

Lead Poisoning Epidemic in Nigeria



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TIFO: All people have the right to live and work in a healthy environment

IMPACTS

- Humanitarian health
- Child and maternal health
- Environmental cleanup, human health risk assessment
- Community employment and social justice
- Scientific research, education, mentorship
- Climate change (adaptation/resilience)



Dom. Republic, Peru, Senegal, Nigeria*, Armenia, Kyrgyzstan*, Bangladesh*, China, Russia

----*projects with MSF



Background

- Unprecedented lead poisoning discovered in Zamfara State 2010 by MSF during meningitis & polio immunizations
- 500 children died within 6 months; 30-40% of all children under age 5.
- ~ 30,000 people severely poisoned including 6000 children under age 5.



Background

- Every child and adult tested was lead poisoned
- Geometric mean blood lead levels = 150 mcg/dL
highest = 700 mcg/dL



How did this happen?

- Price of Gold
- >10% Pb in ore
- Primitive Mining Practices & Women's Roles in Local Society (Purdah)





Give them CLEAN DIRT to eat!



Children treated by chelation must be returned to a clean environment

TIFO – Remediation to reduce exposure

MSF – Blood lead testing and chelation



MSF Hospital



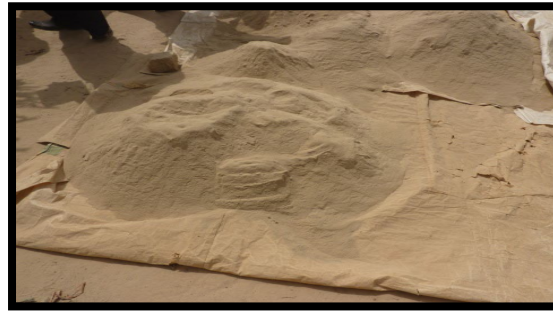
**But under
Purdah, women
were confined
to their
compounds**



MSF Outpatient Clinics



Exposure Pathways



Ore processing moved out of villages



Testing household interior with XRF



Selling food at mining camp



Malaria, cholera, guinea worm!



