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Zika Prompts Pleas for DDT

The World Health Organization (WHO) has sparked a global scare over a tropical virus outbreak that officials say is worse than last year's Ebola epidemic, which killed 11,000 people in Africa. They predict the Zika virus could infect as many as four million people by the end of 2016. "Last year, the virus was detected in the Americas, where it is now spreading explosively," warned WHO Director-General Margaret Chan in January. She told her executive board in Geneva that the "level of alarm is extremely high," and on February 1 declared the outbreak a Public Health Emergency of International Concern.



For decades, the disease mainly affected monkeys, deriving its name from the Zika forest of Uganda, where the virus was first discovered in 1947 in a rhesus monkey. Eventually it spread to humans, but never before in great numbers. "Today the situation is dramatically different," explains Chan, because in fewer than 10 months Zika, first reported in Brazil in May, spread to more than 20 countries.

Zika victims are typically asymptomatic. One in five suffers a rash, conjunctivitis (pink eye), and/or flulike symptoms of fever and joint pain. They normally recover within a week or two. So why all the panic? The virus is known to spread from a mother to her unborn child, and an alarming rise in birth defects and neurological disorders has accompanied the current outbreak. Chan said that WHO "strongly suspect[s]" a causal relationship between Zika virus and these problems, though a link has not been proven.

Officials believe Zika may cause a condition in infants known as microcephaly, or an abnormally small head, which involves poor brain development and, according to the Centers for Disease Control and Prevention (CDC), is often accompanied by seizures, developmental delay, intellectual disability, vision and hearing difficulties, and other neurological problems. Life expectancy is often drastically reduced. Officials link some 4,000 cases in the Americas to the current outbreak. "The increased incidence of microcephaly is particularly alarming, as it places a heart-breaking burden on families and communities," Chan said. "WHO is deeply concerned about this rapidly evolving situation."

Another principal concern is the possible link between Zika and the sometimes fatal Guillain-Barré syndrome, in which a person's immune system attacks his nerve cells. The results can range from a few weeks of muscle weakness to several months of paralysis or even death. The Brazil Ministry of Health reports a rise in cases of this otherwise rare disorder since the Zika outbreak began.

Various Central and South American countries are warning women to avoid pregnancy altogether until the threat is eradicated, and as Alex Newman reported for The New American, "The United Nations is exploiting hysteria over the Zika virus to wage war on babies, stepping up its efforts to legalize abortion across pro-life Latin American nations where the killing of unborn children mostly remains a serious

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crime." Indeed, in a statement published on the UN Human Rights website, Commissioner Zeid Ra'ad al Hussein openly attacked Latin American defense of the unborn: "Laws and policies that restrict [a woman's] access to [reproductive health] services must be urgently reviewed in line with human rights obligations." This sentiment has prompted a group of feminist organizations in Brazil, epicenter of the Zika outbreak, to petition the Supreme Federal Court to legalize abortion in cases of "malformation of the fetus," according to Catholic News Agency. Brazil's bishops immediately countered with a statement that Zika provides "no justification whatsoever to promote abortion."

"In a sane world, it's the virus that should be targeted for destruction, not a person infected by it," reads a petition circulated by LifeSiteNews.com. "But in our insane world of today, that's exactly what United Nations and other groups are doing — going after the victim, instead of the disease."

Others say Zika is a scapegoat, used to conceal damage caused by pesticides widely used in Brazil. Researchers with the Red Universitaria de Ambiente y Salud (University Network of Environment and Health) (REDUAS) published a study on February 3, noting that in linking Zika to microcephaly, the Brazilian Ministry of Health ignores "that in the area where most sick persons live, a chemical larvicide producing malformations in mosquitoes has been applied for 18 months, and that this poison (pyroproxyfen) is applied by the State on drinking water used by the affected population." The Brazilian team of scientists reported that previous Zika epidemics elsewhere produced no birth defects, and that even during the present outbreak, "in other countries such as Columbia there are no records of microcephaly," despite plenty of Zika cases.

