

INTRODUCTION

The Brazilian city of Limeira, in São Paulo, locates a production center of fashion jewelry where part of the production is informal and home-based, including whole families. In these complex scenario, where fashion jewelry production and domestic routines are shared, it is difficult to define the real exposure, mainly to children¹, and among the contaminants which they are exposed.

The International Cancer Research Agency (IARC) classified Cd (cadmium) as 1 - carcinogenic to humans² and Pb (lead) as 2B - possibly carcinogenic to humans³. Children are especially vulnerable to Pb, mainly because their central nervous system is developing, being more vulnerable to toxic agents⁴.

OBJECTIVE

This study aimed to describe the exposure scenario for children living with home-based informal working families.

METHODS

A questionnaire was applied for 21 home-based and informal working households, and the metals Pb and Cd were determined in soldering powders and wires samples, using a field-portable X-ray-fluorescence analyzer.

RESULTS

Cd was found only in soldering powders, while Pb was found only in soldering wires.

Table 1. Descriptive Analysis of the Composition of Solder Powder and Solder Wire (ppm).

Metal	GM	SD	Min	Max
Cd	53,927.21	32,806.44	5,209.72	165,296.14
Pb	249,973.13	165,157.41	5,840.90	522,785.34

GM – Geometric mean / SD - Standard Deviation / Min – Minimum / Max - Maximum

In 38% of the houses, soldering powder was visible on the furniture. Furthermore, 81% of the households did not use individual protection equipment, 43% used ventilation systems and 81% worked with doors/windows opened. In 43% of the households, the welding activities were shared with husbands, sisters, and friends. Depicting the children exposure, 57% of the houses had at least one child, and the time median, which children stayed at home, was 17 hours and 50 minutes/day, during the week.

REFERENCES

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RESULTS

Figure 1. Distribution of the use of chemicals by welders

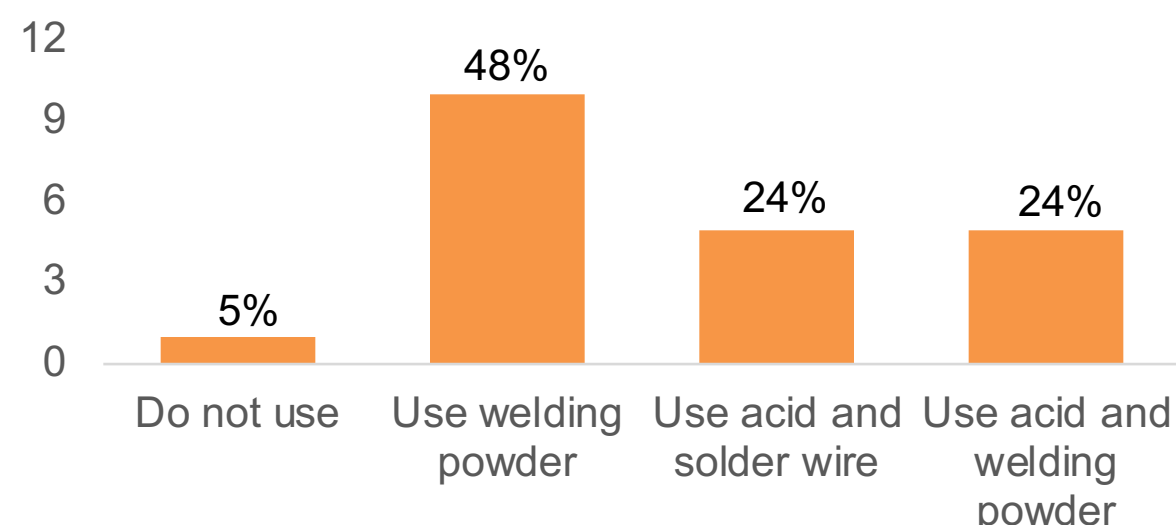
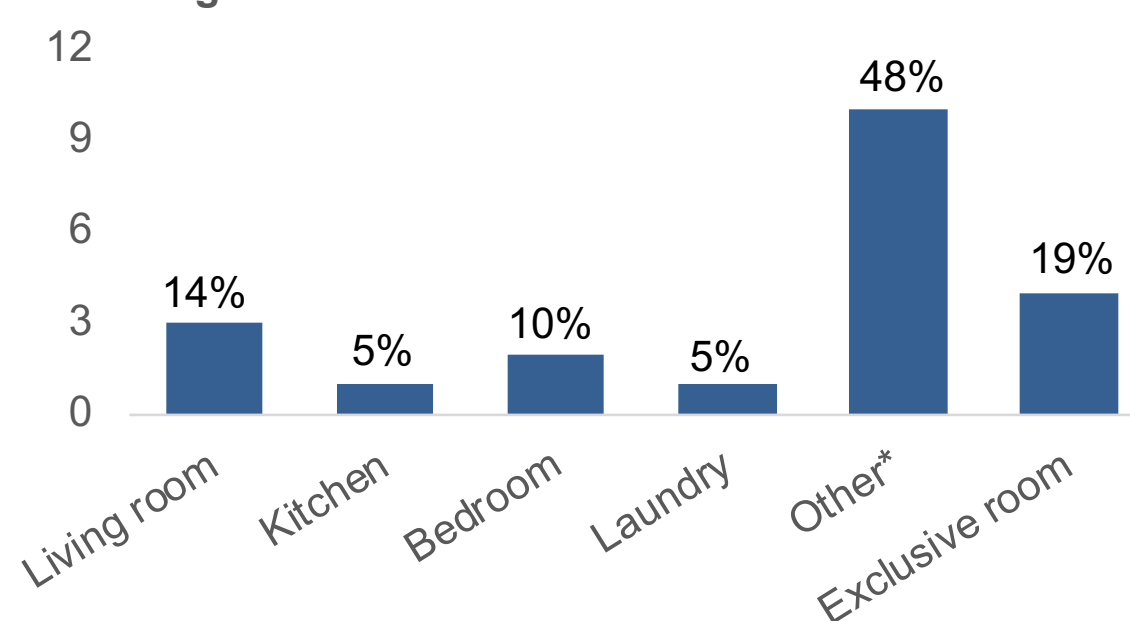


Figure 2. Distribution of welders' work stations



* Backyard, balcony.

CONCLUSIONS

The households who use soldering wires are more exposed to Pb and the ones who use soldering powders are more exposed to Cd. As they do not use protective equipment and work in precarious places, the Cd and Pb in the welding fumes can be a health risk to the children who live in those places. Ongoing studies including health risk evaluation are crucial to understanding deeply the risks for children development.



Figure 3. Welding Working Stations

ACKNOWLEDGMENTS

