LEdELSOE OF OCCUPATIONAL EXPOSURE TO SOLAR ULTRAVIOLET RADIATION IN VANCOUVER, CANADA

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Introduction
Outdoor workers are at high risk of exposure to solar ultraviolet radiation (UVR), a known human carcinogen. In Canada, construction workers represent the largest group of outdoor workers at risk, but no objective measures of UVR exposure are available. The purpose of this study was to measure UVR exposure levels in this at-risk occupational group.

Methods
The Outdoor Workers Project collected UVR exposure data among mainly construction workers in Vancouver, Canada during the summer of 2013. Objective measures of exposure were taken for one work week using calibrated electronic UVR dosimeters. Additional data was collected from workers on skin cancer risk factors, family history of skin cancer, and job type, as well as meteorological data for sampling days. Marginal models were constructed to examine the worker, job and meteorological determinants of UVR exposure levels, as measured in Standard Erythemal Dose (SED).

Outcomes
Seventy-eight workers were recruited, of which seventy-three had at least one day of measured UVR exposure for this analysis. Participants were mostly male, young and Caucasian. Mean exposure (corrected for repeated measures) was 1.08 SED, which is approximately 3 times the recommended exposure limit. Exposure measures were highly variable even in the same workplace, ranging from 0.01 SED to 19.2 SED. The only significant determinants of higher UVR exposure in the final marginal models were weather (sunnier weather leading to higher exposure), higher UV Index, and number of hours spent outdoors.

Relevance
Exposure levels capable of causing sunburn were common in the present study of outdoor workers, in a location not typically associated with high sun exposure. High risk days were identified via standard forecasting systems and could be used in policies to lower outdoor workers' exposure to UVR.