance problem is not going to diminish; it's going to grow. And so there is a real need for new chemicals. There will be situations where pyrethroids have worked well in the past, but not in the future. At that point, what do they go to?

The environmentalists have mounted attacks on the organophosphates, so the organophosphates are not an optimal alternative. The environmentalists have mounted attacks on the carbamates, so the carbamates are not an optimal alternative. So what do you have other than pyrethroids?

EIR: I guess you have protection of mosquitoes at the expense of people.

Roberts: That is why we need DDT. Besides, none of these other chemicals function as a repellent. Some are contact irritants, but none are strong spatial repellents like DDT.

EIR: The other issue people raise is, why not use bednets, and this amazes me because of the tiny number of people who now have bednets. I'm not against the use of bednets, but they don't do the job in the same way. What do you think?

Roberts: I'm not particularly eager to attack the use of bednets, because I think the bednets are useful and it's not constructive to attack them, but the problem with the bednets is the same problem you have with any personal protective measure. It's fundamental, it's basic: The problem with bednets is user compliance. People have got to be willing, and they've got to have the discipline to use the darn things every single night.

The other issue with bednets is that they provide protection primarily when you're beneath the net. And that's a limitation. People do not necessarily stay under their bednets during all the hours when the mosquitoes are out there biting. The bednet is an easy and popular answer to the malaria problem. Bednets are receiving such an enormous push right now. So many people, and so much big money is behind use of bednets. *But* all the hype, all the big money, is not going to overcome those fundamental issues.

There is a basic principle in occupational health: The least desirable of all preventive measures is the personal protective measure. That relates to the fact that people won't comply. And so, the big push right now in malaria control, the use of bednets, defies that fundamental principle of occupational preventive medicine.

EIR: Another question that's related in my view, and this is something that the anti-DDT people have said, is that "We can't do DDT, because it requires public health infrastructure." That boggles my mind. They are actually saying, we don't want to spend money on infrastructure; we don't have it, whereas we have the money for bednets. I don't get it.

Roberts: It's putting the cart in front of the horse. You must have infrastructure if you're going to control the disease—any disease. You've got to have people who know something about therapeutics, about the proper treatments. You've got to have people who know something about data collecting and surveillance, making a proper determination of whether one case is malaria and another case is some viral disease. You've got to be able to distinguish between these infections. All of that requires infrastructure. You've got to know how much disease you have, how big the burden might be, before you can evaluate whether or not your control methods are working to control disease.

EIR: I think a major problem is that there is no infrastructure in Africa. Here we've taken down our public health infrastructure too, but in Africa, it's abysmal.

Roberts: Yes, it's abysmal, but the policies that brought about the destruction of our malaria control programs around

the world were *wrong,* just flat wrong. And the people who were promoting those changes were deluded into thinking that what we need to do is empower the people to handle their own disease problems.

People can't handle their own disease problems. And you can't empower them to do so.

EIR: It seems to me that policy move was an excuse for genocide—deaths in the millions over the past few decades.

Roberts: It has certainly been a major global reversal in public health. No question in my mind about that. Hopefully, change is on the way. There's hope; perhaps that's all we have at the moment.

Foto de Armando Waak/OPS

On Sept. 15, the new head of WHO's malaria division, Dr. Arata Kochi (right), announced the decision to return to a science-based malaria policy, and permit the use of DDT for indoor house spraying. Dr. Kochi's courageous step overruled 30 years of anti-DDT prejudice at WHO.

EIR: I have been following the news on various countries in Africa, and they do seem to be making a fight to get back to the use of DDT.

Roberts: And if it's not DDT, at least it's Indoor Residual Spraying. Because, quite frankly, I think the best of all worlds would be a combination of spraying the walls and the use of the bednets, ITNs [insecticide-treated nets]. We shouldn't exclude bednets; they should be used. But we should spray. The advantage of spraying is that a sprayed wall is the first cut. The mosquito has to get past that barrier first. If it gets past that barrier, and there are nets, maybe the nets will give the second line of defense.

EIR: What do you think it would take, having been in this field for a few decades now, to get public health back to where it should be?

Roberts: It takes a huge investment, and you can see there are signs that the investment is growing. That's a very hopeful change. Monies are being made available, probably not enough, but a lot more than we had before.

