

employs spatiotemporal correlation analysis to examine patterns of co-occurring ozone and pollen concentrations. The outcomes of this study provide information that could support development of strategies for managing health-impacts of co-occurring photochemical pollutants and aeroallergens.

Keywords: A-climate change, A - ambient monitoring, B - ozone

#### **SU-PO-25**

##### ***Heat and Hydration Assessment of Migrant Grape-Workers in Sonora, Mexico***

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**Abstract:** The demanding physical labor that makes agricultural production possible in Northern Mexico is exacerbated by extreme temperatures, migration, and lack of health and safety oversight on a national level. This study addressed heat and hydration in a commercial grape farm in Northern Mexico where 95% of the land is classified as arid or semi-arid. Notably, one-third of Mexico's heat-related deaths reported from 2002 to 2010 occurred in agricultural workers in this region. Migration status, low socio-economic ranking, and poor literacy rates contribute to the vulnerability of workers in this region to heat exposure. Furthermore, there is growing concern about the direct and indirect health effects of climate change, especially in regions such as Sonora that have limited access to resources and occupational health control methods. A total of 38 participants were recruited for three sampling periods during spring and summer 2016. For each sampling period, an oral questionnaire was administered in Spanish; core body temperature was measured using ingestible thermometers; urine was collected and analyzed for specific gravity; and the effective Wet-Bulb Globe Temperature (WBGT) and metabolic rate were calculated. The majority of participants listed Chiapas as their home state, nearly half spoke an indigenous language as well as Spanish, most were between the ages of 18 and 24, and none had completed high school. The effective WBGT was higher during the summer. However, the core body temperature of workers in the spring were not significantly different than the core body temperatures of workers in June and August. As indicated by urine specific gravity, the majority of workers in all months were either mildly or clinically dehydrated. These results indicate the need for enhanced administrative and engineering controls, policies, and binational collaborations to reduce levels of heat stress and dehydration in agricultural workers in Northern Mexico.

Keywords: D-occupational, D-susceptible/vulnerable, D-environmental justice, A-climate change, A-workplace

#### **SU-PO-26**

##### **Health Risk Ranking Assessment of Human Exposure to Multiple Air Pollutants Emitted from Municipal Solid Waste Incineration in China**

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**Abstract:** Municipal Solid Waste Incineration (MSWI) has developed rapidly with doubled increase in China during 2010-2015. However, risk level of MSWI as well as its spatial distribution were still unknown. A systematic risk identification and ranking assessment is essential to improve effectiveness and pertinence of risk management. In this study, we developed a health risk ranking framework and applied it to assess the MSWI related risk across China. Firstly, a bottom-up multiple-pollutant emission inventory was calculated based on detailed information of 222 MSWIs in mainland China and localized emission factors from literature investigation. Then a Gaussian Plume Model was used to simulate the dispersion of pollutants emitted by each MSWI, considering the perennial dominant wind direction and mean wind speed. Finally, spatialized and population-weighted Hazard Index (HI) and Relative Risk (RR) were calculated to evaluate both non-carcinogenic and carcinogenic health risks caused by individual respiratory exposure from heavy metals and PCDD/Fs. Results show that, in 2015, 59651.6 t of NO<sub>x</sub>, 20072.2 t of SO<sub>2</sub>, 13215.3 t of CO, 7240.0 t of HCl, 4392.5 t of particulate matter (PM), 26.0 t of Pb, 25.8 t of Cr, 15.5 g of Hg, 5.0 t of Cd, 3.4 t of Ni, 273.2 kg of As, and 73.2 g-TEQ of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/Fs) were emitted by MSWI in mainland China. The

# ISES2017

# ABSTRACT BOOK



Integrating Exposure Science Across Diverse Communities

Research Triangle Park, NC, USA

October 15-19, 2017



Date: 10.6.17