However, until the cause of the upsurge in neurological defects is known, some health experts are calling for cancellation of the 2016 summer Olympic games in Brazil. "To host the Games at a site teeming with Zika, an outbreak the World Health Organization has labelled a 'public health emergency of international concern,' is quite simply irresponsible," wrote doctors Art Caplan and Lee Igel in a *Forbes* op-ed. Caplan is head of the Division of Bioethics at New York University, where Igel is associate professor. Referring to Brazil's recession, which *Financial Times* calls its worst economic downturn since the 1930s, Caplan and Igel point out that "Brazil is going broke even without paying for the Olympics. Where should its financial priority be in the middle of an epidemic?"

Stateside, the CDC has issued a Level 2 Alert, warning travelers to use "enhanced precautions" in Zikaoutbreak countries. These amount to applying insect repellent and wearing long sleeves to prevent mosquito bites. The agency strongly recommends that pregnant women postpone travel plans altogether.

Unfortunately, Zika had already arrived on U.S. soil by late January, when two travelers brought the virus back to California with them from the Dominican Republic, prompting the CDC to warn that imported cases could spread the virus domestically. By the first week of February, the number of U.S. cases rose to 38. Hardest hit is Florida, where Governor Rick Scott has declared states of emergency in county after county as cases emerged. All U.S. incidents are travel related, but one individual in Texas acquired the infection through sexual contact with a person who had been to Venezuela, making it the first domestically transmitted case.

CDC reacted with new precautions on February 5, warning pregnant women about Zika's sexual transmission risk. The agency had already discovered this potential from a 2008 case in Colorado, where a man apparently spread the virus to his wife after becoming infected in Senegal. The report

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came to light only after the Texas incident, when CDC also issued a warning of transmission risk from blood transfusion.

Aedes Aegypti

However, Zika spreads most commonly by vector — in this case, a species of mosquito found in 23 states, according to the University of Florida agricultural extension institute (IFAS). Known as the "yellow fever mosquito," *Aedes aegypti* is especially prevalent in the southeast and particularly good at spreading disease. "During the Spanish-American War [1898], U.S. troops suffered more casualties from yellow fever transmitted by *Ae. aegypti* than from enemy fire," IFAS relates. The disease earned the title "Scourge of the South" because it blindsided so many areas in the southeastern United States during the 1800s, wiping out 10 to 20 percent of their populations within two or three months.

Today, most of this species is found in urban areas along the Gulf Coast, but recent research reveals that *Aedes aegypti* is gaining ground. *Science Daily* reports that a University of Notre Dame investigation has discovered a "major population" in a Washington, D.C., neighborhood near Capitol Hill. Researchers believe that the mosquitos, typically suited to tropical and subtropical climes, are adapting to a "climate well out of their normal range."

The news is particularly troubling because, on February 4, the D.C. Department of Health confirmed that three local residents, including a pregnant woman, have been diagnosed with Zika. Each of these people contracted the disease during travel abroad. But biological sciences professor David Severson, an expert in mosquito-borne disease transmission who led the Notre Dame team, expressed concern to *Science Daily*, saying, "A real potential exists for active transmission of mosquito-borne tropical diseases in popular places like the National Mall." The National Park Service reports that approximately 24 million visitors from around the world tour the popular landmark annually.

Whether *Aedes aegypti* is migrating north may prove a moot point, considering that it is not the only Zika vector in the United States. Aedes albopictus, familiarly known as the Asian tiger mosquito, carries the same viruses as its aegypti cousin. But CDC warns this species "has adapted to survive in a broader temperature range and at cooler temperatures, which enables them to persist in more temperate climates." *Aedes albopictus* is prevalent in eastern and central states.

