

Hostynek, J. J. and H. I. Maibach. 2003. Copper hypersensitivity: dermatologic aspects--an overview. *Rev. Environ. Health* 18:153-183.

Abstract: Reports of immune hypersensitivity reactions of both the immediate and the delayed type following cutaneous or systemic exposure to copper are reviewed here in an endeavor to draw a comprehensive profile of the immunogenic potential of that metal and its compounds. The immunotoxic potential of the metal is also briefly reviewed. In principle, as noted for other transition metals, the electropositive copper ion is potentially immunogenic because of its ability to diffuse through biological membranes, forming complexes when in contact with tissue protein. Based on the results of the predictive guinea pig test and the local lymph node assay (LLNA), copper has a low sensitization potential. Reports of immune reactions to copper include immunologic contact urticaria (ICU), allergic contact dermatitis (ACD), systemic allergic reactions (SAR) and contact stomatitis (STO), but considering the widespread use of copper intrauterine devices (IUDs) and the importance of copper in coinage, items of personal adornment and industry, unambiguous reports of sensitization to the metal are extremely rare, and even fewer are the cases that appear clinically relevant. Most reports of immune reactions to copper describe systemic exposure as a cause--predominantly to intrauterine devices and to prosthetic materials in dentistry--implicitly excluding the induction of hypersensitivity from contact with the skin as a risk factor.