

Environmental and human health risks due to mining activity in the soils and plants of the Remance mine, Panama

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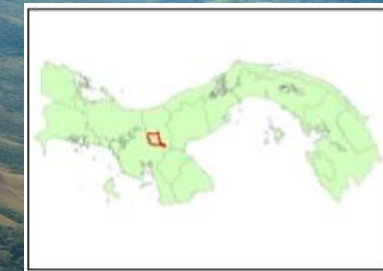
INTRODUCTION – The Remance mine



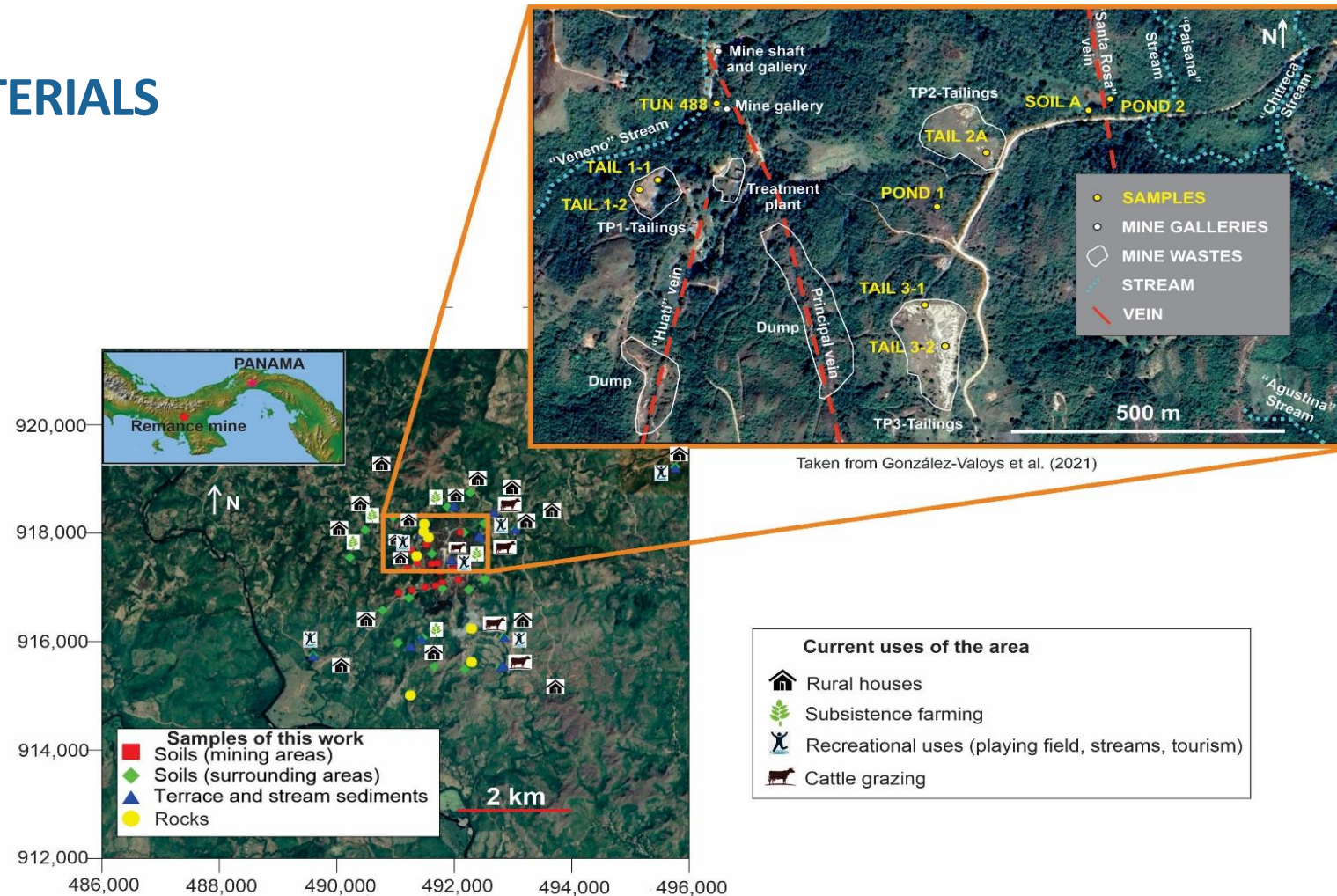
- The mine has been intermittently exploited for over a hundred years.
- The last company used **cyanidation process** to extract the precious metals.
- Now, three tailing dams with processed waste are exposed to climatic conditions.
- In the surroundings live peasants.
- The objective of this study has been to evaluate the environmental and human health risks that this area represents.



