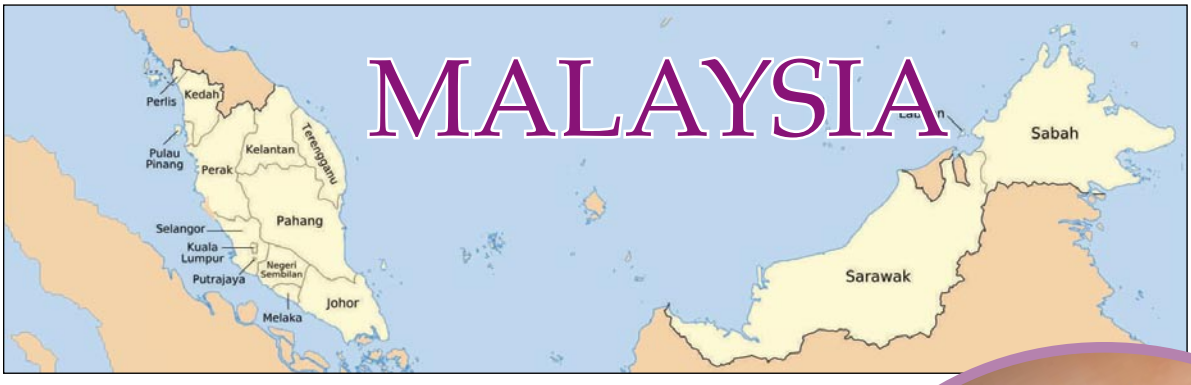
With DDT Spraying,



Can Show the World How to Control Dengue

by Mohd Peter Davis

The Asian tiger mosquito (Aedes albopictus)*, is one of the vectors for dengue. Here the female feeds on the blood of a human host.*

A Malaysian scientist proposes a pilot project to test a program using DDT to control dengue.

The official announcement by the World Health Organization in September 2006 giving a clean bill of health to the use of DDT for indoor spraying for controlling malaria,[1] reversed WHO's 30-year ban on DDT and offered a promising way forward for also controlling the spread of mosquito-borne dengue fever. The dengue fever virus, which is transmitted to human beings by the *Aedes* mosquito, has increased alarmingly in recent decades to 50 million cases per year, subjecting about two fifths of the world's population to risk of infection, particularly in urban and semi-urban areas in the tropics and subtropics.[2]

A severe form of the disease, dengue haemorrhagic fever, is a leading cause of illness and death among children in some Asian countries. Malaysia is a typical example, with dengue now rampant. Dengue virus usually causes an incapacitating flu-like illness with sudden onset and high fever, severe headache, pain behind the eyes, muscle and joint pains, and rash. Dengue haemorrhagic fever, the WHO reports, affects 500,000 people per year and can have a 20 percent death rate, without skilled hospital treatment especially among children.

Unfortunately, there is no vaccine to protect against dengue. Although progress is under way, developing a vaccine against the disease—either in its mild or severe form—is challenging. The only way to prevent dengue virus transmission is to combat the disease-carrying mosquitoes.

A Proposed Malaysian DDT Experiment

Malaysia, a small nation that has developed well in 52 years of independence, with a population of 27 million and 65 percent urbanization, is in an excellent position to test the effectiveness of spraying the indoor walls of houses with DDT, as recommended by WHO. Only minute quantities, 0.3 parts per million in a water spray, need to be used, which is sufficient to repel mosquitoes from homes for up to six months when the spraying can be repeated.

Female mosquitoes in search of a blood meal to support egg production are attracted to houses by the

Sixty-five percent of Malaysia's population is urban. Here a view of the capital city, Kuala Lumpur.

Malaysia's independence celebration on Sept. 16, 1963. The Federation of Malaysia was formed by the merger of Malaya, Sabah, Sarawak, and Singapore. The Malay words "Majulah Malaysia" mean "Onward Malaysia."

carbon dioxide and pheromones emitted by humans, but the smell of DDT is abhorrent to mosquitoes. This fighting-fire-with-fire approach at the molecular level greatly reduces the chances of getting bitten by mosquito inside the home, and was the hidden basis for the highly successful anti-malaria strategy used throughout the world before DDT was unjustly banned.

