

## INTRODUCTION

The Communities Actively Researching Exposures Study (CARES) is a longitudinal pediatric cohort of children living in Marietta, Ohio near the longest operating ferro-manganese (Mn) refinery in North America.



Inhaled Mn accumulates in the basal ganglia region of the brain which is primarily responsible for motor control. We have previously shown CARES children (7-9 years old) and adolescents (13-18 years old) with higher concentrations of blood and hair Mn demonstrated postural instability.

No study has examined the impact of pediatric Mn exposure on injury.

## CARES STUDY DESIGN

<b>Recruitment 2008-2013</b>  Child age 7 to 9 years; Lived in the community for entire life	<b>Child and Adolescent Exposure Biomarkers</b>  Blood Mn, Pb; Serum Cotinine; Hair Mn; Toenail Mn	<b>Child and Adolescent Neuromotor Measures</b>  Postural Balance	<b>Young Adulthood Measure</b>  Injury Survey
--	--	---	--

## RESEARCH QUESTION

Is early life Mn exposure associated with injury?

*We hypothesize child and adolescent biomarkers of Mn exposure will be associated with injury variables.*



## METHODS

Disseminate survey to characterize injury trends in the CARES cohort now that they aged into young adulthood

Conduct multivariable linear regression models to examine the association between childhood (ages 7-9 years) and adolescent (ages 13-18 years) biomarkers of Mn exposure, measured in blood, hair and toenails, and self-reported injury data (e.g. event, work-related, body part, limited activity)

## NORA RELEVANCE

This study will contribute to the Manufacturing sector and Musculoskeletal Health cross-sector research agendas to reduce the burden of occupational illness, enhance knowledge of occupational safety, and develop effective interventions to reduce exposure.

## RESEARCH 2 PRACTICE

- Partner with young adult community members as they enter the labor force
- Identify occupational safety and health needs for young adults exposed to Mn
- Contribute to the development of interventions to prevent injury

## FUTURE FUNDING

- Follow CARES into adulthood
- Implement intervention study to prevent injury

## ACKNOWLEDGEMENTS

National Institute of Environmental Health Science R01 ES016531; R01 ES026446; National Institute for Occupational Safety and Health through the Pilot Research Project Training Program of the University of Cincinnati Education and Research Center Grant #T42OH008432