

LIGHT INDUCED DECOMPOSITION OF INKS**Urs Hauri**^{1,2}, Maurice Adatto³¹*Kantonales Laboratorium Basel-Stadt; (Basel, Switzerland)*²*Lc-Labor Non-Food; (Basel, Switzerland)*³*Skinpulse Dermatology & Laser Centre; (Geneva, Switzerland)*

Introduction: Photodegradation is one of the reasons for tattoo fading and laser irradiation is the method of choice for tattoo removal. Both processes can release potentially toxic contaminants from the decomposition of the pigments and should therefore be taken into account in the evaluation of pigments for tattooing.

Methods: Tattoo inks were diluted with water and subjected to laser irradiation. Inks and pure pigments were placed between glass plates and subjected to artificial sunlight. After irradiation, samples were analysed with liquid chromatography coupled to mass and photo spectrometric detection.

Results/Discussion: Laser irradiation of inks containing the pigments C.I. 21095, 21108 and 21110 always lead to the formation of 3,3'-dichlorobenzidine. O-toluidine and 2,4,5-trichloroaniline were observed after laser irradiation of C.I. 12370 and aniline after laser irradiation of C.I. 21110 and C.I. 11767.

Artificial sunlight irradiation leads to similar degradation products. In addition, we found 3,3'-dichlorodiphenyl after irradiation of C.I. 21110 and C.I. 21095 and 3,3'-dimethoxydiphenyl after irradiation of C.I. 21160.

Several factors complicate the detection of degradation products like the instability of some degradation products under irradiation with artificial sunlight or the presence of high concentrations of impurities in the pigments. More information is needed about photodegradation processes of non-azo pigments to identify their decomposition products.

Conclusion: In vitro analytical screenings provide evidence that azo pigments are degraded to problematic contaminants by laser or sunlight irradiation. In the light of these findings, it is time to consider results from photodegradation studies to amend the negative list for pigments in tattoo inks.