

# Are Colombia's missing microcephaly cases linked to a pesticide in Brazil?

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Since the appearance of Zika in Colombia more than a year ago, public health officials have awaited a surge in the number of newborns with microcephaly—a surge that has yet to materialize. The current total of 56 cases remains far below what most experts predicted based on the much larger number of cases reported in Brazil, over 2,000 to date. According to a new report by the New England Complex Systems Institute, the relationship between Zika and microcephaly remains unclear even within Brazil's borders, raising serious questions about its use as a model for predicting the disease's spread and side effects.

The report compares the ratio of confirmed Zika cases to confirmed microcephaly cases in each of Brazil's states. This proportion varies wildly. The majority of microcephaly cases are clustered in the northeastern states, but even there the ratio is inconsistent. This pattern does not match the data from either French Polynesia's or Colombia's Zika epidemics.

One explanation for the over-abundance of microcephaly cases in Brazil's northeast region and the absence of cases in other regions and countries is that some other factor is contributing to birth defects. Zika can explain some but not most of the microcephaly cases. One possible environmental contributor is the pesticide pyriproxyfen which has been applied to drinking water since Fall 2014 in Brazil but not in Colombia.

The case for pyriproxyfen has been largely dismissed, but this larvicide is chemically similar to retinoic acid which is known to cause

microcephaly. Brazil continues to report new microcephaly cases at the rate of 100 births per month. NECSI President Yaneer Bar-Yam commented, "Urgent policy action is needed to replace the use of pyriproxyfen until more research can be done. Even without confirmation of a connection to [birth defects](#), the risk is too great to keep using the pesticide."

**More information:** Yaneer Bar-Yam, Raphael Parens, Alfredo J. Morales, Is Zika the cause of Microcephaly? Status Report November 4, 2016, NECSI (November 4, 2016).  
[necsi.edu/research/social/pandemics/statusreport4](https://necsi.edu/research/social/pandemics/statusreport4)

Provided by New England Complex Systems Institute

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