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# Trash and Standing Water - Online Conference
# Wednesday, September 21st

An online conference was held on September 21 to identify innovative and effective methods to prevent waste accumulation and water deposits from becoming sources of breeding sites for mosquitoes. Thirteen experts from six countries joined two dozen public officials from four Latin American countries in this two-hour online conversation.

The issue propelling the conference: fighting Dengue, Zika, and Chikungunya requires eliminating trash and containers that can fill with standing water, which allow Aedes mosquitoes to breed with alarming rapidity.

Hence the conversation focused on addressing: *What can be done to eliminate uncollected waste and standing water where Aedes Aegypti mosquitoes breed?*

## The Status Quo

To start the discussion, Argentina presented current approaches to trash collection and water elimination. Having faced a major Dengue epidemic earlier this year, including in the capital city of Buenos Aires, Argentina learned first hand that Aedes aegypti can also breed in temperate environments where there is an accumulation of water. A big sanitation problem they face is a high number of abandoned vehicles in urban environments. Another problem is that the discarding of public institutions' officially inventoried objects, such as chairs and wardrobes, is a complicated procedure that can last over a week. During that time, this trash is abandoned outside buildings or on rooftops, possibly becoming breeding sites.  Domestic trash is a problem for Argentina because recycling is not sufficiently widespread and rooted in the population. Many places send all their common waste to open dumps and/or non-sanitary burying sites, due to lack of landfills.

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Although officials have maps for a large majority of open air dumps in cities and they also have a National Observatory for the Integral Management of Solid Waste, which promotes statistical information, reporting and research, there is currently no systematic mapping of sites containing trash contaminated with eggs or larvae.

There are programs on waste education, mostly through print media, audiovisual media, lectures, and community conferences. There are no specific incentives for waste disposal. Currently, there is no mosquito breeding prevention program for areas without water distribution that use water containers, nor a map of contaminated water containers.

Argentina created a Working Committee for Tire Recycling at the National Institute of Industrial Technology (INTI). It developed a management model for old tires in the metropolitan area. It seeks to generate industrial activities from recovered materials and help the development of legislation and regulations that take into account environmental and social benefits.

In the same conversation, Rio's trash company representative also shared his experience. He explained that slums have a high concentration of people living in a small space. Although people mobilize to bring goods inside the community, the same effort doesn't go into taking trash out of the slums, and so it accumulates. Because of the geography of the slums, regular trash trucks don't have access to most areas, which further exacerbates the situation.

Another issue mentioned was "accumulators"--- people who don't remove their own waste. The city can't go inside houses to investigate this problem unless someone from the community calls in to file a complaint.

*To Explore: Possible Action Items*

The use of technology to locate and identify waste was mentioned by several experts as the best and most cost effective way to improve the work that is currently being done to remove breeding sites. Several ideas for removing standing trash and standing water were discussed, such as the use of apps to geolocate accumulated waste.

## Innovative Approaches

1. Locating Waste. **Nicholas Johnson** pointed to work he has done using different satellite imagery on Google Maps to try and identify hot spots through crowdsourcing. **Jeff Kirschner** introduced Litterati, a mobile application that uses crowdsourcing to identify trash accumulation and even the brands and sub-products that compose it. That data is then aggregated and used to create specific insights to inform tangible actions. Litterati has been used both to identify and analyze trash and then to drive an action that makes a positive impact. **Joe Eyerman** followed up with his project that uses drones to collect data by flying over sugar cane fields and then using that data to build maps for agriculture purposes. That data is then coded both by hand and automated coding to look for Zika breeding sites. They are now developing systems to pool all that data into a common resource for identifying garbage and Zika breeding sites.

2. Financial Incentives: Fines and taxes: **Durland Fish** suggested the use of financial disincentives to reduce waste, such as fines on those who accumulate trash on their property and don't take action to eliminate breeding sites. He mentioned that such fines were effective in controlling Dengue in Cuba. **Israel Cedeño**, from the Panamanian government, replied that the use of fines was previously tested without success. **Jeff Kirschner** followed by suggesting the use of taxes instead of fines. He shared how a project he conducted in San Francisco to identify the percentage of trash that consisted of cigarette butts was cited by policy-makers to create a cigarette tax that helps fund trash collection.

3. Container Remediation - Public-Private Partnership with Container Manufacturers - **Graham Alabaster** drew from his experience in working with particularly low income communities to say, "you can usually trace the main components of the trash to two or three industries. In many cases it may be a drinks manufacturer or a cooking fat manufacturer. If you look at it, you can narrow it down to perhaps three or four different types of containers." He suggested there's a need to involve the private sector industries that produce those products, and to work with them to see how they can support recycling or other ways to prevent their product from becoming sources for mosquito breeding. **Jeff Kirschner** bolstered that observation through his experience with his project Litterati, saying that very often a single product generates a large part of the waste accumulation. **Alfredo Rihm** talked about how tires are a slightly more complex problem because they are

usually not considered a house waste residue and therefore not within the municipality's responsibility to be removed. Some countries are handling this problem via "extended producer responsibility." Producers of tires can search for and recapture a significant percentage of these wastes.

4. Citizen Collectors - **Dietmar Offenhuber** suggested using informal collectors, "who are experts at where to find waste, as well as what kind of particular containers and brand names and products are found in different waste deposits in the city." He suggested that they can be marshaled to bring producers back into the picture and identify illegal dump sites. He cited a project in Kosovo to illustrate the use of informal collectors along with technology. **Alfredo Rihm** shared a project run by LACRE (la Red Latinoamericana de Recicladores) and IDB, reinforcing that informal trash collection can be helpful in not only removing waste but also collecting information on it.

