Rezende, L. P. D., Barbosa, J. B., & Teixeira, P. (2024). *Potentially toxic elements contamination of soil and compost from urban farms in the Porto metropolitan area and its impact on food safety*. Abstract from IX PhD Students Meeting in Environment and Agriculture , Évora, Portugal.

The correlation between urban agriculture, food security, and mental well-being is well documented. However, the safety of consuming products from urban agriculture remains a subject of debate. From the latter half of the 19th century, the Porto Metropolitan Area (PMA) became one of the most significant industrial centres in the Iberian Peninsula, resulting in a lasting environmental impact on the region. Today, the PMA is home to over 1.75 million residents, and although much of the industry has shifted to the outskirts, the environmental legacy of past industrial activity persists. This study assessed the contamination of potentially toxic elements (PTE) in soil and compost samples from 12 urban farms within the PMA. These results were analysed according to national and international regulations concerning permissible levels of these elements in agricultural soils. Widespread contamination with zinc, lead, copper and chromium was observed in soil samples. Zinc levels exceeded the Italian legislation (IL) threshold in five farms, while lead concentrations surpassed both the Swedish guidelines (SG) and IL in nine and five farms, respectively. Soil samples from four farms contained copper concentrations above the FAO/EU regulations, likely due to excessive use of Bordeaux mixture. Additionally, three farms exhibited substantial chromium contamination, with two exceeding FAO guidelines. In at least one of these farms, chromium contamination may be linked to historical tanning activity in the area. Given the potential role of fertilisation in metal and metalloid contamination, organic fertilisers, primarily compost, used in these farms were also analysed. Extremely high zinc concentrations, surpassing the FAO guidelines, were observed in five samples, with one exceeding the European legislative limit. While lead concentrations remained within acceptable limits, copper levels in three fertilisers exceeded both European and FAO standards. Although chromium concentrations in the fertilisers were lower than those observed in soils, the presence of this element in high concentrations is concerning. The long-term sustainability of urban farming requires safe environments to ensure safe products. In this study, substantial metal contamination was observed in urban farms within the PMA, highlighting the need for increased monitoring of both the environment and agricultural practices in these settings.