

## Abstract

### DEMOLITION WORKER LEAD EXPOSURE: VALIDATION OF PREDICTIVE MODEL USING WORKPLACE VARIABLES

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This study validated a linear regression model describing lead exposure in the demolition industry. A previous lead study (Phase I) of the demolition industry described lead exposure for many common demolition tasks by use of a multiple regression model. In this study 38 samples were obtained to validate the Phase I regression model. The 38 samples were limited to work categories and work sub-categories found in data used to form the Phase I regression model. Ambient lead values for the 38 samples divided into the work categories of demo&manual, cutting, and loadout were plotted against the expect lead value found from the Phase I linear regression model. The R-square value for the observed versus predicted lead values was 0.36. A similar analysis of tasks not involving "cutting" material improved the R-square value to 0.67. Residuals were analyzed in an attempt to explore the variability in the observed/predicted relationship. Of the variables used in the Phase I regression model, "fan" and "work" variables were identified as the most likely cause for the discrepancy between Phase II data and Phase I final predictions. The final evaluation of the Phase I regression model was to estimate 95% prediction intervals of the Phase I regression model. The 95% prediction interval for the mean predicted response has a range of 0.75 log-lead to 1.05 log-lead, and the 95% prediction interval for a single observation has a ranged from 0.0 log-lead to 1.8. log-lead.