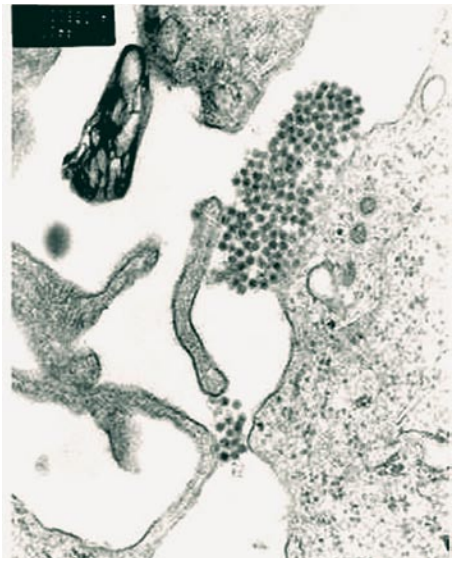
Similar low-dose DDT spraying of potential mosquito breeding sites immediately outside each house, and in the gardens and streets of dense urban areas, serves to prevent {Aedes} mosquitoes from laying eggs in rainwater traps, whether in man-made habitats or natural ones, such as the water that collects in leaves and branch nodes.

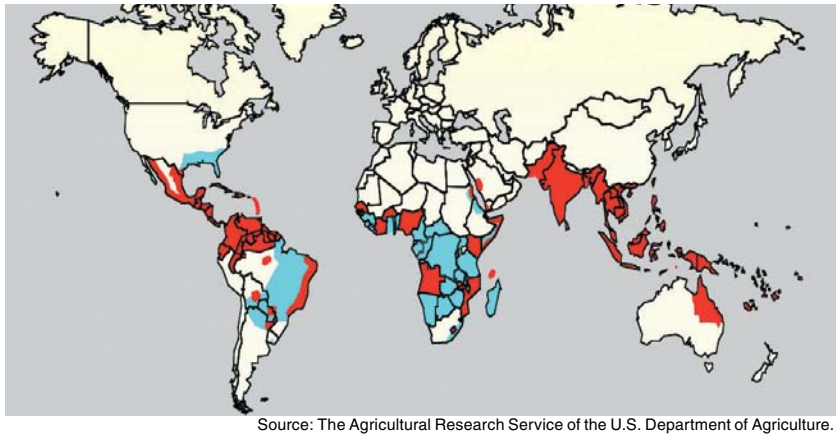
This outdoor urban strategy, termed perifocal spraying, was used to virtually eradicate dengue in South America in the 1950s. Unlike the present fogging strategy, with short-lived pesticides that kill mosquitoes on contact, the aim of perifocal spraying with minute quantities of long-acting DDT is to repel mosquitoes from their natural and man-made breeding sites in dense urban areas. Life in the city and suburbs protected by ridiculously small quantities of DDT becomes tough for mosquitoes. They are denied human blood meals and good breeding sites and have to go back to nature to breed! This is where mosquitoes rightly belong, in low numbers, as part of the natural ecosystem of the biosphere.

Trying to exterminate mosquitoes with the crude pesticides currently used in fogging campaigns is a stupid dengue control strategy that has repeatedly failed and should be compared with the elegance of proposed combined indoor/outdoor DDT strategy that aims simply to repel mosquitoes (also killing some of them) from dengue-affected urban areas.

If the Malaysian government, via the Ministry of Health, were to give its full support to this program, Malaysia under the watchful eye of WHO, could test and scientifically evaluate the DDT proposal in pilot project in dengue hot spot suburbs. Armed with DDT, the Public Health spraying teams will again have the decisive weapon against dengue. It will be an exciting live experiment for long-suffering Malaysians to observe and follow, and will serve to counter the anti-DDT brainwashing the population has been subjected to by the green environmental movement.

Most important, it could be a world-class national experiment, with leading dengue and DDT experts as advisors, for the benefit of 40 percent of the worlds population now at risk from dengue.

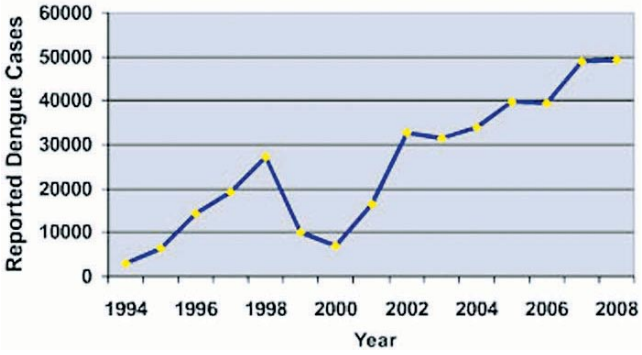




Source: The Agricultural Research Service of the U.S. Department of Agriculture.