Remediation – Risk Assessment & Characterization



Remediation – Excavation





Remediation – Clean Soil Capping

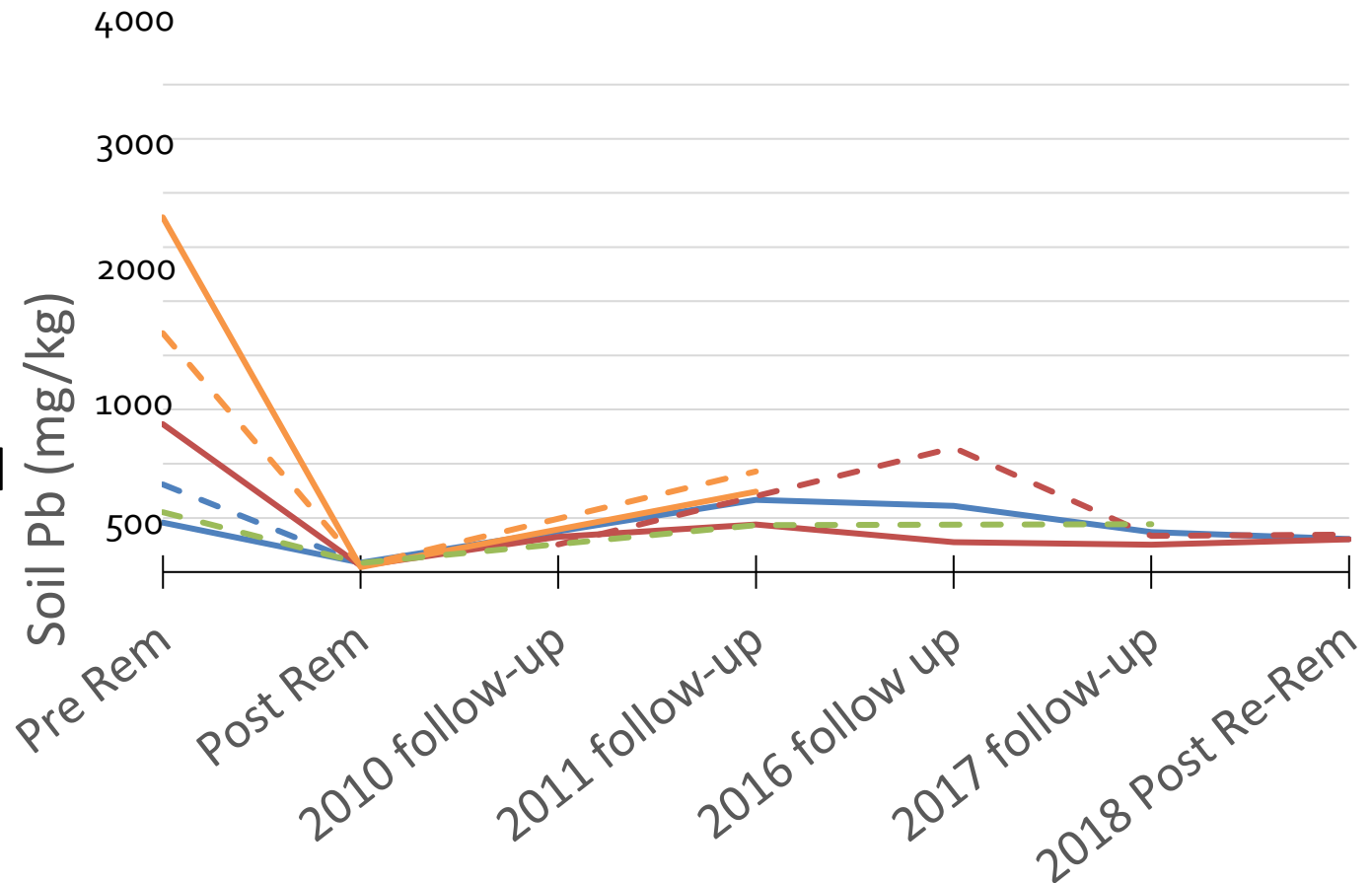


Remediation – Disposal

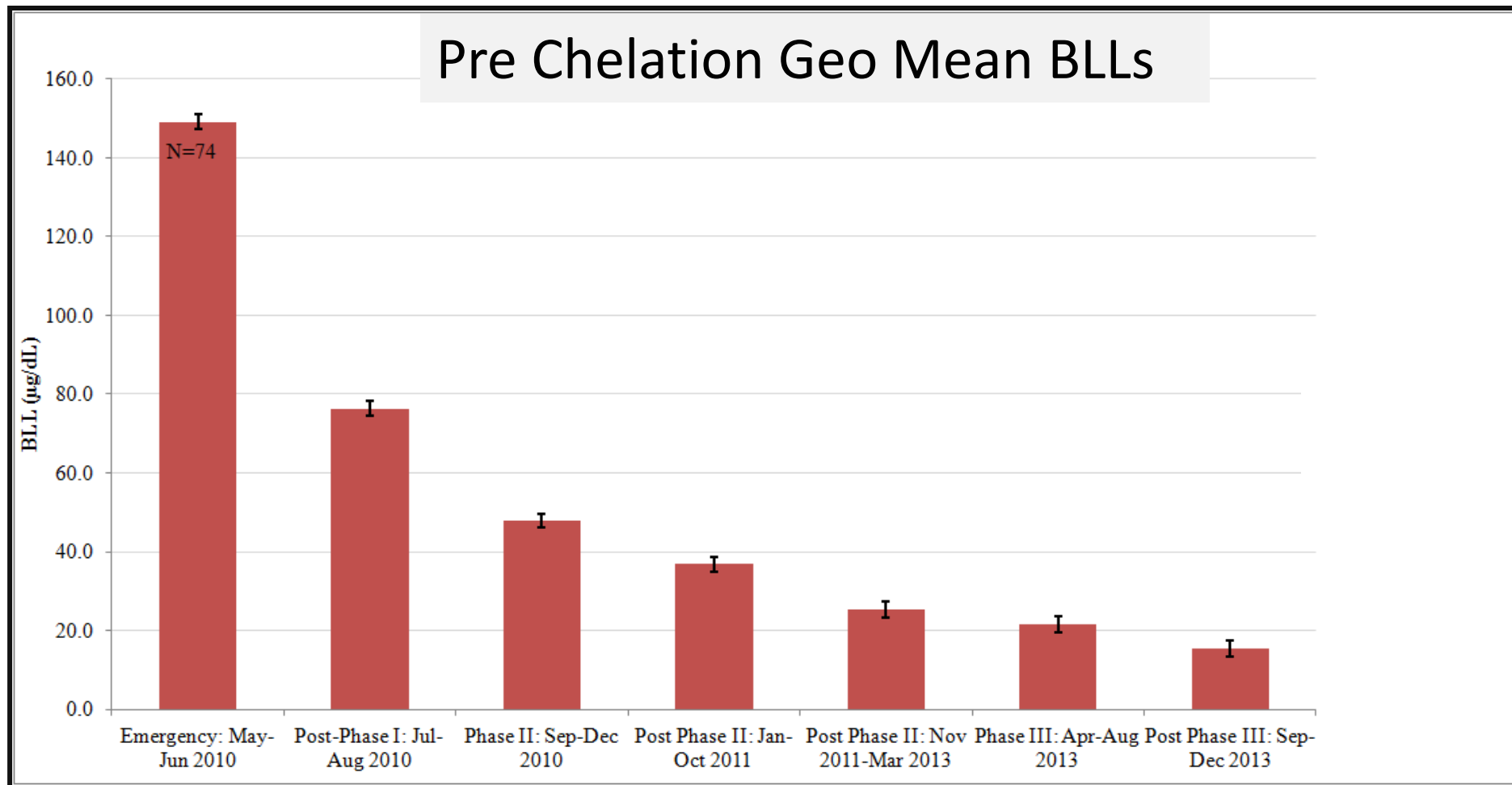


Geomean Soil Lead Levels: 2010-2018

- Remediation successfully reduced exposures
- Sustainability challenges
- Emirate & local government & community oversight



Zamfara Blood Lead Levels



12-year environmental health response

- Remediated 10 villages in 2 states
- >8,000 children treated by MSF – ONLY UNDER AGE 5
- Within 3 months, childhood mortality rates dropped from >30% to <2%
- Collaboratively developed safer mining program
- Project locally owned, implemented, maintained
- Institutional controls to keep ore processing out of villages





“subsistence mining” not “illegal mining”

Vice President: “Children should not be sacrificed for mining.”

Artisanal and small-scale mining (ASM)

ASM employs >100 million people
~40 million small-scale gold miners

What drives ASM?
Prices
Poverty
Climate change



Climate Crisis = conflicts between farmers and miners











Northern Nigeria Now

“The conflict’s roots lie in climate-induced degradation of pasture and increasing violence in the country’s far north.”
– International Crisis Group



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Deadly cattle raids in Zamfara: Nigeria's 'ignored' crisis