Swat Teams

Health officials claim they are pulling out all the stops to combat the outbreak. WHO is ramping up Zika vaccine research, as no medicine exists to prevent or treat those infected with the virus. But it is unrealistic to expect one soon, experts say. Australia's public television corporation reports that an Indian company, Bharat Biotech, has already patented a possible vaccine, but says it "will not be available for a few years" because it lacks necessary clinical trials. Mike Turner, head of infection and immuno-biology at the Wellcome Trust, a U.K. biomedical research charity, told *The Guardian*, "The real problem is that trying to develop a vaccine that would have to be tested on pregnant women is a practical and ethical nightmare."

Then there are genetically modified male mosquitoes, engineered by the British biotech company Oxitec to pass a lethal gene to their offspring, causing death to the larvae. Oxitec says its morphed mosquitoes have slashed populations in the few Brazilian neighborhoods they've tested. But REDUAS relates a different story. "Where field tests were carried out, less than 15% of the larvae" carried the lethal gene.

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Moreover, REDUAS points out that only female mosquitoes bite, and only when they need to develop eggs. Adding millions of male mosquitoes to the population increases the number of fertilized females spreading diseases.

The *New York Times* tells of other "gene drives" being developed in labs to either kill mosquitoes or alter them so they cannot carry viruses. But many oppose genetic modifications that could lead to unexpected results such as pesticide resistance or newfound ability of the vectors to spread other diseases.

Regardless, none of these methods provides a short-term solution. "Prevention will be key. Mosquito control is hard," said CDC director Tim Frieden, writing at CNN.com. He cautioned that it "takes hard, meticulous work — and money."

That's bad news for depression-ravaged Brazil, where President Dilma Rousseff has declared war on the insects. *MIT Technology Review* explained her plans to send 200,000 troops throughout the country to spray insecticides, eliminate pools of standing water where mosquitoes breed, and educate the public about the disease and ways to prevent it. "These methods work," claims MIT, recounting a 20-year campaign begun in 1942 to combat yellow fever in 18 Central and South American countries, including Brazil. By 1962, they were virtually mosquito-free.

Not so today. WHO's American branch, the Pan American Health Organization (PAHO), suspended eradication efforts in the 1970s, and *Aedes aegypti* quickly reemerged. It now thrives throughout the Americas, where it transmits many debilitating diseases such as dengue fever and chikungunya. WHO reports that the global incidence of these diseases has increased dramatically in recent decades, and that severe dengue "is a leading cause of serious illness and death among children" in some Latin American countries.

Let Us Spray

One of the keys to successful eradication in the 1940s and '50s was DDT. Global bans of this pesticide in the 1970s — due to its supposed environmental ill-effects — coincide strikingly with the resurgence of mosquito populations and the diseases they spread. Dengue fever provides a good example. "Before 1970," explains WHO, "only 9 countries [worldwide] had experienced severe dengue epidemics." Now endemic in more than 100 countries, dengue cases in the Americas rose from 66,000 in 1980, to 700,000 in 2000, to 2.35 million in 2013.

The current Zika outbreak is prompting calls for a DDT revival. As Mike Turner of the Wellcome Trust told *The Guardian*, "We have to balance the risk posed to the environment by DDT with the terrible impact this virus is having on the unborn."

There are even pro-DDT rumblings at CDC, despite the insecticide's reputation as an environmental pollutant. "That concern about DDT has to be reconsidered in the public health context," Dr. Lyle R. Petersen, director of the division of vector-borne diseases, told the *New York Times*. He said that DDT poses no ecological threat when used in insect eradication campaigns.

It appears his boss disagrees, for in his editorial at CNN.com, CDC director Tim Frieden emphasized the "use of *today's tools*" and the need to "advance innovative mosquito control *tools of tomorrow*, such as promising *new products* that may be safer and more effective than today's methods." (Emphasis added.) He didn't specifically mention DDT — a tool of yesterday — but his comments cast a glaring

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light on the omission.

Many condemn public health officials such as Frieden for ignoring the most effective solution available. A *Tyler Morning Telegraph* editorial criticized: "The ominous outbreak of the Zika virus is really a policy failure; the demonization of DDT has left much of the world defenseless against mosquito-borne diseases that were once easily and effectively wiped out."