The distribution of dengue fever in the world, as of 2006. Dengue is transmitted by the Aedes *mosquito, in particular* A. aegypti *and* A. albopictus. *The blue color indicates areas where* Aedes aegypti *is the vector. At left: An up-close look at the dengue virus, with a magnification of 123,000 times.*

REPORTED DENGUE CASES IN MALAYSIA



From bad to worse: Dengue cases increased nearly 700 percent from 2000 to 2008.

United Nations University

The Malaysian Ministry of Health's pesticide fogging program for dengue has failed to stop the spread of dengue.

A similar national experiment concerning the general welfare occurred in 1970 in Australia. While the rest of the world agonized over the compulsory wearing of front seatbelts in automobiles, Australia boldly cut through all the individual rights objections and made it compulsory, to address the slaughter on the roads. By 1974, Australia's decrease of 37 percent in deaths and 41 percent in injuries convinced the rest of the world to quickly adopt similar mandatory seatbelt legislation.

Now that WHO has underlined the efficacy of the indoor spraying of DDT, Malaysia can conduct a national scientific experiment that hopefully will convince a world that has forgotten how the use of DDT in the 1950s and 1960s was successfully combating malaria and dengue. We must not miss this golden opportunity to again control these diseases, especially as the world economy disintegrates. The lesson of history is that economic collapse and rapid increase in diseases go hand in hand. Recall the Black Death following the 14th Century disintegration of the European financial system, or more recently the 50 million deaths from the 1918 influenza pandemic following the social and economic breakdown unleashed by the First World War.

The Malaysian Dengue Situation

The reported number of cases of Dengue Fever in Malaysia continues to go from bad to worse, rising each year—from 7,103 cases in 2000 to 49,335 in 2008, an increase of nearly 700 percent. This increase occurred despite energetic outdoor insecticide fogging campaigns conducted by the Ministry of Health[3] to control the *Aedes* mosquito population in urban areas.

The lack of success with outdoor spraying has been noted worldwide. The Head of Insects and Infectious Diseases Unit at the Pasteur Institute in Paris, Professor Paul Reiter, in a 2009 letter to the Malaysian *New Straits Times* sums up the practice: "Fogging with insecticides from road vehicles has little or no impact in urban areas." Reiter goes on to state: "Search-and-destroy missions (against mosquito larvae) can be effective if people are vigilant, but many sites are hard to find, even by professional entomologists."[4]

This is an "Ovitrap," used to monitor the Asian Tiger Mosquito by collecting its eggs.

Another epidemiologist who has experience in fighting dengue has documented how perifocal spraying with DDT around the outside of the houses in the dengue area has been effective in the past. Malaysia should include this in its pilot project.

The limited success of the current method used in Malaysia is borne out by a large campaign in 2008 to control the spread of dengue, conducted by the Ministry of Health, which mobilized 11,892 volunteer residents in 598 suburbs (around 20 residents per suburb) in weekly search-and-destroy activities of *Aedes* breeding sites. The Health Ministry reported considerable success with an 84 percent reduction in dengue cases in these suburbs.[5] However, the number of reported cases throughout Malaysia in 2008 still rose by 1 percent. Clearly, it would require the constant mobilization of huge numbers of volunteers in *Aedes* search-and destroy missions in every urban suburb and indeed rural areas throughout the country to effectively control the spread of dengue.

Faced with this daunting task, the Ministry of Health has instead placed the responsibility on every resident and factory owner to control *Aedes* breeding sites in their compounds by regularly emptying the base of flower pots and other water containers, including cleaning storage water tanks every week. There are heavy fines if the patrolling health teams discover mosquito larvae in a factory or household. Yet dengue cases have increased sevenfold in eight years. The sad truth is that the Ministry of Health has been transformed from a top-down body of highly trained and dedicated disease control professionals protecting the public health to become a low-grade and resented police force, which increasingly blames the public for spreading dengue.

Again, Professor Reiter hits the nail on the head: "There is no country in the world where dengue is under control. We

Institute for Medical Research

CDC

Before the ban on DDT, Malaysia used it in a house spraying campaign against malaria.

