

# Valutazione degli effetti conseguenti a basse dosi di mercurio inorganico da esposizioni ambientali ed occupazionali. Considerazioni degli "osservatori esterni"

G.B. BARTOLUCCI, P. BOFFETTA\*, A. MANTOVANI\*\*, E. CHIESARA\*\*\*

Dipartimento di Medicina Ambientale e Sanità Pubblica, Università degli Studi di Padova

\* Unit of Environmental Cancer Epidemiology, IARC, Lione

\*\* Laboratorio di Tossicologia Comparata ed Ecotossicologia, Istituto Superiore di Sanità, Roma

\*\*\* Dipartimento di Farmacologia, Chemioterapia e Tossicologia Medica, Università degli Studi di Milano

## KEY WORDS

Mercury; low doses; occupational exposure; environmental exposure; early effects

## SUMMARY

**«Assessment of effects due to low doses of inorganic mercury following environmental and occupational exposure. A comment by the "invited observers"». Aims:** *This paper reviews the studies, both in vivo and in vitro, carried out for the project on low-dose effects of inorganic mercury, financed by the Italian Ministry of Universities and Scientific and Technological Research. Results, Comments and Proposal:* *The results offer both innovative aspects and potential practical applications. Particular attention is drawn to the reliability of biomarkers of exposure [mercury in urine (HgU) and blood (HgB), possibility of speciation] as well as to the availability of guidance values for risk assessment (reference value, action level, biological threshold value). In the general population, HgU and HgB levels are significantly related to the presence of dental amalgams and to fish consumption; nevertheless, such exposure levels do not elicit adverse health effects on renal, immune and nervous functions, according to the markers evaluated in the studies. The present biological threshold values for occupational exposure appear adequate to prevent health effects, considering the immune system, kidney and central nervous system as the target organs. However, possible effects of low doses of mercury on immune and neuroendocrine functions should be further examined; moreover, consideration should be given to the risk of consuming fish species with high Hg content, particularly concerning the renal and central nervous system effects. Finally, further studies should be planned on other potentially important effects, that could not be considered in this study, such as those on prenatal development, the cardiovascular system and the thyroid gland.*

Pervenuto il 5.2.2002 - Accettato il 5.4.2002

Corrispondenza: Prof. Giovanni Battista Bartolucci, Dipartimento di Medicina Ambientale e Sanità Pubblica - Medicina del Lavoro, Università degli Studi di Padova, Via Giustiniani, 2 - 35128 Padova