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Updates on the GMO Mosquito Release

Analysis by Dr. Joseph Mercola ✔ Fact Checked | August 08, 2023

STORY AT-A-GLANCE

- Genetically engineered (GE) mosquitoes created by biotechnology company Oxitec have been released in the U.S., in Florida and Texas
- In March 2022, the EPA granted Oxitec a two-year extension of its Experimental Use Permit, which would allow the biotech company to release additional GE mosquitoes in Florida as well as in four counties in California for the first time
- While the EPA extended Oxitec's EUP, both the Florida Department of Agriculture and California Department of Pesticide Regulation (DPR) must approve Oxitec's testing in order for it to move forward in their states
- Following pushback from legislators, California's DPR announced Oxitec voluntarily withdrew its research authorization application to test its GE mosquitoes in California
- Locally acquired malaria has been nonexistent in the U.S. for the last 20 years, but five such cases have recently been diagnosed — four in Florida and one in Texas

Genetically engineered (GE) mosquitoes created by biotechnology company Oxitec have been released in the U.S., even though the long-term effects could be disastrous. Oxitec is using Aedes aegypti (A. aegypti) mosquitoes for this real-world experiment, the species known to carry yellow fever, dengue fever, chikungunya, Zika, West Nile and Mayaro,[1] a dengue-like disease.[2]

Oxitec genetically engineered the males to carry a "genetic kill switch," such that when they mate with wild female mosquitoes, their offspring inherits the lethal gene and

cannot survive or reproduce in the wild.

In the U.S., Oxitec is marketing the insects as Oxitec Friendly™ mosquitoes, trying to put a nonthreatening name on a reckless project that could quickly backfire. It may even be too late, as the GE mosquitoes have already been released in multiple locations.

EPA Extended Oxitec's Experimental Use Permit

In April 2020, the U.S. Environmental Protection Agency approved an initial Experimental Use Permit (EUP), allowing Oxitec to release its GE mosquitoes on 6,240 acres of Monroe County, Florida, and 360 acres of Harris County, Texas.[3]

By April 2021, Oxitec had released nearly 5 million A. aegypti mosquitoes in the Florida Keys over a seven-month period,[4] against the wishes of many residents and environmental groups. In March 2022, the EPA granted Oxitec a two-year extension of its EUP,[5] which would allow the biotech company to release additional GE mosquitoes in Florida as well as in four counties in California for the first time.

With the extension, GE mosquitoes may be released on 29,400 acres in Stanislaus, Fresno, Tulare and San Bernardino counties in California, through April 30, 2024, "to generate efficacy data in different climatic zones." Harris County, Texas, is no longer an approved release site for the GE mosquitoes.[6]

The EPA's extension to Oxitec's EUP paved the way for up to 2.45 billion GE mosquitoes to be released — an extension that was granted even before Oxitec had publicly released results from its 2021 field trial release in Florida.[7] The Gates Foundation is heavily invested in the GMO mosquito project, investing more than $30 million in Oxitec. Most of it — more than $20 million — is aimed at U.S. regions.[8]

Oxitec Withdrew Permit for California GE Mosquito Experiment

While the EPA extended Oxitec's EUP, both the Florida Department of Agriculture and California Department of Pesticide Regulation (DPR) must approve Oxitec's testing in

order for it to move forward in their states.[9] In November 2022, members of the California legislature sent a letter to DPR, "urging denial" of the permit to release GE mosquitoes.[10] The letter states, in part:[11]

> *"We believe that DPR should deny this research authorization permit because we have serious concerns about the safety, environmental effects and the ability to manage and contain genetically engineered mosquitoes. Significant scientific research is still needed to understand the potential public health and environmental concerns associated with the release of this novel insect prior to any approval.*
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> *… We believe that the U.S. EPA review process was incomplete and that it is premature for the state of California to consider the Oxitec application without more diligent federal review. There are many issues not addressed by U.S. EPA's review and there is insufficient data for the public to comment on the proposal or know its consequences.*
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> *… The release of genetically engineered mosquitoes in California could be an experiment that, due to genetic spread, never ends and creates many unintended consequences. There are other more proven and less risky methods to control mosquitoes."*

In May 2023, California's DPR announced Oxitec voluntarily withdrew its research authorization application to test its GE mosquitoes in California, adding "DPR did not issue a decision on the application."[12]

Rebecca Spector, west coast director at Center for Food Safety, said in a news release, "The withdrawal of Oxitec's application is a victory for California residents and wild species. This withdrawal is in line with leaders from our state legislature who demanded a more comprehensive review of the impacts of these genetically engineered mosquitoes before the approval of this permit."[13]

On the other hand, the Florida Department of Agriculture already approved the extension of field trials using the GE insects. In response, Barry Wray, executive director of Florida

Keys Environmental Coalition, said:[14]

> *"We should all be very concerned about an EPA that forgets its middle name, protection, with this approval. Our public trust is abused by Oxitec's lack of scientific transparency and no independent scientific investigation from EPA to show this experimental insect will not create infinitely more problems than it will solve.*
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> *The EPA has behaved as if it is in partnership with Oxitec, disregarding the company's history of deception and allowing a lobbyist to meet former EPA Administrator Pruitt. It is ethically repugnant to release these mosquitoes."*

EPA's Not Worried About Releasing GMO Insects in the Wild

Initially, the U.S. Food and Drug Administration was in charge of reviewing the GE mosquitoes, but in October 2017, it transferred the power for regulatory approval over to the EPA, after categorizing the insects as pesticides rather than drugs to prevent disease.[15]