The United States began spraying with DDT for malaria control shortly after the pesticide was introduced. Below, spraying of a military facility in the Southeast.

need original ideas to win the battle."

Rethinking the Dengue Problem

We have reached a dead end and need to go back to basics. Trying to exterminate the *Aedes* mosquito in Malaysia or worldwide to control dengue or malaria is "mission impossible," rather like trying to eliminate cockroaches or termites from the biosphere. No matter how sophisticated the technique, from new insecticides to kill larvae, biological control to eat them, or the release of male *Aedes* mosquitoes with transgenic sterility genes, insect extermination is not the answer.

This is because the female *Aedes* mosquito is not the source of the dengue virus but merely the transmitter of the disease: the flying syringe which picks up dengue virus in the blood of infected humans. Although limited reproduction of dengue virus occurs in mosquitoes, they have a short life and die within 50 days, along with the virus. It is human beings and monkeys, not flower pots and dirty drains, that are the main breeding grounds, producers, and reservoirs of the dengue virus.

We must stop thinking of other species as aliens from another planet, threatening mankind. Killing every species that spreads disease to humans would soon entail the extermination of all life on Earth. Although it is often hard to accept, mosquitoes do serve a useful and necessary purpose in the Earth's biosphere, which contains perhaps 50 million interdependent species. The highly cursed mosquito does not have an evil intent against humans. The only reason female *Aedes* mosquitoes bite humans is for blood meals to complete their reproductive cycle. The wrong public health strategy of trying to exterminate *Aedes* mosquitoes has in fact allowed the pool of humans infected with dengue virus to dramatically increase in recent decades and get dangerously out of control.

The War against DDT

Can we stop mosquitoes biting humans? That would stop the spread of dengue in its tracks. The good news is, yes we can! As the World Health Organization advised in 2006: Go back to when DDT was effectively controlling malaria and other mosquito-borne diseases including dengue from the mid 1940s to the early 1970s before it was unjustly banned worldwide.

The green environmental movement ran a 10-year fear campaign, remarkably similar to today's global warming hysteria, claiming that the life-saving DDT was a dangerous environmental poison. The fraudulent campaign took off in in 1962, when Rachel Carson, a marine biologist and well-known science writer, claimed that the use of DDT in households and agriculture was killing wildlife, especially birds. Hence the title of her book, *Silent Spring,* which shocked an innocent world into believing that DDT and man-made chemicals were threatening life on Earth. Carson falsely reported many of the results of DDT studies in order to make her case, as U.S. entomologist Dr. J. Gordon Edwards has documented.[6]

Sound familiar? The misinformation against DDT was united with zero population growth, and the imminent exhaustion of resources on spaceship Earth claimed by the Club of Rome, into a giant fear campaign that became the fanatical battle cry of the green environmental movement. The 1968ers from the universities, those anti-Vietnam war, anti-blue collar, drugs/sex/and rock 'n roll white-collar baby boomers, became the shock troopers who turned the optimistic postwar public culture, which supported progress driven by science and technology, into green scientific pessimists.

Many scientists internationally fought back with convincing evidence. The U.S. Environmental Protection Agency conducted seven months of hearings on DDT in 1972, producing more than 9,000 pages of transcript. At the end, the EPA hearing examiner, Edmund Sweeney, ruled that on the basis of the scientific evidence, DDT should not be banned. "DDT is not carcinogenic, mutagenic, or teratogenic to man [and] these uses of

EPA

President Nixon (left) and Chief Justice Warren Burger (right) at the swearing in ceremony for EPA administrator William Ruckelshaus, Dec. 4, 1970. Two years later, Ruckelhaus's ban on DDT launched the growth of U.S. green groups—and the increase of malaria.

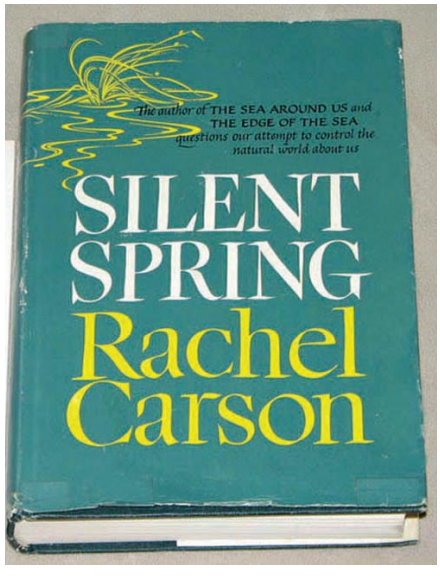
DDT do not have a deleterious effect on fish, birds, wildlife, or estuarine organisms."[7]

But the EPA administrator, Nixon appointee William Ruckelshaus, ignored these hearings and banned DDT anyway, later admitting that he did so for "political reasons."