Gold mine, Remance, Veraguas, Panamá



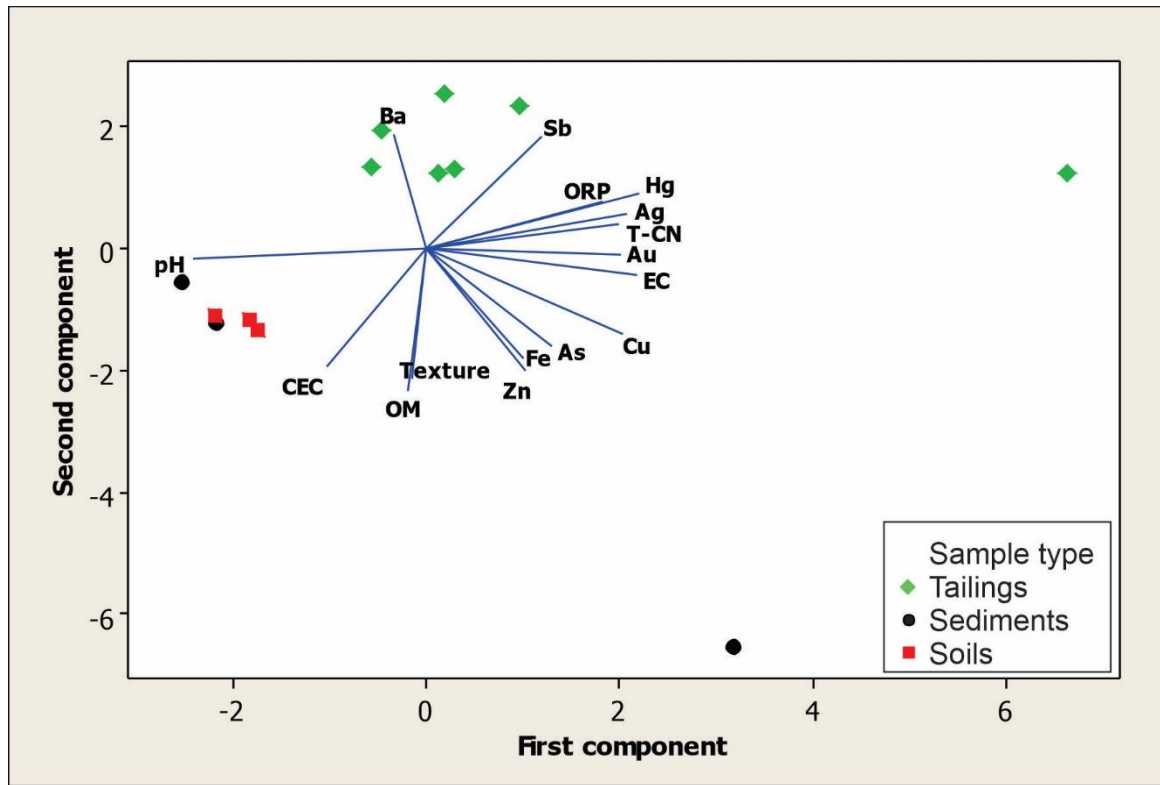
METHODS AND MATERIALS



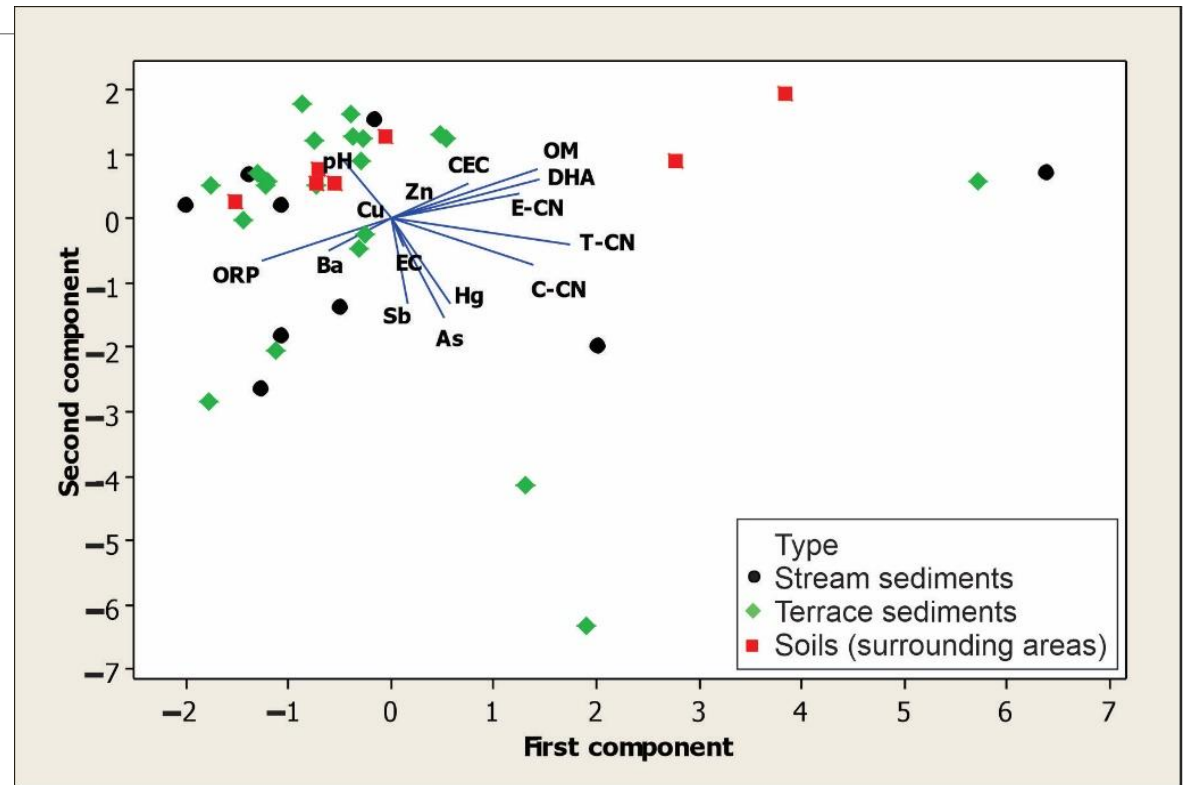
- Reactivity (pH), electric conductivity, organic matter, cation exchange capacity, texture.
- CN^- , PTEs (Cu, Zn, As, Sb, Ba, Hg).

