UN Uses Atomic Technology to Fight Malaria Mosquito

We could not live without nuclear science and technology in this day and age.

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SEIBERSDORF, Austria (Reuters) - The United Nations (news - web sites) is harnessing nuclear technology to try to eradicate the mosquitoes whose bite transmits malaria, a deadly disease devastating the African continent.

Sunday is Africa Malaria Day, when governments will focus attention on a disease which kills millions of Africans a year, most of them children, and costs the continent at least $12 billion in lost gross domestic product.

Bart Knols, a Dutch entomologist at the U.N. International Atomic Energy Agency (IAEA), estimates there are "three to five hundred million cases of malaria every year on a world-wide scale, 90 percent of which occur in sub-Saharan Africa."

"Sub-Saharan Africa also suffers the major burden... of mortality," he told Reuters during a tour of the IAEA's entomology laboratories.

One African child dies of malaria every 20 seconds. People in poor, remote villages are usually unable to get treatment and so Knols's research aims to nip the problem in the bud by destroying the mosquito that transmits the malaria parasite.

The IAEA is best known for its inspections of countries like Iran and Iraq (news - web sites) who are suspected of building atomic weapons. But the agency has already used its expertise to wipe out the dreaded tsetse fly, which can transmit fatal sleeping sickness, from the island of Zanzibar.

NUKING MOSQUITOES

The Sterile Insect Technique (SIT) is a simple idea. Scientists breed insects and expose the males to enough radiation to render them sterile. The males are then released into the environment to breed with the females, whose eggs are unfertilized and never hatch.

"The whole idea or concept is that the population would actually start to crash and eventually may actually lead to eradication of the insect, and therefore eradication of the disease and less malaria," said Knols, who has personally suffered nine bouts of malaria through working with mosquitoes.

Alan Robinson, the entomologist in charge of the IAEA's entomology unit, said the $4 million project was still in its infancy. He described it as a "high-risk project" with many hurdles to overcome before it is ready for field trials.

Over the next five years, they need to reach a point where they can produce a million sterile male insects a day.

The males they breed must be robust enough to survive when released from planes into the environment and tough enough to compete with fertile males during mating. The females, the ones which bite humans, only mate once in their two-week lives.

Knols and Robinson point out that in the 1970s, El Salvador (news - web sites) successfully used the SIT to eradicate the malaria mosquito from part of the country.

"They brought that insect into the lab, started producing it in large numbers, sterilized it and then released it in a small area... about 15 square kilometers, and successfully induced 100 percent sterility in the population," Knols said.

Afterwards, they started a much larger project in which they were producing a million male insects a day. But when civil war broke out the project ended.

"We think we can do a better job than they did in El Salvador," said Robinson.

He said the technique of sterilization could not be used all over Africa and would have to be combined with other population control techniques to eradicate the malaria pest.

"But there's no alternative to irradiation for the sterile insect technique. It's a very clean technique," he said, adding that there was no risk of contamination. "The insects are not radioactive when they're released."