So, number one, it takes a huge investment, and number two, it takes investment in infrastructure. We've got to rebuild public health programs, and WHO capacities to direct house spraying programs. Additionally, we've got to stop saying "We're not going to do anything unless it's based on the community." We've got to get public health workers back into the field doing public health for the people. As opposed to saying, "No, no, we want the people to do all this."

EIR: That's just an excuse for not doing it.

Roberts: Exactly, it's a cop-out. If you look at the history of our efforts with dengue fever, you see a glowing example of this whole idea of community participation. Throughout the '70s and '80s, the catchwords, the hype, for dengue control, was community participation. It was an abysmal failure. There is no success.

EIR: In other fields that has certainly been the case, such as community control of education. . . .

Roberts: We just need to go back to what history has shown us actually works. I have tremendous respect for the scientists of the 1940s and '50s, who were in there doing pioneer work in the field, on the ground, showing how they could go about controlling disease, and they did it. They were successful, and we have now a 30- to 40-year history of complete failure, rejecting everything that they did. And it's not as if they tried and they failed; they tried and they succeeded! And we've spent the last 30 years casting criticisms on what they did, saying, "No, we're doing it the right way, we're doing it a better way," and meanwhile disease is growing, and growing, and growing.

EIR: I think the words of Alexander King give a big clue as to what happened. He said, he was for DDT during World War II—he was a chemist in charge of DDT for Britain. And then, by 1960, when he founded the Club of Rome with its Malthusian outlook, he said in a memoir that he regretted his decision to back DDT, because it had allowed such population growth in the Third World: People weren't dying of malaria, and they could live and have children. I think that's behind a lot of the anti-DDT and other kinds of public health take-down: the idea that we don't need more people, and this is a good way to get rid of them.

Roberts: It certainly works! The disease and the dying is going on. Illness is high, deaths are high, and they just keep increasing. Malaria is pretty good at taking people out of the picture, so to speak.

The truth is, though, that does not solve population growth. If you're truly concerned about population growth, what you need to do is focus on making those people wealthier.

EIR: That is another way to look at it; people who have a

WHO Photo

A typical malaria victim in 1950, before DDT was widely used. The child's spleen is enormously enlarged, one of the symptoms of malaria infection.

higher standard of living tend to have fewer children, so they can raise them to have an even higher standard of living.

Roberts: They tend to produce fewer children. It's like the population growth that we see in Japan and Europe. Many countries are very concerned about their *lack* of population growth. You'll also find that these are rather wealthy countries.

So, I think the people who are against DDT because it prevents disease and death, and do so from the standpoint of controlling human population, are just terribly misled.

EIR: Unless they are the Bertrand Russell types, who advocated the use of disease as a killer.

Roberts: I've never been able to figure out the role of that ideology within this mix of issues. I know it's out there. I don't doubt that; I just don't know how big of an issue it is.

EIR: Any time I've questioned persons who are opposed to DDT, it turns out that they are Malthusians. They think that fewer people in the world would be better. There's no causality there, necessarily, but those two things usually go together. It's the same with nuclear energy and fusion. . . .. They oppose it because it will lead to cheap energy and more industrialization.

Roberts: It's very sick, and it's wrong—it's wrong ethics and wrong thinking.

EIR: Can you talk a little about the book you are writing?

Roberts: This book is about DDT. It is written to build a solid foundation of science for dealing with the questions about DDT. In the book, we try to explain how DDT actually functions to control disease transmission, and how it is, in fact, unique in the way that it functions. We explain that DDT is not a very toxic chemical, and try to put its persistence into perspective, in terms of compartmentalization, sequestration, and biodegradation.

There are lots of misunderstandings about DDT. There is a strong belief that DDT does not biodegrade; it does. It's readily biodegraded. It's biodegraded in the human body. It's biodegraded in the bodies of most living organisms. It's biodegraded by bacteria. It's biodegraded by fungi. White rot fungi can mineralize DDT. So it is ubiquitously degraded in the environment.

It is also degraded by light. It's chemically degraded. And so, when you start looking at all the mechanisms for breaking down DDT, what you really discover is that DDT is persistent, only to the extent that it is protected from all of these processes, by becoming tightly bound to organic particles in the soil, for example. In the process of compartmentalization, it becomes stored in fat. Basically DDT in a fat cell is not available for degradation. In addition, when it's in fat, DDT is not available to act against the living organism.