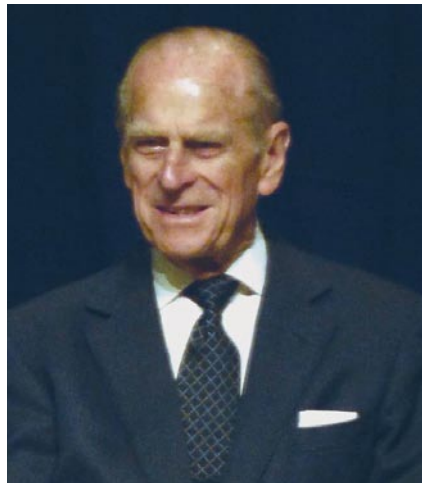
The U.S. ban on DDT, in effect banned it in the areas of the world that need it most. The U.S. State Department, other governments, and NGOs then refused to fund any aid program that involved the use of DDT. Poor countries could not afford to lose this aid.

The ban on DDT, against all the scientific evidence establishing its human safety, proved over the years to be a crime against humanity. The LaRouche movement, which has championed the reintroduction of DDT for decades, estimates that the banning of DDT since 1972 has led to 60 million needless deaths, mainly from malaria in developing countries, especially in Africa. To grasp the magnitude of this crime, in the whole of the 20th Century, road accidents worldwide claimed half this number, 30 million lives.

The responsibility for the unjust ban on DDT, lies with Prince Philip and the environmental movement that he launched and controlled through his World Wildlife Fund for Nature, and its poisonous offshoots such as Greenpeace. These share an evil belief, as followers of Malthus and Hitler, that the Earth is grossly overpopulated and needs to be reduced from 6.7 billion to less than 2 billion. They have certainly practiced what they preached. The environmentalists' war against DDT was a war against humanity. Put to the test, a team of fresh young lawyers and scientists, armed with the historic record, could today prove that case in any fair court. By natural law, the trial should be held in Africa. Like the Nazi trials in Nuremberg Germany, such trials are held close where the genocide occurred.



Rachel Carson's Silent Spring*, the "bible" of the anti-DDT Malthusians.*



Britain's Prince Philip founded the environmentalist movement to carry out his depopulation wishes. He has often stated his desire to be reincarnated as a royal virus to help with the killing.

How DDT Works

The beauty of DDT is that it not only kills mosquitoes, but it is still by far the most effective mosquito repellent ever invented by man and is amazingly cheap to produce. A few grams of DDT in a solution sprayed on the inside walls of a house will keep most mosquitoes away, as if by magic, for about 6 months. (The effect is known as excito-repellency.) Then the walls can be re-sprayed with DDT. Imagine a giant mosquito net over the whole house; that is the effect that DDT provides.

Aedes mosquitoes can fly many kilometers to feed and find their victims by following an increasing gradient of molecules in the air, such as carbon dioxide and other products of human and animal metabolism. When the mosquito's antennae also start to pick up the molecules of DDT coming from a house, its effect is repulsive, and the hungry mosquitoes are compelled to go elsewhere for their blood meal.

For humans, DDT is almost odorless. It has been found from long practice that spraying the indoor walls of houses just once with DDT gives the inhabitants good protection against mosquito bites for 6 months or more. In contrast, mosquito coils, vapor mats, and aerosol sprays have to be used daily and contain insecticide chemicals such as prallethrin and allethrin, which kill rather than repel mosquitoes. So, large amounts of these more expensive insecticide chemicals have to be used, yet they are far less effective than a few grams of cheap DDT repellent.

Courtesy of Kathy Keatley Garvey, University of California Agriculture and Natural Resources

University of California Davis researcher Zain Syed (right) sprays DEET on the arm of chemical ecologist Walter Leal. Their research shows that DEET, like DDT, repels mosquitoes.

