Reactive oxygen stress generating capacity and inflammatory potential of settled dust samples from moisture damaged and reference schools.

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Exposure to moisture damaged indoor environment is associated with adverse respiratory health effects, but responsible factors remain unidentified. In order to elucidate the mechanism behind these effects, Reactive Oxidative Stress (ROS)-generating capacity of settled dust samples (n=25) collected from moisture damaged and reference schools in Spain, The Netherlands and Finland was evaluated. In addition, the results were compared with immunotoxicological endpoints analysed with an *in vitro* model.

ROS capacity was assessed with a plasmid scission assay (PSA), which determines the dose able to damage 50 % of DNA from a plasmid sensitive to ROS (TD_{50} value). In addition, immunotoxicological endpoints such as production of inflammatory markers as well as mitochondrial activity, viability, apoptosis and cell cycle arrest were analysed *in vitro* using mouse RAW264.7 macrophages as a model.

The average TD_{50} values showed that samples from moisture damaged schools in Spain and The Netherlands had higher ROS capacity compared to samples from reference schools, whereas the capacity of Finnish samples was lower with no clear difference between the schools. The results were in line with the findings of an *in vitro* model showing significant geographical differences and a trend for higher potency of samples from moisture damaged environments in two out of three countries. The results indicate that ROS producing capacity of indoor dust tends to be higher in moisture damaged buildings, but geographical differences and high variance confounds the differentiation between moisture damaged and reference environments.