

## Poster Presentation

## Chemicals

0226

**AFFECTION IN THE AUDITORY BRAINSTEM PATHWAY ASSOCIATED WITH OCCUPATIONAL, LOW-LEVEL EXPOSURE TO ETHYLBENZENE**

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**Introduction** Hearing loss in occupational exposure to a solvent mixture has been already reported; however, mixture in those reports did not contain ethylbenzene, a compound showing peripheral ototoxicity in animals exposed to high levels. In this work, we evaluated the auditory brainstem pathway in two samples of workers exposed to different levels of a solvent mixture where ethylbenzene was present, compared to a reference group.

**Material and methods** Individual exposure levels for up to seven compounds were obtained in two groups: Exposed (n=21 gas station attendants, GS, and leather shoe factory workers, LS) and Non-exposed (n=21, administrative workers) all of them from the city of León Guanajuato, México. The click-evoked auditory brainstem response test was performed in both groups.

**Results** Toluene, n-hexane, acetone, ethylbenzene, xylene and methyl ethyl ketone exposure levels were higher in LS (p<0.001). Only n-hexane exposure levels were above the permissible levels, while mean ethylbenzene exposure levels ranged 0.4–14.58 mg/m<sup>3</sup>. Wave V latency at four different points of stimulation for both ears was delayed in the exposed group, as well as the I-V and I-III interwave latencies at 70 dB (p<0.05). LS workers showed a delayed I-III interpeak interval compared to non-exposed group. Also in LS, ethylbenzene exposure levels showed a significant correlation with wave V latency at 40 dB (r=0.8, p=0.008).

**Conclusion** Our results point out to a central affection in the auditory system caused by ethylbenzene in a dose response manner. Workers exposed to ethylbenzene levels far below the permissible exposure limit should be closely monitored for early ototoxicity effects.

## Oral Presentation

## Working Conditions

0227

**RISK OF HEAT RELATED ILLNESS: DIFFERENCES BETWEEN MALE AND FEMALE FARMWORKERS WITH RESPECT TO HYDRATION PRACTICES**

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**Introduction** Dehydration is a major risk factor for Heat Related Illness (HRI) in farmworkers.

**Methods** 587 acclimatised Latina/o farmworkers were monitored once each, in the hot, dry, California Central Valley over the summers of 2014–2015. Weight was recorded before and after the shift in a minimum level of clothing to assess change in hydration. To assess activity, accelerometers were worn, and questionnaires were administered in Spanish to collect occupational characteristics.

**Results** 66.2% of the participants were male; both sexes had a mean age 38.7 years. Men drank more, either total or just water (adjusted for height) than women (mean volumes 112 v 77oz, or 97 v 67 oz, PVal <0.001 for both). However men were more likely to lose ≥1.5% of their body weight: 64 (16.5%) v 6 (3.0%) women PVal <0.0001. Shift lengths were similar, but both total and mean activity levels were higher in males 2 02 000 v 1 33 000 and 391 v 255 counts per minute, respectively PVal <0.0001 for both.

Being male, working any type of piece rate and higher mean activity were all independently associated with weight loss over the shift in a multivariable linear regression model. Parameter and (95% CI) respectively: - 0.31 (- 0.43 to - 0.19), 0.18 (0.05–0.309), and mean cpm/100 0.022 (0.001–0.045).

**Conclusion** Male Latino farmworkers are more at risk of dehydration especially those who work high activity tasks or any form of piece rate. Employers should focus special attention on the safety of these workers.

## Poster Presentation

## Risk Assessment

0229

**RISK OF HEAT RELATED ILLNESS IN LATINO AGRICULTURAL WORKERS: CORE BODY TEMPERATURE AND WORK TASK**

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**Introduction** Environmental heat and work-rate are risk factors for Heat Related Illness (HRI). Work-rate by task and core temperature have not been quantified in California farmworkers.

**Methods** Farmworkers were monitored for one work-shift each in the summers of 2014–2015. Individuals' core temperature was assessed throughout the shift using an ingestible sensor, a 3 min moving average computed and maximum temperature identified. Accelerometers were worn, and NHANES criteria used to classify counts per minute (cpm) into sedentary, low, moderate and vigorous activity. Daily work-rate was categorised by the number of minutes spent in moderate and/or vigorous activity (<30, 30 to 90, >90). Questionnaires administered in Spanish collected occupational tasks conducted and self-rated environmental heat exposure.

**Results** 499 Latina/o farmworkers performed only one task on their shift. The mean activity in cpm was highest for tree/vine harvesters 445 (SD 225) and lowest for produce sorters 193 (SD 167). 22 workers recorded a maximal core temperature >38.5°C, a criteria for heat stress in acclimatised workers. In a multivariable logistic regression high body temperature was associated with both the number of minutes