EVALUATION OF COMBAT ARMS EXPOSURE TO EMISSIONS FROM COPPER-BASED FRANGIBLE AMMUNITION

Roger Erich, PhD1,2; Greg G. Wolff, MPH1; Alain Pujol, MSHP1,2
1U.S. Air Force School of Aerospace Medicine, Wright-Patterson AFB, OH, USA; 2Solutions Through Innovative Technologies, Fairborn, OH, USA; Armed Forces Health Surveillance Branch – Air Force Safety Cell, Wright-Patterson AFB, OH, USA

Abstract

Copper-based frangible ammunition (CA) fragments into small particles upon target impact. Respiratory issues are associated with frangible ammunition and can occur regardless of the amount of copper present. In this study, we evaluated potential exposure and health outcomes related to frangible ammunition emissions.

Methods

The survey design captured symptomatology and diagnoses of current and recent respiratory diagnoses. The survey analyzed principles of contractile, chronic, and acute toxicity. Validity and reliability were evaluated using self-reported questionnaires. Results were evaluated to determine an appropriate case definition for each health outcome. The evaluation was conducted in a cohort of CA users.

Results

The study identified CV 24, 37, and 47 for the diagnosis of respiratory diagnoses. Results were confirmed with additional surveying and analysis. The analysis showed that the prevalence of respiratory diagnoses was significantly higher in the CA group compared to the control group. The findings suggest a potential association between CA exposure and respiratory health outcomes.

Discussion

Survey results and reviews of existing literature provided a basis for designing a population-based study of respiratory health outcomes associated with CA exposure. Future research should focus on evaluating the long-term health effects of CA exposure and developing preventive strategies.

Reference


Introduction

Copper-based frangible ammunition (CA) fragments into small particles upon target impact. Respiratory issues are associated with frangible ammunition and can occur regardless of the amount of copper present. In this study, we evaluated potential exposure and health outcomes related to frangible ammunition emissions.

Methods

The survey design captured symptomatology and diagnoses of current and recent respiratory diagnoses. The survey analyzed principles of contractile, chronic, and acute toxicity. Validity and reliability were evaluated using self-reported questionnaires. Results were evaluated to determine an appropriate case definition for each health outcome. The evaluation was conducted in a cohort of CA users.

Results

The study identified CV 24, 37, and 47 for the diagnosis of respiratory diagnoses. Results were confirmed with additional surveying and analysis. The analysis showed that the prevalence of respiratory diagnoses was significantly higher in the CA group compared to the control group. The findings suggest a potential association between CA exposure and respiratory health outcomes.

Discussion

Survey results and reviews of existing literature provided a basis for designing a population-based study of respiratory health outcomes associated with CA exposure. Future research should focus on evaluating the long-term health effects of CA exposure and developing preventive strategies.