Environmental analysis results

Why the DRC?

The **Democratic Republic of the Congo** plays a central role in the global energy transition. In 2024, the DRC produced about **76% of the cobalt and 13% of the copper used in the world**. Much of this extraction takes place in the **Lualaba Province,** especially in and around **Kolwezi** and **Fungurume.**

Methodology

In **October 2025**, Source International carried out a monitoring campaign to document environmental pollution linked to industrial copper and cobalt mining mining in Lualaba. We measured **particulate matter pollution in air** ($PM_{2.5}$ and PM_{10}), analyzed the composition of **inhalable dust**; and collected **water** and **sediment** samples in rivers, **lakes and wells** used by local communities.

Water and sediments showed clear contamination

Rivers and lakes

- **Copper** was the main pollutant in water and sediments.
- **Cobalt** and **manganese** were also elevated.
- **Sediments** showed the clearest signs of mining contamination (i.e. copper in the Musonoie river was 34 mg/kg before mining facilities and up to 2100 after.)

Main ecological risks: toxicity to aquatic life, biodiversity loss, and heavy metal accumulation in the food chain.

Households

- Most wells had relatively low dissolved heavy metal levels.
- All domestic waters were about **100 times more acidic** than recommanded by the WHO.
- One well near a tailings storage facility contained 1,100 µg/L of manganese, 14 times the WHO recommended limit.

Main risks: acidic water can mobilize heavy metals and increase exposure risk and Manganese is a neuro-toxin.

Heavy metals of concern and possible health effects

Cu — **Copper:** stomach irritation; liver and kidney stress at high exposure.

Co — **Cobalt:** stomach irritation; heart and thyroid effects.

Mn — **Manganese:** nervous system effects; risks for child development.

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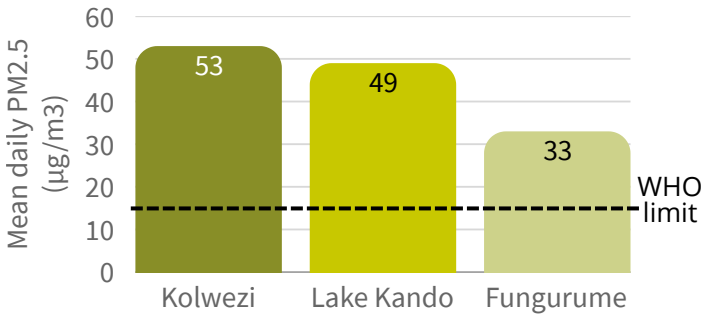
Air pollution was persistent and widespread

Every daily measurement exceeded the WHO guidelines for both $PM_{2.5}$ and PM_{10}. Daily $PM_{2.5}$ concentrations ranged from 33 to 87 µg/m^3 (WHO guideline is 15 µg/m^3) while daily PM_{10} was 67–178 µg/m^3 (WHO guideline is 45 µg/m^3). These results were not caused by a few isolated peaks: **hourly data showed that pollution remained elevated all day**, with additional afternoon and evening peaks at sites closest to open pits and waste rock dumps. The most polluted site, less than 500 metres from the COMMUS waste rock dump in Kolwezi, was classified as unhealthy for the general population.



98% of hourly $PM_{2.5}$ values exceeded the WHO guidelines

84% of hourly PM_{10} values exceeded the WHO guidelines

7/8 recorderd air from moderate to unhealthy

Galaxy: the school surrounded by the mine

The Galaxy School in Kolwezi serves about 1,700 students and sits beside the COMMUS mining activities.

$PM_{2.5}$	3x	than recommanded by the WHO
PM_{10}	2x	than recommanded by the WHO
Copper and cobalt in dust	4x	than science suggests to be safe for humans

How do we know it is mining pollution?

Inhalable dust samples contained **cobalt**, **copper** and **manganese**. We analyzed the chemical composition of particles that can be inhaled. Their chemistry was different from ordinary urban dust: it always contained more copper, cobalt, and manganese than expected, suggesting it come from wind blowing over waste rock dumps. Although there are no clear guidelines, the amount of copper and cobalt in this dust is above safe limits for humans.

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