RESULTS AND DISCUSSION

Total cyanide in tailings

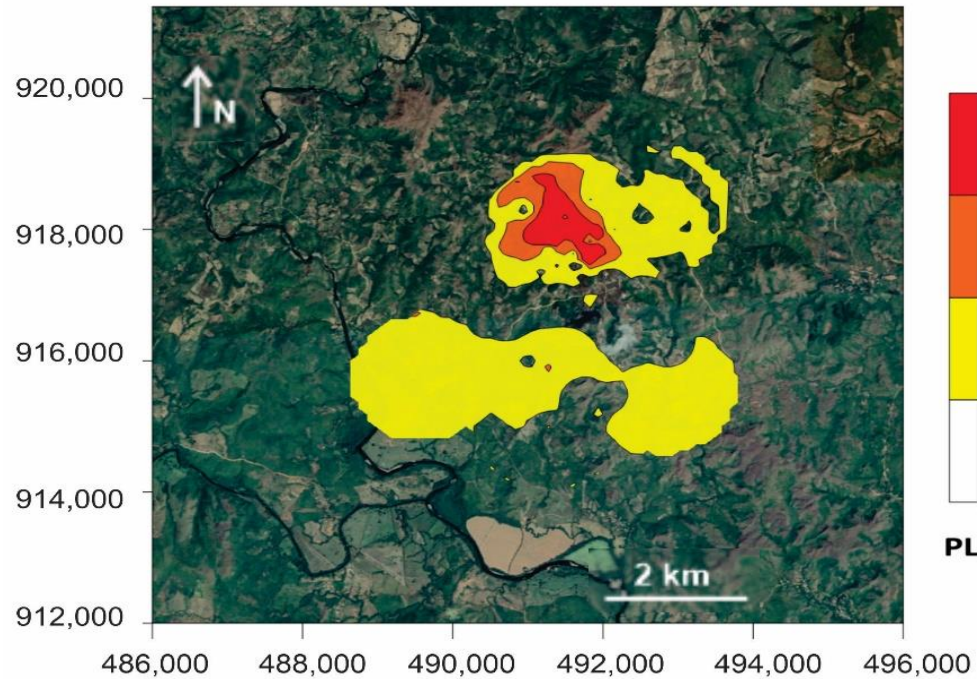


Soil health

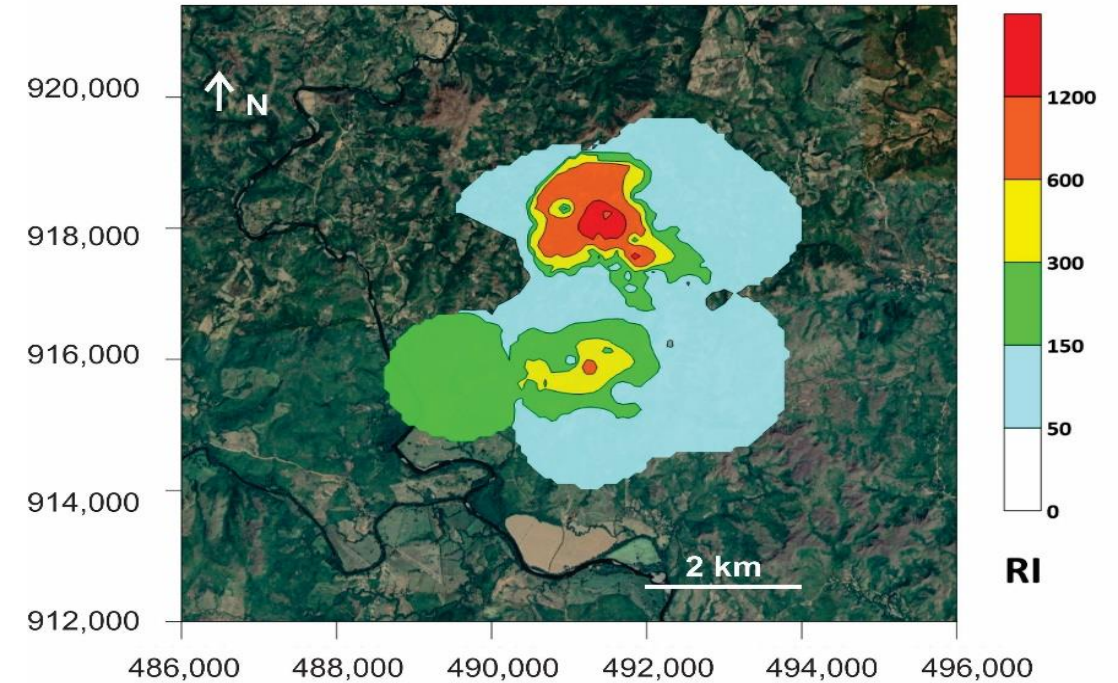


Dehydrogenase activity (DHA)

