

Biomarkers of Exposure to “Libby “ Asbestos

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Abstract

Previous studies by the Superfund Research and Training Program (SRP) have used newly available, state-of-the-art analytic methods to search for both previously characterized and novel biomarkers in people exposed to asbestos. These studies have inter alia identified 3 novel biomarkers of mesothelioma, in addition to previously described biomarkers. Libby MT, heavily contaminated with a unique mixture of amphibole asbestos fibers known as Libby Asbestos Amphibole (LAA), has a high incidence of mesothelioma and is the nation's first declared Public Health Emergency. CARD (Center for Asbestos Related Disease) funded by CDC follows the Libby population longitudinally, and has identified apparently unique features of LAA, including aggressive pleural disease and a high prevalence of immunological effects.

Serum from 40 volunteer former Libby workers with previous high LAA exposure and related pleural findings will undergo two types of biomarker analysis: a targeted analysis for known biomarkers (including the 3 novel biomarkers identified by the Blair laboratory in mesothelioma), and an untargeted analysis to detect new biomarkers. Potential associations between biomarkers and clinical data will be explored using CARD's extensive longitudinal data base. The results will be compared with those already obtained from each of three groups (also of 40 individuals each): a control group of unexposed individuals, subjects exposed to predominantly chrysotile asbestos in Ambler PA, and subjects from Philadelphia with mesothelioma.

In addition as pleural fluid samples become available in Libby subjects we will explore presence of biomarkers using similar methods.

The project is collaborative between the SRP and CARD. We expect the pilot will lead to publication and submissions to NIEHS in collaboration with CARD including for longitudinal studies. Collaboration and community translation will be further developed through presentation of the results and discussions with the Libby community and CARD researchers and through presentation and discussion of CARD research at Penn.