The study was aimed at evaluating the impact of the 1999 Department of Energy (DOE) beryllium rule on occupational exposures and the incidence of new cases of beryllium sensitization and chronic beryllium disease. The study hypothesis was that a quantitative reduction in exposure and disease due to implementation of the current rule at DOE facilities would be estimated and evaluated as a means of estimating the burden of disease that could be reduced with enactment of new proposed rules. This research could provide support for the rule-making as well as results in advances in the science of beryllium exposure and associated health effects.

**Methods**

All workers were employed at a single DOE nuclear site that was one of the earliest sites for which Beryllium Lymphocyte Proliferation Test (BeLPT) screening results are available for study for classification workers with BeLs. Workers were classified as BeLs when they met one of the following definitions:

- Two abnormal blood BeLPT results
- One abnormal and one borderline blood BeLPT result
- Three borderline blood BeLPT results
- One abnormal broncho-alveolar lavage (BAL) BeLPT result.

Descriptive statistics, longitudinal analyses, and correlation analyses were utilized to evaluate the trends in incidence before and after implementation of the beryllium rule. Approval for human subjects research was granted by the Oak Ridge Site-Wide Institutional Review Board. As a surrogate for latency of sensitization, time-to-sensitization was evaluated for the entire cohort by the number of months from first signal to sensitization. The adjusted statistical models of the variation by both individual and the definition of sensitization met in time were important for latency analyses. The longitudinal and latency analyses are still on-going and important next steps include:

- Obtain and integrate complete worker history information
- Will enable stratification by work type, age, and other possible factors
- Compare sensitization incidence rates adjusted by exposure and work type
- Apply an interrupted time series, or similar statistical model, to quantify the reduction in incidence over time, adjusted for exposure
- Describe the incidence of chronic beryllium disease among those who became sensitized
- Evaluate exposure dose-response for sensitization and chronic beryllium disease

In conclusion, these preliminary findings provide support for the hypothesis that the DOE Beryllium Rule helps prevent beryllium sensitization. Additionally, these results indicate that there is significant variation by both individual and the definition of sensitization met in time from first signal to sensitization. The adjusted statistical models of the next phase of this evaluation will more precisely assess the relationship between beryllium exposure levels and beryllium sensitization incidence over time, providing evidence on which to evaluate the potential impact of new rule-making for lower exposure limits.