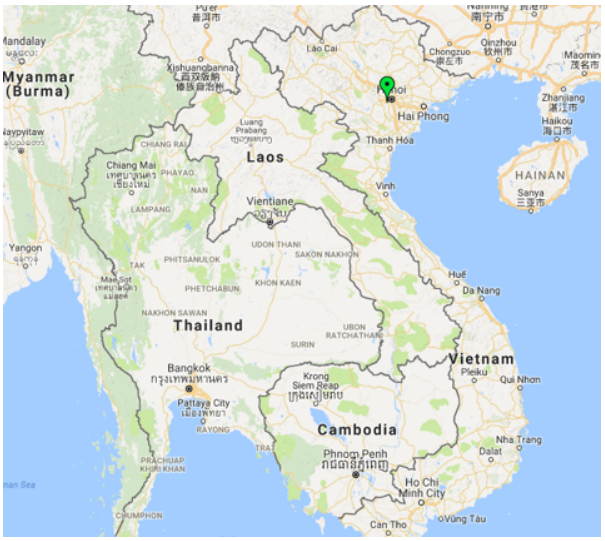
Leverage Case Study
Dong Mai, Vietnam



Background

Lead is an acute neurotoxin which causes permanent brain damage in children and cardiovascular disease in adults. The informal recycling of used lead acid batteries (ULAB) is one of the leading causes of lead poisoning around the world. Every day, trucks full of used batteries from cars, motorbikes and other vehicles from all across Vietnam are delivered to the rural village of Dong Mai in the agricultural heartland of Vietnam. Dong Mai, a community of 3,000 residents, specializes in the recycling of used lead acid batteries.

For years, almost every family in the village recycled batteries informally without any precautions. Villagers broke batteries by hand, dumped the acid into rivers and sewers, and smelted toxic lead in their backyards. As a result, the village was severely contaminated with toxic lead.

Blood tests carried out by University of Washington of 263 village children in 2012 found more than 100 children with **blood lead levels 5 to 13 times greater than CDC's level of concern of 5 ug/dl.**

Fortunately in 2008, an industrial area was constructed by the Vietnam Environment Administration (VEA) 1 km south of Dong Mai, and most industrial activity was relocated. However, because lead is immobile in the environment, soil and home interior lead levels in Dong Mai remained dangerously elevated.

Pure Earth's Solution

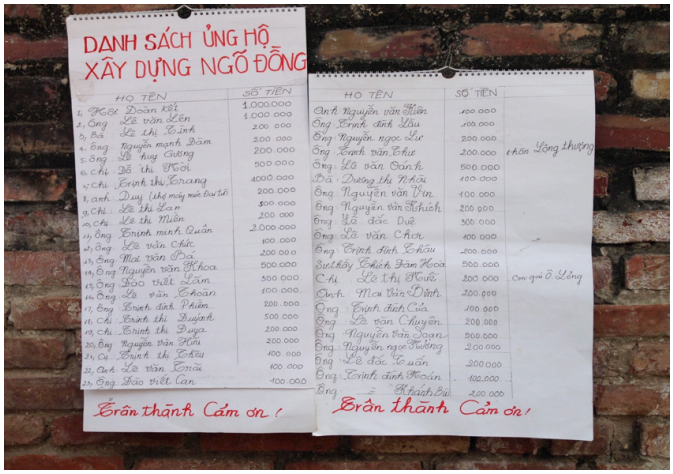
The project contains five key components:

1. Community education
2. Cleaning contaminated home interiors
3. Covering of contaminated soils with compacted clean soil or cement to prevent exposure (encapsulation)
4. Construction of a clothes changing and shower facility for workers to prevent them from bringing lead back into their homes.
5. Final village inspection and blood lead level monitoring

Impact

49 home interiors were initially cleaned by Pure Earth staff, these cleanings were used as demonstrations for community members who then cleaned their own homes. In addition villagers were trained remediate yards and contaminated dirt roads.

Local authorities were also trained in environmental sampling and blood monitoring. The environmental assessments of the remediated yards found soil lead levels 8 times below US EPA standards. **Blood lead levels of children under 5 decreased on average by 72%.**



Above: Lists of the villagers who personally contributed towards the construction of paved roads that now criss-cross Dong Mai were posted throughout the community.

Community education workshops were held with more than 90% of households attending.

Yards with lead levels above the threshold of 800 ppm were capped with a geotextile layer and compacted clean soil

Leverage

Less than **$100,000** in private funds to complete the above work leveraged **$555,000** (points 1-4 below) from the local government, individuals, private industry and other funding as well as labor and national awareness. The combination of community education about the dangers of lead and hands-on training in lead cleanup and assessment, motivated the community to continue the cleanup activities and secure the needed resources:

1. **Cleaned an additional 317 homes**. Villagers, on their own, cleaned 250 home interiors. Local officials secured an additional $55,000 from Center for Environment and Community Development (CECoD) and International Lead Management Center (ILMC) to clean an additional 67 homes and yards.
2. **Paved all remaining lead-contaminated roads:** $110,000 personally donated by villagers. $165,000 provided by the municipal government.
3. **Pilot a cleanup in another village**. Another private funder is investing $100,000 for this replication.
4. **National Toxic Site Identification Plan**. Government officials visited Pure Earth's offices in 2017 to explore a collaboration on a national plan to systematically identify toxic sites and other contaminated villages throughout the country, and prioritize them for cleanups. Pure Earth will allocate $50,000 from a USAID grant to facilitate the process.