

# **Introduzione: scopi e finalità del progetto multicentrico “Valutazione degli effetti conseguenti a basse dosi di mercurio inorganico da esposizioni ambientali ed occupazionali: studio dei meccanismi di tossicità specifica *in vitro* nell'uomo”**

L. ALESSIO, P. APOSTOLI, I. CORTESI, L. LUCCHINI

Cattedra di Medicina del Lavoro e Cattedra di Igiene Industriale, Università degli Studi di Brescia

## **KEY WORDS**

Mercury; occupational exposure; early effects; dental amalgam; fish consumption

## **SUMMARY**

**«Objectives and aims of the multicentre project “Assessment of effects due to low doses of inorganic mercury following environmental and occupational exposure: human and *in vitro* studies on specific toxicity mechanisms”».** The principal aims of the project financed by the Italian Ministry of University and Scientific and Technological Research were: to verify if at the current limit values early biological effects can be demonstrated; to identify the levels of internal dose that can cause early effects; to evaluate the non-occupational factors that can contribute to the levels of internal dose. In particular, the mercury intake derived from dental amalgams and fish consumption was considered. The internal dose was measured with the traditional biological indicators (urinary and blood mercury) and with the speciation of a large percentage of biological samples by ICP-MS. The central nervous system, neuroendocrine function, kidney and the immune system were considered as target organs and were examined using previously standardized indicators of effects. Two groups of subjects were included in the study: workers with occupational exposure to inorganic mercury in different industrial settings and control subjects identified from the general population. The first group was characterized by an exposure level to inorganic mercury clearly below the current limit values; whereas the HgU levels of a relevant number of control subjects were similar to those measured in the exposed subjects. The *in vitro* studies covered several issues: the percutaneous absorption of mercury using skin derived from human post-mortem samples in a standardized model; the release of the metal from dental amalgams in different physiological conditions of the oral cavity; the effects of increasing doses of mercury chloride on tubular renal cells. The project was realized with the cooperation of seven Research Units from six Italian Universities. Researchers belonging to Departments of Occupational Medicine, Industrial Hygiene, General Pathology, Biochemistry, Odontology, and Biostatistics were involved to achieve a multidisciplinary approach. The results of this research project are described and discussed in the following papers.

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Corrispondenza: Prof. Lorenzo Alessio, Cattedra di Medicina del Lavoro, Università degli Studi di Brescia, p.le Spedali Civili 1, 25123 Brescia