

Studio *in vitro* dell'assorbimento transcutaneo del mercurio inorganico dal terreno solido

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KEY WORDS

Mercury; percutaneous penetration; *in vitro*

SUMMARY

«In vitro study on the percutaneous absorption of inorganic mercury from contaminated soil». Objectives: *Skin is such an important route of absorption of mercury compounds that the ACGIH has assigned them a skin notation. Soil has been recognised as a potential source of exposure to chemical contaminants. It therefore seems advisable to establish maximum daily exposure levels for mercury in soil. In the past, areas adjacent to certain industries and smelters were heavily contaminated by mercury. For example, on Monte Amiata in Tuscany, which was an important mercury mining and production centre in the past, several areas have been polluted. To understand the dermal uptake of chemicals bound to soil and dust, information on the pure substance is helpful but does not seem sufficient. Other factors must be accounted for, that can easily be reproduced and controlled in in vitro experiments.* **Methods:** *Using an in vitro diffusion cell system and human skin, we studied percutaneous penetration of mercury chloride (HgCl₂) at different concentrations, with particular emphasis on skin absorption from soil. The test apparatus consisted of a flow-through diffusion cell system. Dermotomed human cadaver skin was used as the membrane, while the receiving liquid was a saline solution with 6% PEG-20 oleyl-ether and gentamycin sulphate. Mercury chloride was applied at two different concentrations using a buffered solution and soil as vehicles.* **Results and Conclusions:** *Increments of percentage of absorption at the different hours were found to be significantly lower in the cells where the higher concentration of mercury chloride was applied. In the receiving fluid of cells where soil was used as vehicle, the concentration of mercury was always below the detection limit. Skin contamination with soil containing inorganic mercury does not seem to be a dermal risk.*