Despite 60 years of organic synthesis to find a better mosquito repellent, DDT is still in a class of its own as the world's best and safest mosquito repellent. Although DDT is not 100 percent effective in preventing mosquito bites, it nonetheless has a remarkable effect in reducing the spread of mosquito-borne diseases such as malaria, yellow fever, and dengue. It is important that the inside of every house and public building in the community is sprayed with DDT. This is a public health measure like chlorinated tap water, rubbish collection, and household sewage, which is carried out to promote the general welfare.

Given the irrational fear factor promoted by the greens, any objections must first be overcome with an intensive campaign of public education conducted nationally in the media, and especially in the suburbs, by disease control professionals, to win the confidence and support of the community. On the appointed days, the same health officials will then go on to actually spray the inside walls of every dwelling and public and commercial building with DDT.

Disease control is a government responsibility handled by professionals and must not be left to volunteers. With the whole community in effect quarantined, in what might be called DDT "safe houses" during much of the *Aedes* mosquito's biting hours around dawn and dusk, the spread of dengue by mosquitoes from a human carrier to other humans is great-

Update: Malaysia Declares War on Dengue!

Malaysia held its first ever National Dengue Conference on July 28-29, 2009 and completely surprised the organizers, the Public Health Specialist Association of Malaysia, 90 percent of whose members are medical doctors, largely employed in the government sector. The organizers expected 100 delegates, and would have been delighted with 200, but were swamped with 300 attendees, including top Ministry of Health officials, university groups, and dengue fogging teams came from all 14 states of Malaysia.

As dengue cases and deaths rise alarmingly, creating fear in dense urban areas, this was a war council determined to explore better strategies. I realized this as soon as I arrived at the conference and was whisked in to see the organizers. I cautiously explained that the talk I had been invited to give, "Is Fogging a Waste of Time?" would be very controversial, since I had been advocating for six years the re-introduction of DDT, claimed to be just about the most dangerous chemical on earth by the green environmentalists for the last 45 years.

"We know, we know, we've been reading your DDT letters in the newspapers," exclaimed a top government health official conspiratorially. "That's why we invited you and other researchers who think differently from us. We are not getting anywhere with conventional fogging; we need to think out of the box."

As the conference progressed, it became clear that Malaysia's War against Dengue was having a positive intellectual effect, despite the escalating national dengue cases. The presented reports and the many innovative posters showed a determination to control dengue outbreaks. The new ideas were coming not from so much from the Health Ministry, but from the troops on the ground. The real strategic problem became obvious.The troops were fighting enthusiastically but with lousy weapons.

Now it was time for the researchers. Professor Abu Hassan Ahmad from Universiti Science Malaysia amazed the delegates with photo after photo of how *Aedes* mosquitoes actually breed in dense urban areas where dengue is rampant. Although the fogging teams were diligently fogging the open drains and checking large household water containers, the *Aedes* mosquitoes were laying their eggs in seemingly insignificant quantities of water, trapped naturally by the leaves of plants and in the hollows of trees and branch nodes, their natural habitat. Much more important, the researchers found, *Aedes* had adapted to laying eggs in the flotsam of modern urban communities and was colonizing discarded drink tins, food containers, and even empty cigarette packets. Anything, that could collect rain water, no matter how small the volume, was suitable for *Aedes* to lay eggs and hatch larvae.

Mosquitoes were demonstrating the successful cockroach survival strategy for outwitting mans extermination attempts by exploiting any possible habitat, whether natural or man-made. The *Aedes* mosquitoes had found the perfect breeding sites supplied regularly to every family with the growth of the plastics industry, which has replaced wood, glass, and metal as the dominant household material.

Take a look at how a plastic bucket is constructed to provide strength to compensate for its ultra-light weight. The water that collects in the rim of an upturned bucket has become the number one breeding site of *Aedes* mosquitoes in urban areas. The plastic lid of a bucket, with its engineered water trap, is preferred to the bucket itself.

Now investigate the underside of other plastic items, especially those that tend to get stored outdoors, exposed to the rain, such as plastic toys and containers, children's bicycles, plastic gardening items, and plastic mats and bath-

ly reduced. Indeed, Donald R. Roberts, a retired Professor of Tropical Public Health in the Uniformed Service University in Bethesda, Maryland, reports that in the 1960s, the malaria outbreaks in the Amazon Basin were usually brought under control by the DDT spraying teams *before* his scientific team arrived to investigate the disease.[8] Could Malaysia expect a similar result today if it were to embark on a national experiment to evaluate indoor spraying with DDT to control the spread of dengue?