Some argue, however, that DDT is no longer an effective remedy since mosquitoes quickly build resistance to it. This argument ignores the fact that DDT's strength lies in its repellant and irritant properties. As reported by The New American in 2013, female mosquitoes need mammalian blood, not to survive, but only to develop eggs and reproduce. Even if an insect has developed resistance to DDT's toxic effects, the chemical still repels mosquitoes from areas where they feed on human blood.

This deceptive "DDT resistance" argument was pushed by biologist Rachel Carson, who single-handedly destroyed DDT in her 1962 book, *Silent Spring*, when she argued that the pesticide was endangering bird populations. Though her charges were proven baseless and false, environmental zealots trumpeted them to such a degree that a DDT ban became one of Richard Nixon's campaign promises. True to his word, he created the Environmental Protection Agency (EPA) shortly after his election. Despite nine months of EPA hearings that ended in favor of DDT's safety and efficacy, Nixon's vested environmental interests won the day. The U.S. ban in 1972 sparked a global censure of the life-saving powder. Today the UN Environment Programme classifies DDT as one of the "Dirty Dozen," a list of 12 chemicals known as "persistent organic pollutants." The Stockholm Convention legally binds most UN-participant nations to keep DDT outlawed, while thousands needlessly die as a result. (India maintains the world's only high-capacity DDT production facility and continues to enjoy extremely low rates of insect-borne disease.)

DDT's demise dealt a catastrophic blow to public health worldwide. Only months before the EPA ban, the National Academy of Sciences had stated that "in a little more than two decades, DDT has prevented 500 million [human] deaths that would otherwise have been inevitable" and concluded, "To only a few chemicals does man owe as great a debt as to DDT."

The praise was well deserved. Throughout the mid-20th century, DDT crushed plagues such as malaria, yellow fever, and typhus. It had wiped out one of history's deadliest typhus outbreaks in Europe during World War II. Having witnessed the miracle, Winston Churchill praised the "excellent DDT powder" as "astonishing" and promised to use it on a "great scale" in saving millions of lives from vector-borne disease. Paul Mueller, a Swiss researcher who discovered DDT's life-saving properties, earned the 1948 Nobel Prize for Physiology in Medicine.

WHO, which had heavily promoted global DDT-based insect eradication programs throughout the mid-20th century, boasted in 1969 that "DDT has been the main agent in eradicating malaria ... and [has] saved at least 2 billion people." Its statement continued, "It is so safe that no symptoms have been observed among the spraymen or among the inhabitants of the spray area...." The agency also prophetically worried that environmental agitation against the pesticide would "place severe restrictions on the use of DDT," endangering lives in developing countries.

So why the refusal to use DDT now, in the face of a "public health emergency of international concern"? Robert Zurbin dubs it snobbish genocide. Writing for *National Review*, he said,

So long as Zika remains mostly limited to its current tropical haunts, the heartless hypocrites will

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doubtless maintain that while they too are deeply troubled by seeing babies born with missing brain parts, concerns over eggshell thickness must take priority. Like the revelers in Poe's "Masque of the Red Death," they will continue to party in their comfortable quarters, secure in the belief that plague outside the mansion walls will never come for them. The fate of humanity should not be entrusted to such guardians.

Zurbin is not alone in these sentiments. "European nations and the United States used insecticides to rid themselves of disease and then pulled up the ladder, denying Africans, Asians and Latin Americans the benefits of those same insecticides," explained Dr. Donald Roberts and Richard Tren in their 2010 exposé, *The Excellent Powder: DDT's Political and Scientific History.*

But the days of reveling in comfortable quarters may soon end. Lyme disease, which first appeared in the early 1970s, is now the most commonly reported vector-borne illness in the United States, with more than 300,000 cases last year alone. West Nile virus made its New York debut in 1999 and has since spread to 44 states and Washington, D.C. There is no treatment, cure, or vaccine for this infection, which can result in serious neurological illness and death. As Zika invades our shores, it's logical to ask how many more victims will suffer before officials reverse the ill-conceived DDT ban.



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