

# ASSESSMENT OF EXPOSURE TO POTENTIAL LUNG CARCINOGENS IN XUANWEI AND FUYUAN, CHINA: PARTICULATE EXPOSURE FROM COOKING AND HEATING STOVES

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**Backgrounds and aims:** Residents in Xuanwei, China have the highest lung cancer incidence rates in China for both men and women. Several lines of research have provided strong support that the excess lung cancer rate in this region is caused primarily by emissions from smoky coal exposure. In order to develop individual estimates of exposure to known or suspected lung carcinogens for an ongoing case-control study, we designed a comprehensive exposure assessment study of 163 households in this region to evaluate exposure to PAHs, PM<sub>2.5</sub>, silica, and other exposures from coal and wood burning.

**Methods:** Homes that used three main fuel types (i.e., smoky coal, smokeless coal and wood), and eight stove types [e.g., firepit, fixed or portable stove, with or without ventilation] were identified and households were sampled on two consecutive days. The female head of each household was asked to wear a 24-hour personal PM<sub>2.5</sub> air sampler at the same time that 24-hour area air sampling was employed in the main living area. We also collected information on potential factors that could influence exposure, such as house characteristics, stove type, fuel type and use and amount of time spent in each room.

**Results:** Initial analyses showed that people using wood burned in firepits were exposed to the highest levels of PM<sub>2.5</sub> measured in area (536.3±370.5 µg/m<sup>3</sup>) and personal samples (419.8±283.3 µg/m<sup>3</sup>). Burning smokeless coal in a high stove with a chimney was associated with the lowest exposure to PM<sub>2.5</sub> (62.2±34.1 µg/m<sup>3</sup>, 62.5±29.9 µg/m<sup>3</sup> for area and personal samples, respectively).

**Conclusions:** These data show that there is a wide range of exposure to PM<sub>2.5</sub> in this population. These data and other exposure information from this study will be used in the future to model environmental exposures and risk of lung cancer in this special, high risk population.