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Sorveglianza sulla salute della Popolazione nei pressi del Termovalorizzatore di Torino

Persistent organic pollutants in adults living near a Waste-to-Energy plant: a biomonitoring study after eleven years of operation

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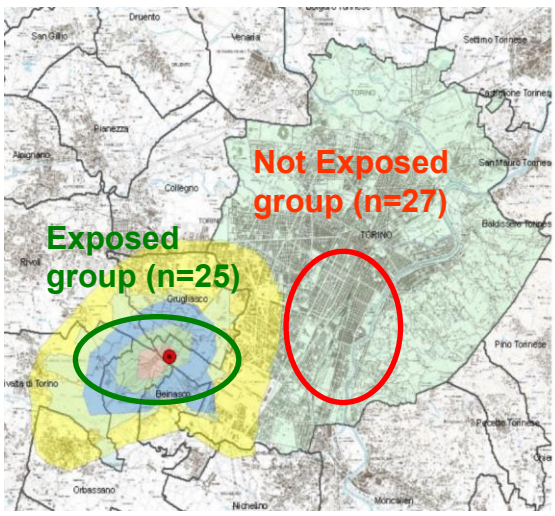
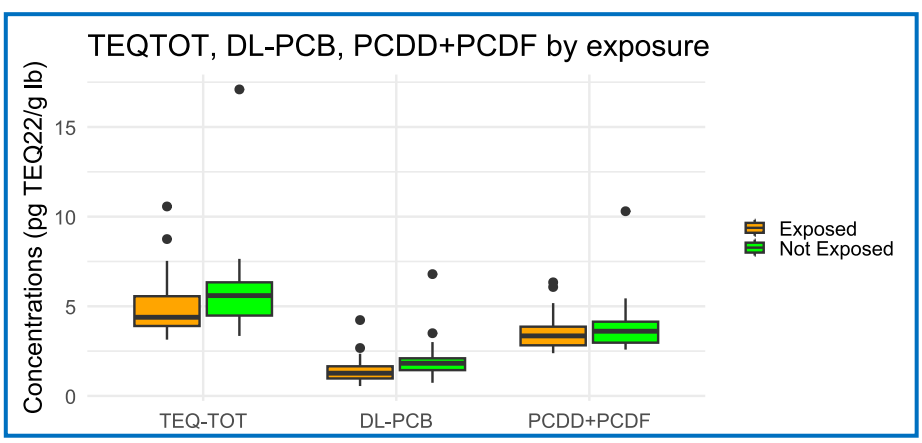
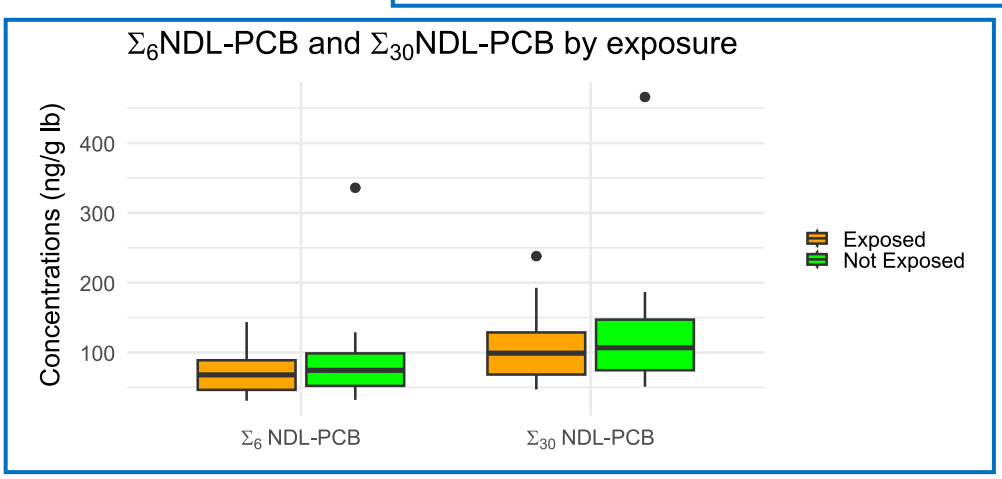


The blue and yellow areas represent two different fallout levels; the red dot marks the WTE plant, the green area corresponds to the city of Turin

Third-generation Waste-to-Energy (WTE) plants represent a recent technological improvement in municipal solid waste treatment, though potential health impacts on nearby residents remain a concern. It has been operational since 2013, and a human biomonitoring (HBM) study was set up, including, among the priority substances of interest, polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), and polychlorinated biphenyls (PCBs). The original sample included 396 participants, with persistent organic pollutants assessed in 102 of them; after 11 years, this subsample decreased to 52 individuals.

No evidence of increased exposure to organic compounds attributable to WTE operation was found





- No gender-related differences were observed. Individuals with higher BMI have higher values, but not significantly. The comparison between exposed and not-exposed individuals is not confounded by age, as the groups are comparable. Older age class (> 50 years) shows significantly higher values for all pollutants (p-value<0.05 according to Wilcoxon-Mann-Whitney test).

- Multivariate analyses based on dietary habits and questionnaire-derived personal data revealed no significant associations, except for age (p-value<0.05 for all pollutants)

- Overall, a statistically significant decrease in organic compounds was observed across all biomonitoring time point, namely before plant start-up and after three and eleven years of operations.

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