

Assessment of Respiratory Health Effects and Immunologic Sensitivity in Epoxy Resin Workers

Epoxy resin systems are used widely in industry and have been associated with occupational asthma, dermatitis and hypersensitivity pneumonitis (HP). An epoxy resin worker at a local manufacturing facility developed HP and required lung transplant. This patient had a positive lymphocyte proliferation test (LPT) to an epoxy hardener containing a proprietary amine and polydiamine. Our Specific Aims are: (1) To assess the prevalence of respiratory symptoms and abnormal spirometry in epoxy resin workers compared to manufacturing workers who do not handle epoxy resins; (2) To investigate the use of an epoxy resin lymphocyte proliferation test (ERLPT) as a biomarker of exposure and sensitization in at-risk workers compared to unexposed workers; and (3) To use this pilot study as the basis for a longitudinal medical surveillance program for epoxy resin workers in this industry to prevent work-related lung disease. Using employee lists and exposure data, we will recruit workers from two Colorado manufacturing sites who work directly with epoxy resin components. The comparison population will include a demographically similar set of newly-hired workers at the two sites who do not work with epoxy resin component. We will obtain questionnaire data, spirometry, and results of the newly developed LPT panel to epoxy resin components. We will compare the demographics respiratory symptoms, spirometry, and LPT findings between the exposed and control worker groups. We have to use the ERLPT to identify a subset of epoxy resin exposed workers who have developed specific sensitization and who may be at risk for lung disease. This pilot research program will lay the foundation for a high quality, longitudinal medical surveillance program for workers at risk for occupational lung disease in industrial settings using epoxy resins.