So, this whole concept that DDT is persistent, and that this persistence is a problem, is wrong. The fact is, the natural world is fully capable of dealing with DDT, because we are surrounded by chemicals like DDT. Degradation, sequestration, and compartmentalization are natural processes for dealing with DDT and other DDT-like chemicals. There are certain vitamins that are toxic, but they are essential to our survival. Some lipophilic chemicals will bioaccumulate, and the way nature handles such a chemical is to tuck it away in fat.

Basically that's the process of compartmentalization. If you were to take the process of sequestration and compartmentalization of DDT away, DDT would be degraded and disappear.

EIR: It seems to me, from looking at experiments reported in the DDT literature going back to the 1960s, that DDT in the animals it was given to, had a kind of protective effect. In other words, the dogs who were given very high doses of DDT, did a lot better than the control group. They got sick less and they lived longer. Did you deal with this at all?

Roberts: Well, let me give you one example. I don't know that I can say anything profound about it. By and large, within a living organism, DDT becomes a neutral factor. It's neither good, nor bad; it's just there. And because it's tucked away in fat, it's biologically inert. But there are systems for moving DDT out of fat, and getting rid of it, just as there are systems for moving any other lipophilic toxins out of fat and getting rid of them.

So none of this is new to nature. We are literally surrounded and immersed in an environment of lipophilic chemicals. Some are toxic, some are less so, and we deal with all of them. Some of them are essential to our survival. DDT is not essential to our survival, but there are certainly mechanisms for dealing with it in a natural way.

The Malaria Cycle

There are three types of malaria, all caused by a genus of protozoans called *Plasmodium,* the most lethal being *Plasmodium falciparum.* In brief, the *plasmodium* is picked up by a biting female *Anopheles* mosquito, when she sucks the blood of a person with malaria. The plasmodia in the blood mate in the mosquito's stomach and produce hundreds or thousands of young plasmodia, which travel through the mosquito's body, including to the salivary glands. When the mosquito bites again, it injects young plasmodia (called sporozoites) into the human victim.

These plasmodia reach the human liver where they reproduce, forming a new phase of plasmodia (merozoites), which enter the blood stream, burrow into red blood cells, reproduce, and in 48 hours, burst out to enter new blood cells, repeating the process in 48 hours.

When the number of merozoites reaches about 150 million in a 140-pound person, the victim has a typical malaria attack every 48 hours. As Dr. Gordon Edwards describes it, "When millions of red blood cells are simultaneously destroyed, the victim suffers a chill. As the cells are ruptured, toxins are released, resulting in alternating chills and fevers. If a large number of plasmodia invade the brain, death quickly follows."

The malaria cycle is most effectively stopped, when the *Anopheles* mosquito is prevented from biting people who already have malaria in their blood. This vastly reduces the incidence of new cases of malaria.

The example I was going to give you: You're familiar with the robin story, which Rachel Carson described. She stated that the robin was headed for extinction because of DDT. Well, a study of many aspects of the robin story was published in 2000, and another in 2003. DDT was used heavily in apple orchards. In fact, there was probably more DDT placed on apple orchards than any other commercial crop. And so, there are these orchards in Canada where DDT had been used until 1973. There was still a lot of DDT in the soil. If you test the robins that live in that orchard, they have higher levels of DDT than any other bird recorded. And you find high levels of DDT in the earthworms.

But if you compare the populations and reproductive success of robins in the orchard, with the robins in surrounding areas that have *no* DDT, you find that the robins are doing just as well, with the DDT, and in fact, the brood and clutch size of the robins in the orchard are actually higher than the brood and clutch size of robins in areas without DDT. The difference is not statistically significant, but they are higher.

So basically, what you find is that the DDT is there, but it causes no harm, and certainly does not affect reproduction.

EIR: I think that the robin story promoted by Rachel Carson is a complete lie, because there were plenty of robins in 1962 when she wrote her book, and later.

Roberts: It was a complete lie. What she focussed on was what happened on a Michigan State University campus in Ann Arbor, and so she made all those wild claims. There were studies done and published in 1973 by ornithologists on campus, and what they showed was that Carson's data were all wrong. They saw that there were just as many robins during the time that DDT was in use as before or after DDT use. And in fact the nesting populations of robins were higher during the DDT years than before or after. But the anti-DDT people don't want to know that. . . .

EIR: Can you say a little more about your book?