Hundreds killed and thousands displaced as cow thieves murder and kidnap, but state and media focus on other conflicts.

Fresh Crisis In Bandits-Ridden Zamfara As Fulani, Hausa Square Off

A source familiar with the crisis said some herders, believed to have migrated from either Shinkafi or Birnin Magaji local government areas of the state during the administration of former Governor Abba Gada, decided to settle at an area west of Gwalli community in Gummi Local Government Area.

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Conclusions

If environmental remediation can work in Nigeria, it can work anywhere!

- Sufficient political will
- Local employment
- Develop local institutions (Ministries Health/Environment)
- Not much \$\$\$ in metals economy
- Media
- NGOs

Measures of Success



A child born into a
clean environment

Measures of Success



Children who are not lead poisoned,
playing in lead free soil



Implementing Partners with TIFO

- Médecins sans Frontières (MSF)
- Zamfara State Government
- Anka/Bukkuyum Local Government Areas (LGAs)
- Anka/Bukkuyum Emirates
- Nigerian Federal Government
- Village Chiefs
- Human Rights Watch
- US Centers for Disease Control (CDC)
- World Health Organization (WHO)
- United Nations Children's Fund (UNICEF)
- UN Office Coordination of Humanitarian Affairs (OCHA)
- University of Idaho
- Blacksmith Institute
- US Geological Survey

MERCI!

