GM was highest among bogger operators 0.53 mg/m³ (GSD=0.27) and the least among truck operators 0.29 mg/m³ (GSD=0.37). While for open pit, the highest GM was found among quality controllers 0.39 mg/m³ (GSD=0.18) and the least among in truck operators 0.13 mg/m³ (GSD=0.15). Respiratory symptoms were phlegm (49.1%), Breathlessness (42.9%), cough (37.5%), wheezing (18.8%) and chest tightness (10.7%). Prevalence of airflow obstruction (FEV1/FVC<0.75) was 7.7% among non smoking miners.

Discussion Despite the fact that levels of respirable dust exposure were below recommended occupational exposure limits, prevalence of respiratory symptoms was still high among gold miners. There is a need to conduct further studies on quartz.

Result It is anticipated that the implementation of targeted workplace ergonomic interventions in conjunction with a participatory MSD prevention program will provide a comprehensive approach to MSD risk factor identification and prevention strategies. Moreover, it is expected that the intervention components will increase communication and decision latitude within core-shack operations.

Discussion The prevalence of musculoskeletal injuries with the Canadian mining industry is of particular concern. The dissemination of this study will be shared with participating mines so improvements can be made to aid in worker health and safety and prevention of musculoskeletal injuries.

**EFFECTIVENESS OF PARTICIPATORY ERGONOMIC INTERVENTIONS AND A MUSCULOSKELETAL DISORDER PREVENTION PROGRAM ON THE REDUCTION OF MUSCULOSKELETAL RISK-FACTORS IN CORE-SHACK OPERATIONS**

1X Whelan, 1J Eger, 1Laurentian University, Sudbury, Canada; 2Centre for Research in Occupational Safety and Health, Sudbury, Canada

**Introdaction** Workplace musculoskeletal disorders (WMSDs) give rise to approximately 44% of compensation claims each year within the Canadian mining sector. Despite the immensity of reported WMSDs little research has been conducted within said population. The purpose of this study is to examine the effectiveness of physical ergonomic interventions and a participatory MSD prevention program on the reduction of MSD risk-factors within core-shack operators. Anecdotal evidence suggests that the awkward postures, excessive force requirements, and repetitive material handling found within core-shack operations may be placing workers at a greater risk for MSD development; however, no previous research has been conducted.

**Methods** Amalgamation of observational based MSD screening tools and direct joint-angle measurements via a mobile movement analysis and motion capture system (NOTCH) will be used. Siemens Classic Jack human modelling software will be utilised to provide ergonomic assessments within a simulated environment. Resultant data will be used to develop targeted physical ergonomic interventions to mitigate MSD risk-factors within at-risk tasks. The Occupational Health and Safety Council of Ontario (OHSCO) MSD Prevention Toolbox 3C and New South Wales Mine Safety and Advisory Committee MSD Prevention Guide will be used as a reference for the development of a participatory MSD Prevention Program.

**Result** It is anticipated that the implementation of targeted workplace ergonomic interventions in conjunction with a participatory MSD prevention program will provide a comprehensive approach to MSD risk factor identification and prevention strategies. Moreover, it is expected that the intervention components will increase communication and decision latitude within core-shack operations.

**Discussion** The prevalence of musculoskeletal injuries with the Canadian mining industry is of particular concern. The dissemination of this study will be shared with participating mines so improvements can be made to aid in worker health and safety and prevention of musculoskeletal injuries.

**HEALTH AND SAFETY TRAINING ON LEAD EXPOSURE FOR ARTISANAL AND SMALL-SCALE GOLD MINERS IN ZAMFARA STATE, NIGERIA**

1Kadiri Shamusideen*, 2Sels Dakwak. 1Principal Consultant, Zub Chord Technical Ventures, Lagos Nigeria; 2Deputy Director, Industrial Training Fund, Jos Nigeria

**Abstract** Artisanal and small-scale gold mining (ASGM) has long been practiced in Nigeria. Mining often involves both occupational and community health and safety hazards that not only affect miners, but also their families and communities. In Zamfara, Nigeria where the gold bearing deposits contain unusually problematic concentrations of lead these are overwhelmed by the enormous effects of lead poisoning. In 2010, unregulated small-scale miners in Zamfara state, gave rise to an epidemic of childhood lead poisoning, with at least four hundred children under the age of five dying within a six-month period (a number that rose to over 700 by 2013). It was found out that a lack of training in Health and safety and support to the ASGM sector, and the need for the miners...