POLLUTION LOAD INDEX (PLI)

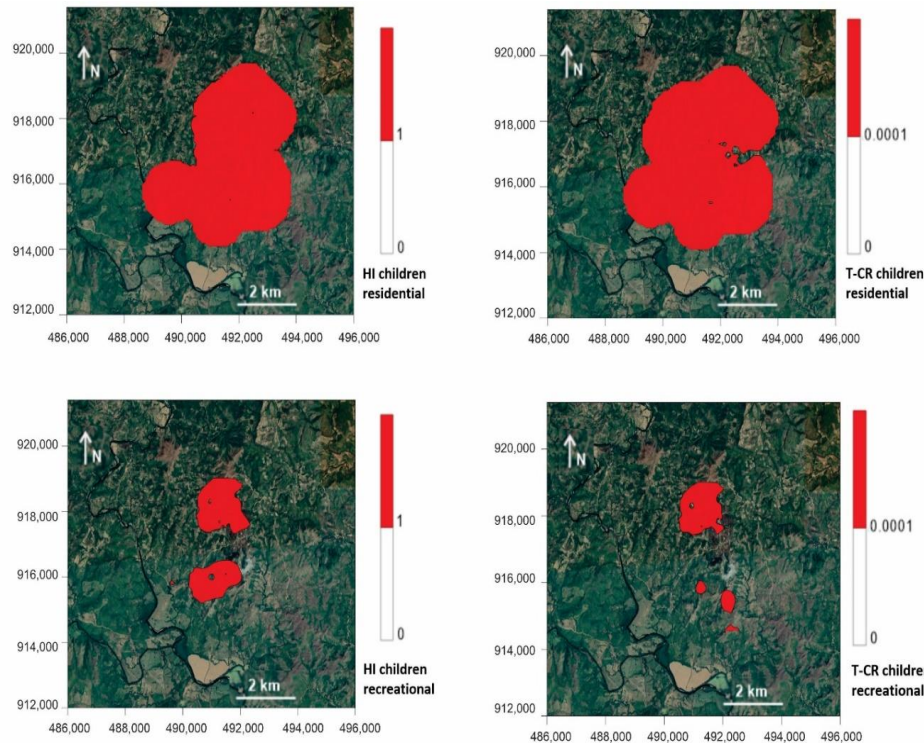


POTENTIAL ECOLOGICAL RISK INDEX (RI)



