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1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
03/26/2020	Master's Thesis	1 Sep 2018 - 26 Mar 2020

4. TITLE AND SUBTITLE

Retrospective Cohort Study of Pure Tone Audiometry Threshold Shifts from Ototoxic Substance, Continuous Noise, and Impulse Noise Exposures at Tinker Air Force from 2005 to 2019

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Blair, Marc J., Major

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

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13. SUPPLEMENTARY NOTES

14. ABSTRACT

This retrospective cohort epidemiology study sought to establish the comparative risks and indicators of hearing loss associated with combinations of ototoxic substances, impulse noise, and continuous noise exposure. After developing an integrated database model for Tinker Air Force Base, the largest of three depot installations within Air Force Material Command, 2,372 individuals were grouped into eight combinations of exposure groups with a minimum three years exposure duration to hazards. The incidence rates and relative risk of hearing loss indicators were calculated with five different pure tone audiometry evaluation methods. With the NIOSH Significant Threshold Shift criteria, a significant increase in risk occurred in the left ear at 2,000 Hz for the Metal/Solvent/Continuous exposure group (RR=2.44 CI 1.24-4.83) compared to a continuous noise only reference group. Descriptive and inferential statistical analysis confirmed a significant difference in hearing threshold shifts in the left ear at 2,000 Hz between this exposure group and reference exposure group. In the presence of continuous noise exposure, ototoxic effects on hearing loss could only be observed in the 1,000 and 2,000 Hz frequencies. Results indicate the current DoD Hearing Conservation

15. SUBJECT TERMS

ototoxic, impulse, pure tone audiometry, significant threshold shift, DOEHRS-IH, DOEHRS-HC, Hearing Conservation Program, STS, HCP, PTA

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
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