

### Pollution, Skin and Hair

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The impact of pollution on human health is a significant concern worldwide. In addition to the effect of air pollution on the respiratory system, air pollution has a significant impact on the skin. UVR together with pollution are considered as the most common cause of extrinsic skin aging arising from oxidative stress and leading to lipid and protein oxidation. To evaluate the effect of pollution on the skin, we have developed a unique Controlled Pollution Exposure System (CPES) which allows the quantified administration of pollutants on the skin and analysis of their direct impact. We show that pollution is capable of inducing an oxidative stress leading to upregulation of pro-inflammatory cytokines and skin collagenases such as MMP-1. This results in the destruction of the elastic and collagen fibers and thus to the premature ageing of the skin.

In addition to the analysis of the effect of pollution on the skin, the CPES system can be adapted to monitor the effect of pollution on the hair. We have observed that the air pollution has detrimental effects on the cuticle morphology of the hair as well as on the hydrophobicity and tensile strength of the hair.