RISK TO HUMAN HEALTH IN SOILS AND GEOLOGIC MATERIALS

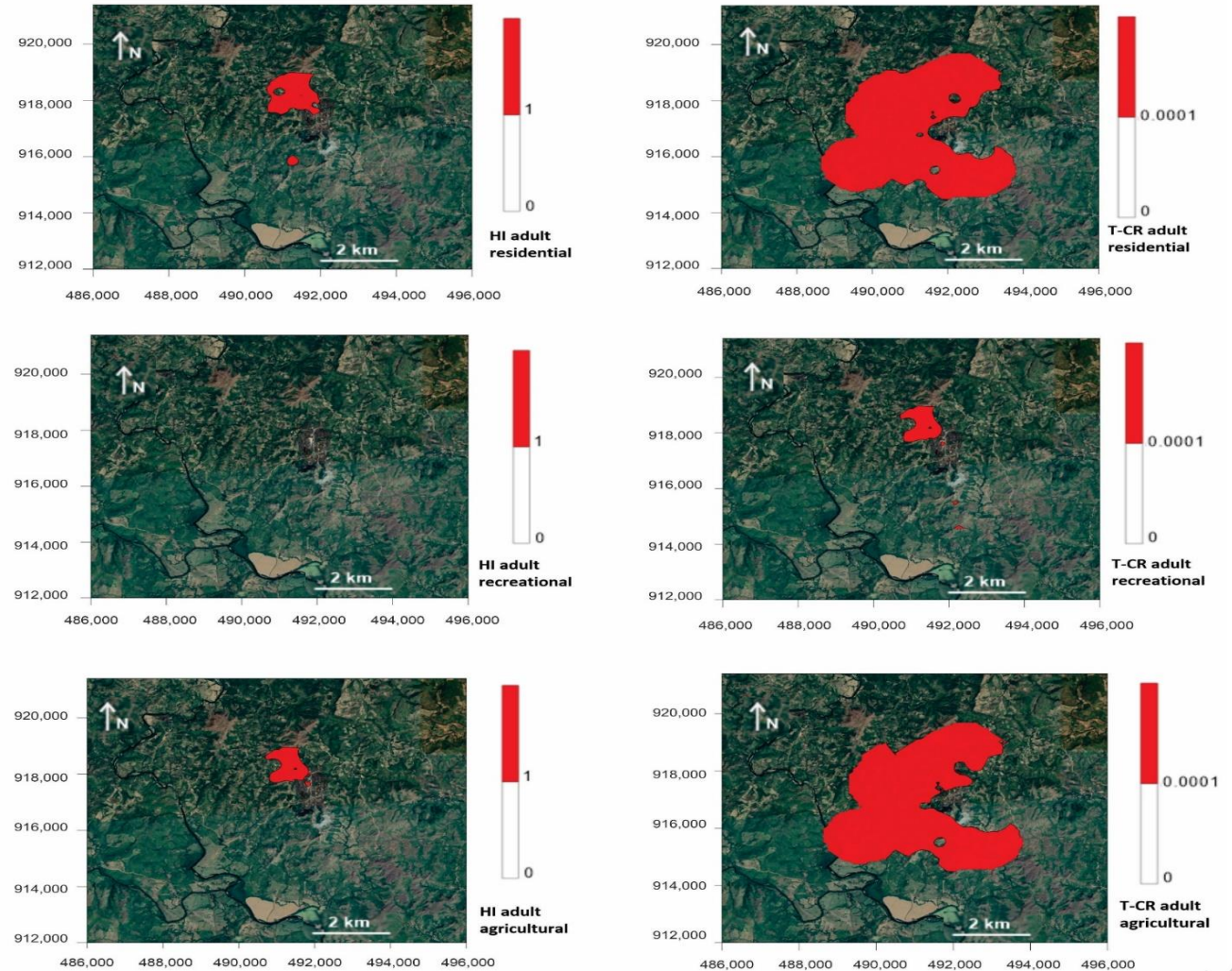
CHILDREN



HI

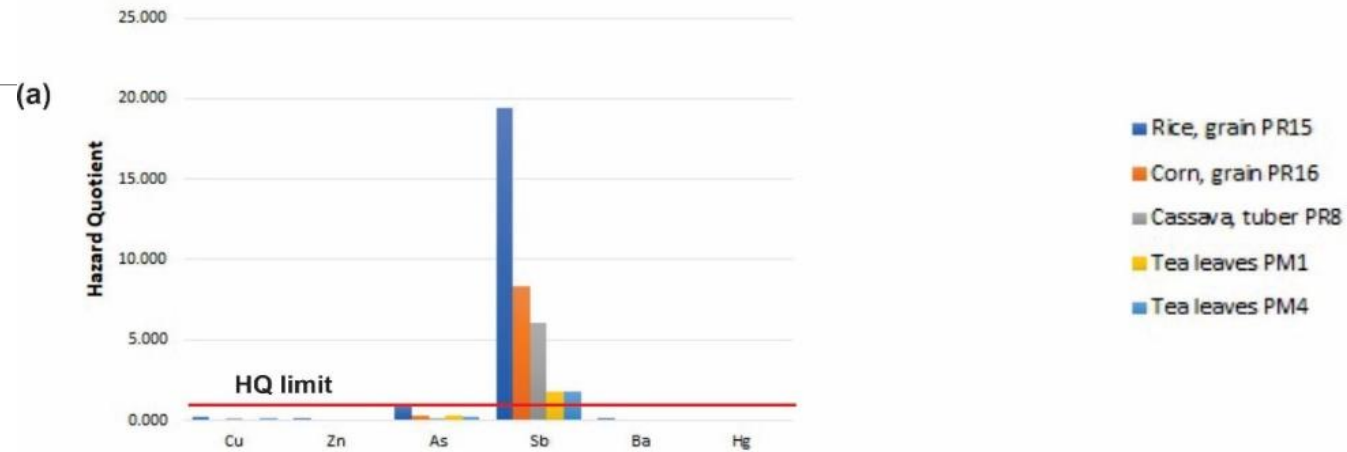
T-CR

ADULTS

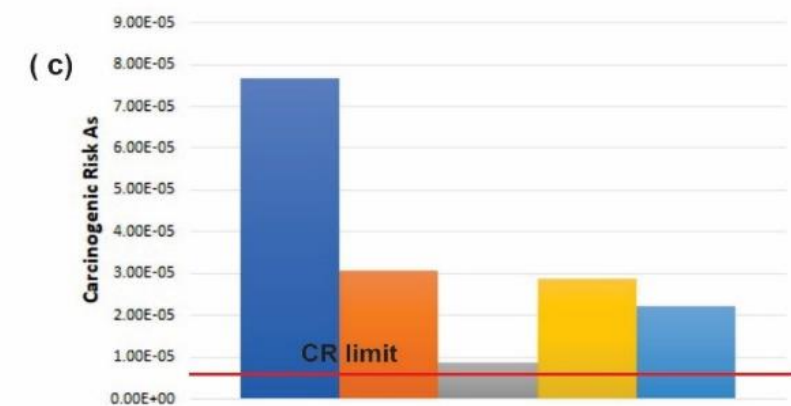
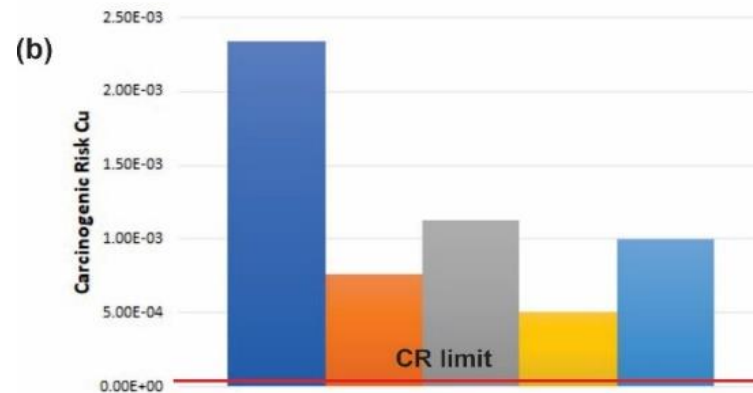


RISK TO HUMAN HEALTH IN EDIBLE PLANTS

No Carcinogenic risk
HQ



Carcinogenic risk
CR



CONCLUSIONS

- After 20 years of cessation of mining operations, the area of the Remance gold mine is still impacted.
- The health of the soil and sediments has been intensely affected.
- Due to its potential ecological and human health risk, the tailings and the pithead represent a serious risk, to the environment and its inhabitants.
- Edible plants have absorbed these pollutants.
- The area needs to be remediated.



Thanks!

