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MAB3-PD-05 SCREENING FOR PULMONARY TUBERCULOSIS USING CHEST RADIOGRAPHY IN NEW EMPLOYEES IN AN INDUSTRIAL PARK IN TAIWAN

S-B SU¹, C-T CHANG², K-T CHEN³, H-R GUO³

(1) Tainan Science-Based Industrial Park Clinic, Chi-Mei Medical Center, Tainan. (2) Chest Hospital, Department of Health, Tainan. (3) National Cheng Kung University, Tainan.

Introduction: Pulmonary tuberculosis (TB) is prevalent in Taiwan, but its occurrence has been suspected to be underestimated. Pre-employment health examination is mandated by law in Taiwan, which provide a mechanism to assess the occurrence more accurately. To evaluate the performance of the National TB Surveillance Program in Taiwan, we compared the outcomes of a screening program for pulmonary TB among new employees of an industrial park to the national surveillance program of Taiwan.

Methods: The yields of a screening program using chest radiography at the clinic in the industrial park were compared to those estimated by the National TB Surveillance Program. All new employees of an industrial park who received mandatory pre-employment TB screening from July 2004 to June 2005 were included in the study.

Results: A total of 17,105 new employees underwent the screening during the study period. The participants had an even gender distribution (men: women = 50.2%: 49.8%) and a mean age of 27.3 years. Among the participants 22 (128.6 per 100,000) new patients of pulmonary TB were diagnosed, and 7 (31.8%) of the patients had positive bacteriology findings. Compared to the national surveillance program, the screening had a much higher yield of new cases (128 vs. 47 per 100,000, $p < 0.001$). The higher yield was observed in both genders and all age groups.

Discussion and Conclusions: The yield of new pulmonary TB cases through the active screening program was much higher than that of the national surveillance program, which is a passive surveillance system. The results imply remarkable underestimation of the occurrence of pulmonary TB in the country and highlight the need of more active surveillance efforts in endemic areas such as Taiwan to identify cases of pulmonary TB, especially those who are asymptomatic, in order to prevent the spread of pulmonary TB in the workplace.

MAB3-PD-06 RETROSPECTIVE EXPOSURE ASSESSMENT OF ASBESTOS RELATED TO SKILLED CRAFTSMEN AT A PETROLEUM REFINERY IN BEAUMONT, TEXAS (1940 - 2005)

P WILLIAMS¹, D PAUSTENBACH²

(1) CHEMRISK, BOULDER. (2) CHEMRISK, SAN FRANCISCO.

Introduction: Despite efforts over the past 50-70 years to estimate airborne dust or fiber concentrations for specific job tasks or industries, there has been no known attempt to reconstruct asbestos exposures for the many different trades employed in various non-manufacturing settings. In this paper, we estimate historical 8-hr TWA asbestos exposures for 12 craftsmen at a large petroleum refinery located in Beaumont, Texas. The trades evaluated include insulators, pipefitters, boilermakers, masons, welders, sheet metal workers, millwrights, electricians, carpenters, painters, laborers, and maintenance workers.

Methods: This retrospective exposure assessment quantitatively accounts for (1) the historical use of asbestos-containing materials at the refinery, (2) the typical workday of the different craftsmen and their opportunities for exposure to asbestos, (3) industrial hygiene air sampling data collected at this refinery and similar facilities since the early 1970s, (4) published and unpublished data sets on task-specific dust or fiber concentrations encountered by craftsmen in various industrial settings since the late 1930s, and (5) the evolution of respirator use and other workplace practices that occurred as the hazards of asbestos became better understood over time. A probabilistic (Monte Carlo) model was used to account for the variability in the data as well as the uncertainty in our knowledge of selected input parameters used to estimate exposure. Significant reliance was also placed on our collective professional experiences working in the fields of industrial hygiene, exposure assessment, and process engineering over the last 25 or more years.

Results: We estimate that insulators at this refinery experienced 50th (and 95th) percentile 8-hr TWA exposures of 9 (16) fibers/cc from 1940-1950, 8 (13) fibers/cc from 1951-1965, 2 (5) fibers/cc from 1966-1971, 0.3 (0.5) fibers/cc from 1972-1975, and 0.005 (0.02) fibers/cc from 1976-1985 (estimated exposures are <0.001 f/cc after 1985). All other craftsmen have estimated 8-hr TWA exposures at least 50 to 100 times less than that of insulators, with the exception of laborers, who have estimated 8-hr TWA exposures approximately 1/5th to 1/10th less than that of insulators.

Discussion and Conclusions: The results reported here are consistent with those reported in the published literature for selected craftsmen. In spite of some data gaps, we are confident that our estimates of 8-hr TWA asbestos exposures properly characterize the typical range of values for these categories of workers over time.

MAB3-PD-07 HEALTH HAZARDS AND PULMONARY FUNCTIONS IN SOLID WASTE MANAGEMENT SECTOR OF CHENNAI, INDIA

P RAMASWAMY¹, R SRINIVASAN¹, K BALAKRISHNAN¹, S SAMBANDAM¹, J PAULSAMY¹, R PITANI¹, V THANASEKARAN¹

(1) Sri Ramachandra Medical College & Research Institute (Deemed University), Chennai.

Introduction: Chennai is the fourth largest metropolitan city in India. More than 10,000 conservancy workers of the Chennai Corporation handle nearly 4000 tonnes of municipal solid wastes. With increasing volumes, inadequate resources and improper handling, these workers are exposed to a multitude of environmental and occupational hazards. Although city corporations have routine screening programs for conservancy workers, a comprehensive assessment of the baseline health status has thus far not been undertaken. This study has aimed to address this lacuna.

Methods: This paper presents the results of Health and Pulmonary function assessment in 400 conservancy workers, 50 rag pickers and 50 residents living near the dumpsites of Chennai Corporation. Detailed medical and occupational history was obtained and clinical examination was performed after obtaining informed consent. Pulmonary function parameters (FVC, FEV₁, and PEF₅₀) were measured using a portable Spirometer.

Results: 55% of conservancy workers gave a history of injury while working and 30% had history of respiratory illness. The pulmonary functions were significantly low in sweepers compared to loaders and drivers. Female conservancy workers had significant lower PFT values as compared to males. The Pulmonary function declined with increasing years of working. The pulmonary functions were significantly lower than their predicted values in conservancy workers, rag pickers and the residents living near the dumpsite. Regression analysis showed that conservancy workers had an increased risk of nearly 3.3 times the unexposed population for respiratory illness. An 8% prevalence of Hepatitis B carriers among conservancy workers was observed. Compared to permissible Biological Exposure Indices (BEI) in blood (ACGIH, 2005), levels of mercury were higher than BEIs in 10% of workers, lead in 15% of workers, Chromium in 12% of workers and Cadmium in 3% of workers.

Discussion & Conclusion: 8% prevalence of Hepatitis B in carriers points to the imminent need for prophylactic immunizations within this group. This study has generated baseline health data of conservancy workers of the Chennai solid waste sector with a view to create a comprehensive profile of the health status and aid the concerned authorities in the implementation of specific interventions.