

# HEALTH IMPACT ASSESSMENT AND MONETARY VALUATION OF LEAD EXPOSURE THROUGH LOCALLY PRODUCED FOOD IN EU MEMBER STATES UNDER DIFFERENT POLICY SCENARIOS

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**Background and Aims:** A case study has been performed which involved the full chain of assessments from policy drivers to health effect quantification at the population level across the EU-27, including monetary valuation of the estimated health impact. The main policy scenarios cover the period from 2000 to 2020 and include the most important Community policy developments expected to affect the environmental release of lead and the corresponding human exposure patterns. Three distinct scenarios were explored, namely the emission situation based on 2000 data, a business-as-usual scenario (BAU) up to 2010 and 2020, and a scenario incorporating the most likely technological change expected (Best Feasible Technical Reductions, BFTR) as response to current and future legislation (already planned).

**Methods:** Consecutive model calculations (MSCE-HM, Watson, Xtrafood, IEUBK) were performed by different partners on the project as part of the full chain approach to derive estimates of Pb blood levels in children as a consequence of the consumption of local produce.

**Results:** The estimated Pb blood levels were translated into an average loss of IQ points/child using an empirical relationship previously established at Vito. The calculated losses in IQ points were subsequently further translated into the average costs/child using a cost estimate of € 10.000 per IQ point based on data from a literature review. The estimated average reduction of costs/child (%) for all countries considered in 2010 under BAU and BFTR are 12.16 and 18.08%, respectively. In 2020 the percentages amount to 20.19 and 23.39%.

**Conclusions:** The case study provides an example of the full-chain impact pathway approach taking into account all foreseeable pathways both for assessing the environmental fate and the associated human exposure and the mode of toxic action to arrive at quantitative estimates of health impact assessment at the individual and the population risk levels alike at EU scale.

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