Another example is South Africa, which bravely withstood the international greenie pressure and re-introduced DDT in 2003 to fight an out-of-control malaria epidemic. Within one year of the reintroduction of DDT house spraying, the incidence of malaria in the worst-hit province, KwaZulu-Natal, fell by 80 percent. In two years, the number of malaria cases and deaths dropped by 93 percent.[9] As the WHO has stressed, there are no environmental effects when small amounts of DDT are sprayed on the inside walls of houses.

Despite these crystal clear benefits and the subsequent reversal of its DDT ban internationally by WHO, the world still does not take action. Malaysia should take the lead and bring the world to its senses. With DDT, mosquito-transmitted diseases such as malaria and dengue can be brought almost completely under control.

The Danger of DEET Insecticides

DDT has been replaced by insecticides that kill rather than repel mosquitoes. The most common chemicals are prallethrin and allethrin, which are used separately or in combination in mosquito coils, vapor maps, and mosquito aerosol spray cans. In Malaysia, these products are readily available in shops, and are used almost daily in virtually all homes in the country. A simple calculation by the present author suggests that the common daily use of these reasonably safe (but not cheap) insecticides could be as high as 95 grams of prallethrin and allethrin per household per year or about 20 times more than, say, the 5 grams of very cheap DDT required per year for indoor wall spraying.

The household insecticides presently used as substitutes for the DDT repellent, however, are very poor substitutes, and for extra protection against mosquito bites there is a danger that families may also resort to personal insect repellents containing DEET (diethyltoluamide), which is directly applied to exposed

room tiles. The myriad tiny unlikely water cavities in plastic goods, in and around the home, are responsible, according to the estimates of Professor Hassan and his diligent students, for breeding perhaps 75 percent of urban *Aedes* mosquitoes. As the session chairlady commented: "What the mind does not know the eye does not see."

We need an educational video alerting the 40 percent of the world's population at risk from dengue to the secret *Aedes* mosquito breeding sites in and around the house.

Enter DDT...

I could not have wished for more appropriate new evidence for my seemingly outrageous proposal to once again spray inside and outside houses with DDT, regarded almost universally (and erroneously) as a dangerous cancer-causing environmental poison. I had one hour and 45 slides (posted on my Biosphere Technology website www.mohdpeterdavis.com) to convince a packed audience of intelligent professionals who had been brainwashed against DDT.

Drawing on the decades-long campaign in the pages of {21st Century Science & Technology} to lift the ban on DDT, I presented the complete DDT story from World War II: the near eradication of malaria and yellow fever, the unjustified DDT banning in 1972 against overwhelming scientific evidence on its safety from 30 years of worldwide use, the hidden genocide agenda, and the 2006 reversal of the DDT ban by WHO.

The presentation was received with intense interest, and the photo of Professor Gordon Edwards bravely eating DDT to prove its safety set many talking. Then the whole hall began animatedly discussing one quotation after the other of Prince Philip's World Wildlife Fund and other green environmentalists, showing what's behind the opposition to DDT. It was just too successful in saving hundred of millions of lives, they complained.

Against this outrageous deliberate genocide by the Malthusians of the green environmental movement, which few have realized, my simple proposals to scientifically evaluate spraying dengue hotspots with DDT seemed to be accepted with a sigh of relief.

The chairman of my session, a senior government health official, told me that throughout his career he had regarded DDT as an unacceptable environmental and human poison, but that my one-hour talk had turned him around 180 degrees. At lunch he said that his state would like to be the first to reintroduce DDT with a pilot study in a dengue hot spot. I willingly conspired with a plan to make this happen!

Many others offered agreement with my pro-DDT presentation and supported my final suggestion to hold an expert workshop to jointly propose new strategies for quickly winning the "Little Dengue War" with DDT in order to focus on the "Big Influenza War" that we must wage against a dangerously evolving 1957, or the far worse 1918-type virulent influenza pandemic.

In a break, a longtime mosquito researcher asked me how I came to be so passionate about DDT, adding that his real concern that DDT was proven to accumulate in the body (yes, but due entirely to the blatant overuse of DDT for pest control by lazy farmers and large agricultural enterprises such as cotton growers). His other concern was that it would cause cancer. (No, this is not true).

So we still have a long way to go in dispelling the brainwashing and outright lies spread relentlessly by the green environmental movement ever since Rachel Carson's poisonous 1962 anti-DDT book, *Silent Spring*.

