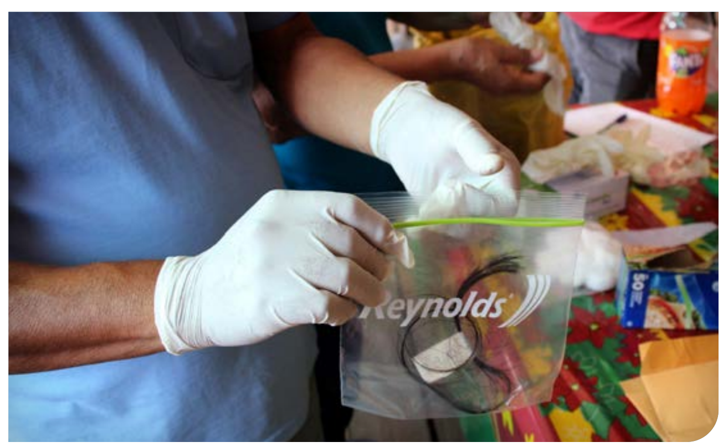
SUMMARY:

MERCURY EXPOSURE OF WOMEN IN TWO LATIN AMERICAN GOLD MINING COUNTRIES

ELEVATED MERCURY LEVELS FOUND AMONG WOMEN WHERE MERCURY IS USED IN GOLD MINING AND CONTAMINATES THE FOOD CHAIN



October 2025

IPEN

for a toxics-free future

IPEN hair sampling for mercury levels in multiple Indigenous communities along the Madre de Dios River in Peru and the Wangki River in Nicaragua found elevated mercury levels among most of the participants, all women of childbearing age. They are an especially vulnerable population due to the neurotoxic impacts of mercury on a potentially developing fetus of a pregnant woman.

Mercury levels in the hair samples were compared to the current 1 ppm US EPA threshold level beyond which negative effects may be detected in a potentially developing fetus of a pregnant woman and to a more health-protective level of 0.58 ppm level, which has recently been proposed by numerous experts due to increasing evidence of potential harmful effects from lower levels of mercury on the cognitive development of the fetus.

Of the 105 Indigenous women of childbearing age who participated in this study, mercury levels in 92 (88%) exceeded the current safety level, and 104 (99%) exceeded the more health-protective proposed level.

Surveys conducted with the sampling participants indicated that most of the women had a fish-rich diet and mostly consumed fish caught in the local rivers as a key source of protein. These rivers suffer from mercury contamination caused by small-scale gold miners who use highly polluting mercury extraction methods.

Dredge and sluice barge using mercury on Rio Madre di Dios Peru near Community 2

PERU

In Peru, hair was sampling conducted by Federación Nativa del Río Madre de Dios y Afluentes (FENAMAD), the regional representative organization of the Indigenous peoples of the Madre de Dios River basin, in communities along that river. Women of childbearing age in four Indigenous communities provided hair samples for analysis of total mercury.

Sampling hair of a participant in Community 3

The results showed that, on average, the women had a mercury body burden more than three times the safe level.

Of the Peruvian cohort, 39 participants (70%) had mercury levels more than twice the current safe level, 14 (25%) had levels more than 4 times higher, and 7 (12%) had levels more than six times higher. The highest level recorded was found in hair from a woman in Community 1 at more than nine times the current level for potential fetal harm (9.44 ppm).

Locally caught predatory fish palometer, chambia and corvina bioaccumlate mercury contamination in the Rio Madre de Dios, Peru

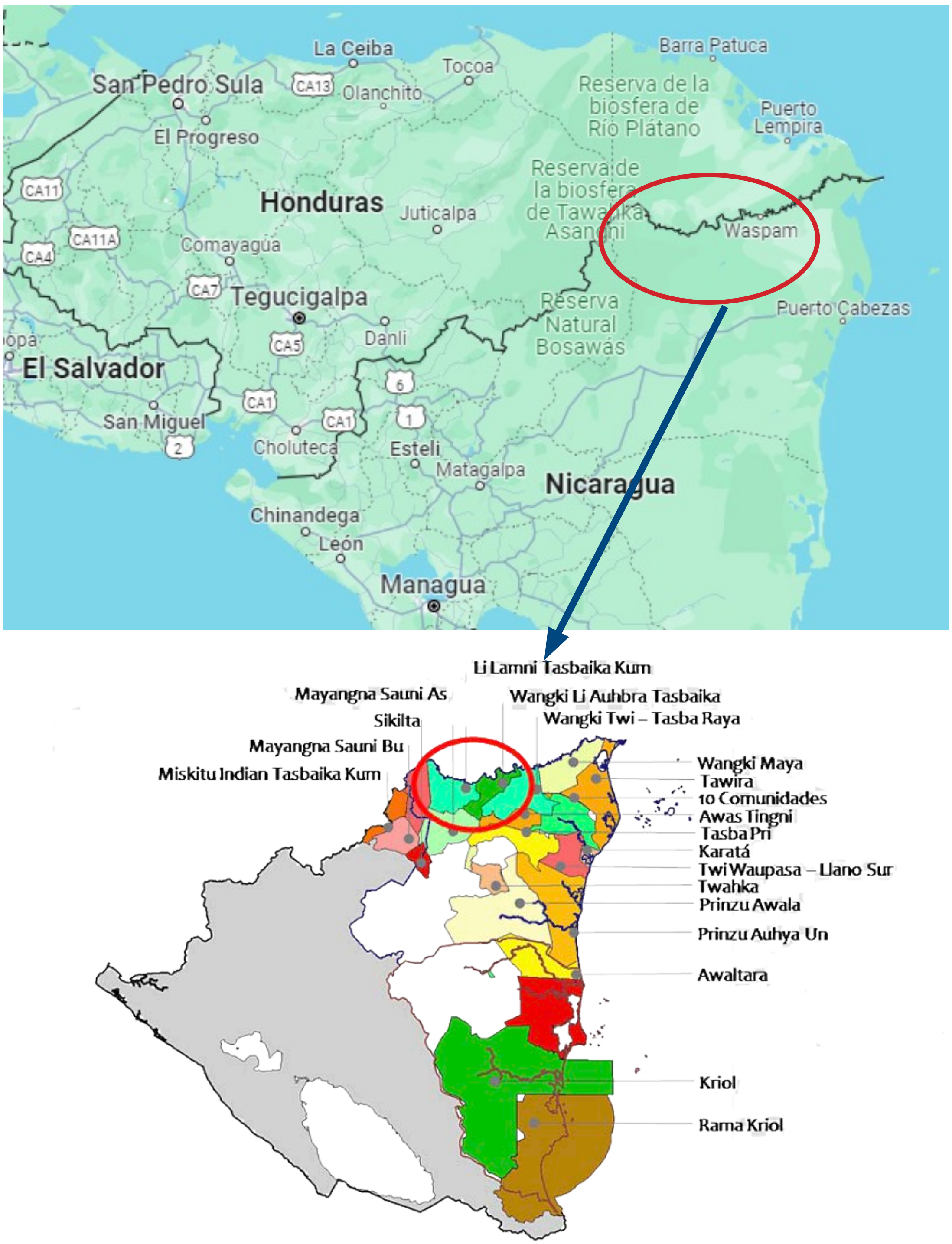
Tailings dump from gold extraction alongside the Madre de Dios River.