5. Michael Reynolds believes that launching reuse projects, such as constructing schools and other buildings with materials considered waste, and integrating these ideas into the community, whether they succeed or fail, is an important way to promote community engagement and reduce waste. He talked about his partnership with Nevex, a company that provided $200,000 - $300,000 to sponsor waste reuse in Uruguay to help build a school. This project reused tires, cans, and bottles, and also bred plants from sewage. He believes that community projects like this one steer people in the right direction.

Other approaches:

6. Biological control: **Carlos V. Urmeneta** launched a discussion on the use of the rainbow fish, which feeds on the Aedes larva and can control it in small streams and water deposits. **Durland Fish** responded, saying that the fish may not work in dry areas infested by drought-resistant mosquito eggs, where fish can't survive. He also questioned the environmental wisdom of introducing a new fish into a foreign environment. **Ligia Moncada** commented that Colombia has a history of people catching mosquito larvae to feed their fishes, so incentivising people to grow fish and capture the larvae could help.

**Participants**

- Dr. Graham Alabaster, Senior Technical expert, Public Health, Environmental and Social Determinants of Health (PHE) Unit, World Health Organization, Switzerland
- Joe Eyerman, Director, RTI Center for Security, Defense, and Safety, USA
- Durland Fish, Professor Emeritus of Epidemiology, Department of Epidemiology of Microbial Diseases, Yale School of Public Health, USA
- Nicholas Johnson, Founder, Open Trash Lab, USA
- Jeff Kirschner, Founder and CEO, Litterati, USA
- Rafael Maciel-de-Freitas, Public Health Researcher, Hematozoa Transmitters Laboratory, Instituto Oswaldo Cruz, Fiocruz, Brazil
- Ligia Moncada, Professor, Public Health Department, School of Medicine, National University of Colombia, Colombia
- Dietmar Offenhuber, Assistant Professor of Public Policy and Urban Affairs, Northeastern University, USA
- Juliana Quintero, Associate Researcher, Centro de Estudios e Investigación en Salud - CEIS, Fundación Santa Fe de Bogotá, Colombia
- Michael Reynolds, Founder, Earthship Biotecture, USA
- Alfredo Rihm, Water and Sanitation Specialist, Inter-American Development Bank, USA
- Nicolas Schweigmann, Director, Mosquito Study Group, Buenos Aires University, Argentina
- Carlos V. Urmeneta, Country Director, iDE - International Development Enterprises, Honduras

**Argentina**

- Dr. Jorge San Juan, Director of Epidemiology, Ministry of Health
- Dr. Raul Forlenza, Department of Epidemiology, Ministry of Health
- Dra. Teresa Varela, Department of Epidemiology, Ministry of Health
- Dr. Eugenio Mirkin, Department of Epidemiology, Ministry of Health
- Florencia Guedes, Communication Services, Ministry of Health
- Andrea Jaitt, Communication Services, Ministry of Health
- Gaston De Rochebouët, Public Innovation National Direction, Ministry of Modernization
- Tomás Dominguez Vidal, Public Innovation National Direction, Ministry of Modernization

## Colombia

- Ricardo Amortegui González, Coordinator, Communications Group, Ministry of Health and Social Protection
- Jairo Hernández Márquez, Coordinator, Healthy Territories Group, Subdepartment of Environmental Health, Ministry of Health and Social Protection
- Ana María Lara Salinas, Advisor, Cooperation and International Relations, Ministry of Health and Social Protection
- Dr. María Mercedes Muñoz, Coordinator of the Public Health Surveillance Group Demography and Epidemiology Department, Ministry of Health and Social Protection
- Julio Padilla, Specialist, Subdepartment of Communicable Diseases, Department of Promotion and Prevention, Ministry of Health and Social Protection
- Mónica Lucía Ramírez, Subdepartment of Environmental Health, Ministry of Health and Social Protection

## Panama

- Dr. Lizbeth Cerezo, National Coordinator of Epidemiological Surveillance of Arbovirosis and Malaria, Ministry of Health
- Dr. Israel Cedeño, International Epidemiological Surveillance Coordinator, Ministry of Health

## City of Rio de Janeiro, Brazil

- Dr. Betina Durovni, Sub-Secretary of Primary Health, Prevention and Surveillance
- Cristina Boaretto, Health Promotion Superintendent, Secretary of Health
- Valeria Saraceni, Health Situation Analysis Coordination, Secretary of Health

## Inter-American Development Bank

- Julie Katzman, Executive Vice President
- Luiz Ros, Special Advisor for Innovation, President's Office
- Diego Molano, Consultant, President's Office
- Kleber Machado, Water & Sanitation Lead Specialist
- Ana Rodriguez, Sector Manager for Institutional Capacity and Finance Sector
- Miguel Porrua, Modernization of State Lead Specialist

- Inés Vásquez, Sector Specialist
- Adela Barrio, Operations Associate
- Antonio Moneo, Learning & Knowledge Management Sr. Associate
- Michelle Marshall, Consultant for Learning & Knowledge
- Mario Sanchez, Social Protection Lead Specialist
- Marcia Rocha, Health Sr. Specialist
- Ian Mac Arthur, Social Protection Lead Specialist
- Rafael Anta, Lead Specialist, Competitiveness and Innovation Division
- Ralf Moreno, Project Manager, Social Protection and Health Division
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- Dr. Rafael Ayoub, Health Research Advisor
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- Dinorah Cantu, GovLab Academy Coordinator
- Anirudh Dinesh, Research Assistant

**Links:**
Problem Brief
Conference Transcript
Conference Chat