But now, 300 Malaysian doctors and health officials have received, for the first time, a truthful briefing on the history and wonderful disease-control properties of DDT, the most life-saving chemical ever invented by man.

—Mohd Peter Davis

skin. According to a Duke University study in 2004, every year, approximately one-third of the U.S. population uses insect repellents containing DEET, available in more than 230 products with concentrations up to 100 percent.[10]

The mode of action DEET in repelling mosquitoes appears to be similar to DDT. In a rigorous research paper from University of California-Davis, involving human subjects who exposed their arms to mosquitoes under a wide variety of experimental conditions, Syed and Leal settled a long debate on the issue, stating that "these results lead us to clearly conclude that the mosquitoes smell and avoid DEET.[11] But there the similarities with DDT end.

A pharmacologist with Duke University, Dr. Mohamed Abou-Dona, has spent the last 30 years researching the effect of pesticides in rats, the laboratory animal closest to humans for metabolic investigations. His numerous studies in rats clearly demonstrate that frequent and prolonged application of DEET causes neurons to die in regions of the brain that control muscle movement, learning, memory, and concentration.[10] Moreover, rats treated with an average human dose of DEET (40mg/kg body weight) performed far worse than control rats when challenged with physical tasks requiring muscle control, strength, and coordination.

Such effects are consistent with physical symptoms in human beings reported in the medical literature, especially by Persian Gulf War veterans. American troops in Iraq are issued DEET skin repellent cream to protect them from the biting flies which cause "Baghdad boils" and also spread Leishmaniasis, a parasitic disease affecting the liver, spleen, and bone marrow. Returning soldiers suffer similar symptoms to experimental chickens treated with DEET. These symptoms in humans include memory loss, headache, weakness, muscle and joint pains, tremors, and shortness of breath, which can occur months or years after exposure to the chemicals.

The take-home message, says Dr. Mohamed Abou-Dona, is "never use [DEET] insect repellents on infants, and be very wary of using them on children in general. Never combine insecticides with each other or use them with other medications. Even so simple a drug as an antihistamine could interact with DEET to cause toxic side effects." These personal insect repellents are intended to be used "sparingly and infrequently" for outdoor recreational use and are very effective for about 12 hours.

However, a dangerous scenario can now be anticipated in urban areas in Malaysia and other countries, where dengue epidemics are creating a climate of fear as the disease spreads to new regions. Those families that can afford to do so may go overboard, combining the whole arsenal of readily available mosquito coils, aerosol insecticide sprays, and now DEET personal repellents—exactly the practice Duke University is trying to avoid with its warning. It seems that in a desperate attempt to protect against dengue, parents could stand a very real possibility of poisoning themselves and their children with a dangerous cocktail of insecticides and repellents.

The daily overuse of these inferior and potentially dangerous insecticides can be completely replaced by indoor spraying with a few grams of DDT every 6 months. For outdoor protection from mosquito bites for building and agricultural workers, and even home gardeners and picnickers, a range of innovative DDT-impregnated hats and outer clothing can be developed.

Malaysia's Role in Stopping Dengue Worldwide

The only valid argument against DDT is that in widespread use in agriculture, it can produce resistance within the targetted insect populations. The introduction of DDT exclusively for control of human diseases, restricting its use for agriculture, and under the strict supervision of the health authorities, may well be able to completely replace the unregulated use of all present household and personal insecticides. Dr. Pierre Guillet, a medical entomologist who spent 10 years on malaria control in Africa and who coordinates the WHO Vector Control and Prevention Team in Geneva, acknowledged in an interview: "There is no direct evidence of toxic effects of DDT on human health. If we haven't found any such evidence after 60 years," he said, "It is bloody safe."[12]

Malaysia, in collaboration with the World Health Organization, has the ability to conduct the proper DDT indoor spraying of all houses and public buildings and also the outdoor mosquito breeding sites in selected dengue hot spot suburbs, and to compare the number of dengue cases with similar, conventionally fogged suburbs. Like the bold Australian compulsory car seat experiment in the 1970s, which dramatically saved lives and injuries, this could be a world-class national experiment, with leading dengue and DDT experts as advisors, for the benefit of 40 percent of the world's population now at risk from this disease. Malaysia's adoption of indoor and perifocal spraying with DDT to protect the population could show the world, brainwashed for 47 years against DDT, the way forward in the control of dengue.

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