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**“Old and new risks: challenges
for environmental epidemiology”**

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DIEP/Lazio
Department of Epidemiology
Lazio Regional Health Service
Italy (ex ASL RomaE)



SISTEMA SANITARIO REGIONALE

**ASL
ROMA 1**



**REGIONE
LAZIO**



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- P1-209 **Using Multiple Spatial Measures to Examine Pathways between Residential Green Space and Birth Outcomes in Austin, Texas**
*Leanne Cusack**
- P1-210 **Visual impact of urban greenness on birth outcomes in Greater London**
Daniela Fecht, Isabelle Anderson, Rebecca Ghosh, David Morely, Anna Freni Sterrantino, Susan Hodgson*
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- P1-213 **Assessing Cancer Risk from Heavy Metals in Recycling Waste Electrical and Electronic Equipment: Preliminary Results from the WEEENMODELS European Life Programme**
*Federica Violi, Alberto Modenese, Fabriziomaria Gobba, Anna Maria Ferrari, Bianca Rimini, Rita Gamberini, Martina Pini, Paolo Neri, Tommaso Filippini, Luigi Grasselli, Pinuccia Montanari, Marco Vinceti**

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Michele Cordioli, Andrea Ranzi, Claudia Pironi, Eriberto De Munari, Paolo Lauriola*
- P1-215 **Air Pollution per Land Use in the Eastern Caribbean**
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- P1-216 **Geostatistical Integration and Uncertainty in Pollutant Concentration Surface under Preferential Sampling**
Laura Grisotto, Dario Consonni, Lorenzo Cecconi, Dolores Catelan, Michele Carugno, Corrado Lagazio, Pier Alber to Bertazzi, Michela Baccini, Annibale Biggeri*
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Scott Bartell, Ghassan Hamra, Kyle Steenland*
- P1-218 **Confounder control using incidence pattern for cancers related to tobacco and alcohol**
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SungChul Seo, Ki-Youn Kim, Hanjong Ko, Dohyeong Kim*



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Abstract Number: P1-213 | ID: 4754

Assessing Cancer Risk from Heavy Metals in Recycling Waste Electrical and Electronic Equipment: Preliminary Results from the WEENMODELS European Life Programme

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Introduction

The growing amount of waste derived from electrical and electronic equipment (WEEE) poses significant challenges to waste management, due to the presence of toxic chemicals with environmental and health implications for the general population and for occupationally-exposed workers.

Methods

Based on a toxicological and epidemiologic evaluation, we carried out a health risk assessment to evaluate the cancer risk deriving from environmental and occupational exposure to heavy metals released during different WEEE recycling procedures (electronic scrap in blister copper, treatment of metals recovery in copper smelter, treatment of shredding, pyrometallurgical treatment of Li-ion battery). We considered the typical WEEE production in a municipality of 150.0000 inhabitants, carrying out a Life Cycle Assessment. Outdoor (1 square km around a treatment plant) and indoor (for a factory volume of 3200 m³) emissions generated during the WEEE recycling procedures were computed. In particular, we estimated the amount of Cd, Ni and As inhaled by the potentially exposed population. We computed the cancer risk due to inhalation of these heavy metals in residents and workers using the methodology proposed by the California Office of Environmental Health and Hazard Assessment

Results

For the metals considered, our results showed negligible cancer risk (from 2,21x10⁻¹¹ to 4,31x10⁻⁰⁸) for the general population around the plant. On the converse, occupational exposures linked to specific procedures were associated with a cancer risk of 1,42x10⁻³ for workers in the shredding procedures mainly due to Ni exposure, and of 4,68x10⁻⁴ for workers with electronic scrap and exposed to As.

Conclusions

Based on our preliminary results from an integrated toxicological and epidemiologic approach, WEEE life cycle may be linked to health risks for workers in the recycling procedures, while it does not seem to adversely affect health of the general population around the treatment plants.