The transfer was a huge win for Oxitec, as the EPA is required to review new pesticides quickly, within 12 months of submission, while the FDA has no set time lines. The EPA stated there will be "no unreasonable adverse effects to humans or the environment."[16] It explained:[17]

> *"Like all pesticides, Oxitec's genetically engineered mosquitoes are regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and therefore must meet the statutory requirement of no unreasonable adverse effects to humans or the environment to be granted an Experimental Use Permit (EUP).*
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> *Prior to approving the EUP, EPA conducted extensive evaluation of the best available science, considered public input, and consulted with technical experts at the U.S. Centers for Disease Control and Prevention (CDC). Only male*

OX5034 mosquitoes will be released into the environment. Because male mosquitoes do not bite humans, they do not pose a human health risk."

It also ruled there would be "no discernible effects" on endangered species, birds, bats, fish or other organisms, and "animals are not expected to be harmed from the potential reduction in the local Aedes aegypti population because predators that eat mosquitoes generally have a diverse diet and none are known to use Aedes aegypti mosquitoes as a sole or critical food source."[18]

However, this doesn't tell the whole story. Oxitec's mosquitoes are engineered to die in the absence of the antibiotic tetracycline, which is introduced in the lab in order to keep them alive long enough to breed. They were designed this way assuming they would not have access to that drug in the wild, a failsafe to ensure the insects don't survive in the wild.

But as is usually the case, the failsafe isn't perfect, especially since antibiotics are known contaminants in waterways worldwide. Even the EPA acknowledges this and has restricted release of the GE mosquitoes, also known as OX5034, near areas likely to have antibiotics in the water:[19]

"To ensure that no OX5034 female mosquito offspring survive, EPA has taken the precaution of restricting release of OX5034 mosquitos within 500 meters of potential sources of tetracyclines, as there is a remote chance that environmental sources of tetracycline could have enough tetracycline present to act as a counter agent to the OX5034 female mosquito-lethal trait.

Releases must not occur within 500 meters from the outer perimeter of 1) wastewater treatment facilities; 2) commercial citrus, apple, pear, nectarine, and peach crops; and 3) commercial cattle, poultry, and pig livestock facilities. The 500-meter distance creates a conservative buffer zone between OX5034 release points and potential environmental tetracycline sources."

Safety Concerns Surround GMO Mosquitoes

A Center for Food Safety webinar raised several concerns about Oxitec's GM insects, including misleading efficacy claims, disease rebound and the spread of antibiotic-resistant bacteria — not to mention there's no informed consent for populations being exposed to this massive experiment.[20]

Previous field trials have already raised red flags. In the city of Jacobina in Bahia, Brazil, about 450,000 GE male mosquitoes were released weekly for 27 months in the region in an attempt to reduce numbers of disease-carrying mosquitoes.[21] "If lethality is complete, releasing this strain should only reduce population size and not affect the genetics of the target populations," researchers wrote in Scientific Reports.[22]

However, this wasn't the case. The Yale University researchers monitored the population of A. Aegypti mosquitoes in Jacobina to determine if the release of GE mosquitoes was affecting the genetics of the wild population by transferring genes. The GE mosquitoes contain a fluorescent protein gene, which allows the GE offspring to be detected.

When analyzed six, 12 and 27 to 30 months after release, the researchers found "clear evidence that portions of the transgenic strain genome have been incorporated into the target population."[23] A tri-hybrid population of GE mosquitoes now exists in Jacobina (Cuba/Mexico/Brazil). Due to their distinct genetic makeup, the study found, the population is likely "more robust" than it was prior to the GE mosquitoes release due to "hybrid vigor."[24]

Malaria Resurfaces in US — in Florida and Texas

Locally acquired malaria has been nonexistent in the U.S. for the last 20 years. In July 2023, JAMA reported on five such cases that have been diagnosed — four in Florida and one in Texas in the last two months.[25]

While malaria is transmitted by a different mosquito species, Anopheles, than those used by Oxitec, it's coincidental that both states where GE mosquitoes have been released suddenly have cases of malaria popping up.[26] It also raises eyebrows that

Russia has accused the U.S. of preparing to use drones to drop malaria-carrying mosquitoes on soldiers.[27]

The CDC is calling for health care professionals to consider a diagnosis of malaria in anyone with a fever of unknown origin, particularly if they been to areas with recent locally acquired malaria.[28]

Natural Options for Mosquito Control and Protection

Spraying chemicals and releasing risky GE mosquitoes isn't a safe answer to reducing mosquitoes. Mosquitoes breed in standing water, including that found in pet bowls, gutters, garbage and recycling bins, spare tires, bird baths and children's toys. So, draining these water sources can help eliminate mosquitoes from your yard. Using a house fan in your backyard is another natural strategy to keep mosquitoes away while you're outdoors.

Strategic planting of marigolds, which mosquitoes tend to stay away from, is another option, as is installing a bat house, as mosquitoes are one of their favorite meals. Even small bats eat 1,000 or more insects in one hour, while nursing bats may eat more than 4,500 insects a night.[29]

To avoid getting mosquito bites, wear long sleeves and pants if you know you'll be outdoors in a mosquito-prone area. Natural insect repellants, like cinnamon leaf oil, citronella essential oil or catnip oil, can also be used, if necessary. Further, since mosquitoes tend to be most active at dusk and dawn, try to avoid outdoor activities during these times, especially when the weather is hot.

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