AFRIGLOBAL RESOURCES · MINING EXPLAINER

Mercury-free gold recovery

For small-scale miners in Tanzania

Five takeaways

1. Gold does not need mercury. Mercury alloys with gold — then becomes vapour and a lasting environmental poison.

2. Tanzania is a Party to the Minamata Convention (ratified 5 Oct 2020; in force 3 Jan 2021). A NAP for 2020–2025 aims to reduce, and where feasible eliminate, mercury in ASGM.

3. Liberate, classify, then concentrate by density: pan, sluice, centrifuge, shaking table.

4. Direct smelting with a flux such as borax works on a small, high-grade concentrate — not a bucket of raw ore. It is not a recipe on this sheet.

5. Cyanidation is a licensed industrial step, never to be used on mercury-bearing feed. See our CIP vs vat guide.

A simple path

Liberate → Classify → Concentrate → Upgrade → Smelt → Test tails

Worked example (illustrative numbers only)

Assume 1 tonne of crushed ore in a day, at an assumed 3 g/t.

Gold in the feed = 1 × 3 = 3 g.

Assume a gravity test on this illustrative, liberated, fairly coarse ore recovered 70% = 2.1 g. Tails hold 0.9 g.
Assume a further 5% handling loss on the concentrate when it is upgraded and smelted = about 2.0 g as doré.
The 0.9 g in the tails is a test question, not a reason to add mercury.

These numbers are teaching assumptions, not assays and not a forecast.
Afriglobal's 200 TPD CIP plant at Umoja is a proposal, not current capacity.

Sources: WHO; UNEP / Minamata Convention (Tanzania party page; Annex C; NAP 2020–2025); planetGOLD gravity guides; US EPA, ASGM without mercury; GCLA, NEMC, Mining Commission. Not legal or technical advice.