Roberts: The goal of the book is to try to set the record straight on DDT. And, more important, to show how the use or non-use of DDT was a critical public health issue that had implications for the health of hundreds of millions of human beings. Hundreds of millions of people have been harmed by the environmentalist-activist campaign against DDT.

The outcome of the enormous propaganda machine has been to give over to the environmental organzations, like EPA [U.S. Environmental Protection Agency], UNEP [United Nations Environment Program], and many others around the world, authority, regulatory control over a critical public health issue, and they have no recognition of the public health consequences. They have authority; they assume no responsibility.

That's one of the points that we try to explain in the book—that the reason that people have been harmed is that the authority is resting in the wrong hands.

EIR: And people are continuing to be harmed until we change that situation.

Roberts: It should change. If there is any justice in the world, the authority over the public health insecticides will be taken away from the environmentalist organizations, and will be put in the hands of the people who have responsibility for public health—WHO, or CDC [Centers for Disease Control]. There should be change; whether or not there will be change is an open questions.

EIR: It's a fight! When does your book come out?

Roberts: I'm working on the eagle story right now and to be fair, and to get the science right, is very difficult. I'm spending

a tremendous amount of time researching, as are my co-authors. I know more about eagles than I ever wanted to know. This is the last chapter I'm writing, and I hope to have it finished in the next two to three weeks.

EIR: One last question: For years the environmentalists have been trying to come up with reasons that DDT is "bad"—whether it's shrinking crocodile penises or hurting the development of Mexican-American children (the recent California study).[1] They are just trying to find *something,* but to my knowledge, they have never found anything in DDT harmful to human health. Can you comment on the University of California study on DDT and infant development?

Roberts: I think the California study falls into the same category as many of these studies. Basically it comes down to the existence of large data sets, and the numbers of large data sets are growing. We are dealing with statistical manipulations, looking for correlations with a large number of variables, and you set your probability for statistical significance at 5%, and well, one out of twenty columns of data is going to give you a significant result; that's 5%. And I think that's what is happening, There is some weak association, and with a large data set, it may give them a statistically significant finding, and they go with it.

Somebody else comes along, and has a different large data set, and they find that, no, it just doesn't work out that way. Those are the problems that we are dealing with: One study finds an association and another study doesn't. It is a search for something harmful from a chemical that we can detect in extremely small quantities. And it's often there, so it's a good target.

Occasionally somebody gets a hit, and they go to press with it. Through this process, we also run into the bias against negative results. If you do a study that duplicates the Eskenazi study [the University of California study of Mexican-American infants], and you find no association, your chances of getting that paper published are extremely small, because it's a negative result. That's a bias in the whole process of publishing scientific studies, and it's real. There's no figment of imagination here. If you've got a negative result, that result is just not very helpful.

If we had ten studies, and they all showed the same thing about developmental effects, you might reach the point that you can say, there's something real in this association. I'm talking about well-designed, well-performed scientific studies all showing the same result. Then you might say, well, let's look at it. Now, just because studies show a developmental effect, does that mean DDT is not good? In my opinion, it doesn't mean that at all. What you have to do is take a look at what is harm versus benefit.

If you've got a population where you're losing 100,000 babies to malaria a year out of a population of 20 million or so, boy, you'd better have some serious, serious harm coming from the use of that chemical if using it will save 100,000 lives.

EIR: What the study showed was so inconclusive, that at a certain point of the infant's development, the child was one or two months behind. That's meaningless, really.

Roberts: It's particularly meaningless when you realize that it's very possible that even if there were an effect, it could disappear over the next two or three years of development.

EIR: And how many other things are so much more important in terms of a child's development?

Roberts: The true significance of that paper was not the science, in my opinion, but that the authors stepped over the line, and made the suggestion that the results of their study should be taken into consideration by those countries looking to use DDT for malaria control. In my opinion, the authors were over the line because they knew nothing about malaria or the benefits of DDT. For them to cross the line and say that those countries should look at their study results before making a decision to use DDT is, I think, unacceptable—scientifically and ethically unacceptable.

EIR: It's also unacceptable that it was picked up and ballyhooed everywhere, including in the science press with the same intent.

1. Brenda Eskenazi, Ph.D. et al. "In Utero Exposure to Dichlorodiphenyltrichloroethane (DDT) and Dichlorodiphenyldicholorethylene (DDE) and Neurodevelopment Among Young Mexican American Children," *Pediatrics,* Vol. 118, No. 1, July 2006.