Map 1 Indigenous community sampling locations along the Madre de Dios River, Peru

NICARAGUA

In Nicaragua, sample collection was coordinated and carried out by carried out by two local community organisations.

The Waspam municipality in Nicaragua is situated just north of the Autonomous Region of the Northern Caribbean Coast and is a wide strip along the Wangki River (Rio Wangki), also known as the Rio Coco, which forms the border between Honduras and northern Nicaragua. Many Indigenous communities are found in this region where small-scale gold mining also takes place. Previous studies have found significant mercury contamination affecting the environment and communities in this region.



Map 3 Territories of the Li Lamni, Li Auhbra and other Indigenous communities below the Rio Wangki

Hair sample collection Li-Aubra and Li-Lamni communities, Waspam, Nicaragua

For the Nicaraguan Indigenous women who provided samples, their mercury levels were, on average, 1.5 times the current potential fetal harm level of 1 ppm. The women live in the Nicaraguan Indigenous communities of Li Auhbra and Li Lamni along the Wangki River (also known as the Rio Coco), which is also polluted by mercury from small-scale gold mining.

Of the Nicaraguan participants, 40 (80%) had mercury levels above the current safe level, and 49 (98%) had levels above the more health-protective proposed level.

The highest mercury concentration recorded was more than four times higher than the current potential fetal harm level (4.64 ppm in Li Lamni).

Predatory carnivorous fish (robalo, suladromar and picama) commonly eaten by communities along the Rio Wangki (Rio Coco) subject to bioaccumulation of mercury pollution from nearby small-scale gold mining.

TIME TO AMEND THE MERCURY TREATY

The Minamata Convention on Mercury (the Mercury Treaty) was signed in 2013 to prevent global mercury pollution and entered into force in 2017. While it has been relatively successful in phasing out products and industrial processes that contain or use mercury, it has not been effective in controlling the use of mercury in small-scale gold mining. This highly polluting activity now ranks as the number one source of mercury pollution in the world and is contaminating the world's oceans, rivers, and lakes. This has led to mercury contamination of the aquatic food chain at a dangerous level. For those consuming contaminated fish near active small-scale gold mining areas using mercury, the contamination levels have become an acute health threat.

Strong action is required to amend the weaknesses in the Mercury Treaty to stop the legal global trade in mercury and establish an imminent phase-out date for mercury use in small-scale gold mining.

When the Mercury Treaty was first agreed upon by nations, there were many products and industrial processes still using mercury. It was considered reasonable to allow the global trade in mercury to legally continue while the transition away from these processes took place over several years. However, nearly all of these uses of mercury have now been phased out, and the justification for the trade in mercury no longer exists. Worse still, this weakness in the Treaty is being exploited, and nearly all mercury currently traded around the world ends up in small-scale gold mining where most of it rapidly enters the environment.

Another major weakness of the Mercury Treaty is the failure to incorporate a phase-out date for mercury use in small-scale gold mining. This implies that mercury can continue to be used indefinitely in small-scale gold mining, undermining the objective of the Convention to protect human health and the environment from mercury pollution. It is currently the only major use of mercury without a phase-out date.

IPEN proposes to close these loopholes and amend the Treaty so that:

- Parties can no longer export mercury to another country, except for the purpose of environmentally sound storage/disposal. (The EU and US have already banned exports).
- A phase-out date for mercury use in small-scale gold mining is established to coincide with the prohibition on all mercury mining in 2032.

Global mercury contamination levels will only drop to safe levels by turning off the mercury supply tap once and for all and ending its use in gold mining. Even then, it may take decades or longer for the food chain to recover.

Hair sampling team from FENAMAD near a sampling location on the Madre de Dios River

for a toxics-free future

www.ipen.org

ipen@ipen.org

@ToxicsFree