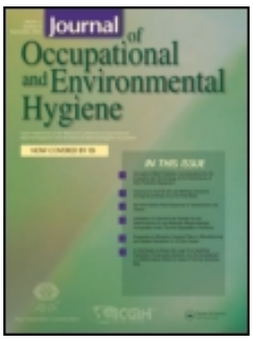

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Letter to the Editor

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Letter to the Editor

PREVENTION OF BERYLLIUM SENSITIZATION AND CHRONIC BERYLLIUM DISEASE

We read with great interest the Letter to the Editor by Newman and colleagues[1] in response to our article entitled "Industries in the United States with Airborne Beryllium Exposure and Estimates of the Number of Current Workers Potentially Exposed."[2] We commend the authors of the letter for raising a number of issues that, while clearly beyond the scope of our article, are relevant to the health of beryllium workers. At this time, we want to clarify some issues regarding our goals and methods.

In the hierarchy of prevention (i.e., primary, secondary, and tertiary), primary prevention is usually considered the most desirable since it is concerned with protecting susceptible individuals from disease onset. The goal of our article was to further the cause of primary prevention of beryllium sensitization and chronic beryllium disease (CBD). Specifically, we used measurements of airborne beryllium collected by the Occupational Safety and Health Administration (OSHA) to identify industries where beryllium is present and to estimate the number of employees in the United States who are currently potentially exposed to beryllium. Our article alerts workers and company officials to the potential for beryllium exposure and the associated risks for beryllium sensitization and CBD.

The authors of the Letter to the Editor offered the criticism that the "paper underestimates the number of former workers who have been exposed to beryllium." Primary prevention is pertinent to currently exposed workers. Starting with the title of our article and throughout it, we clearly stated that we would estimate the number of current workers rather than the number of former workers. Personnel at the Department of Energy (DOE) had provided us estimates of the number of former workers who had enrolled in medical surveillance, and we reported those estimates. Also, a month before the publication of our article, other researchers published an estimate of the number of construction workers who had ever been employed at DOE sites and had potentially been exposed to beryllium.[3] A comprehensive estimate of the number of workers from both the public and private sectors who had formerly been exposed to beryllium would complement our article, with its focus on primary prevention, by serving secondary and tertiary prevention.

Newman and colleagues pointed out that the OSHA data we used were based on surveys conducted in a fraction of the companies in the United States. To address this limitation, our algorithm for estimating the number of exposed workers extended beyond just the companies where beryllium was measured to include an estimate of exposed workers in similar companies where samples were not taken. Newman and colleagues also expressed concern that OSHA did not conduct air measurements for beryllium in companies where it was not suspected. In fact, the exposure data from OSHA did include measurements of beryllium in worksites where it was not suspected. This occurred because samples sent by OSHA inspectors for metal analyses were subjected to laboratory tests for a variety of metals, even if only a single metal was the focus of attention. We used the OSHA samples to identify many users, "downstream" of the primary beryllium producer, who were very likely unaware of the potential for exposure. We do not know of another industrial hygiene data base in the United States that has measurements of beryllium in worksites where it was not suspected.

We and other researchers have identified beryllium sensitization and disease associated with airborne levels below 0.1 $\mu g/m^3$ beryllium.[4,5] The authors of the Letter to the Editor criticized the absence of exposure measurements below 0.1 $\mu g/m^3$. However, given the field and laboratory methods used by OSHA during the relevant period of sample collection (i.e., 1979–1996), 0.1 $\mu g/m^3$ was probably the minimal concentration that could be measured reliably from a personal 8-hour sample. Moreover, 0.1 $\mu g/m^3$ might have been recorded in the OSHA database in some instances as a default level when the laboratory reported that no beryllium was detected. Consistent with our awareness of the risk associated with low exposures, we recommended that OSHA and others should have the capability to measure air concentrations below 0.1 $\mu g/m^3$ when monitoring beryllium currently and in the future.

We would like to offer a final recommendation to further the prevention of beryllium sensitization and CBD. OSHA is collecting data on beryllium exposures and associated health risks in preparation for proposing a new standard. In the past, OSHA standards have impacted workers both in the United States and in other countries that look to OSHA for guidance. We have provided OSHA access to beryllium data at NIOSH and understand that OSHA has requested relevant data from others. We urge all researchers and users of beryllium to cooperate with OSHA in order to ensure the development of a standard that will adequately protect current and future workers exposed to beryllium.

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The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the National Institute for Occupational Safety and Health (NIOSH).

NOTE FROM THE EDITOR IN CHIEF

It is the policy of the *Journal* that authors of a published manuscript be given the opportunity to respond to any letter to the editor concerning that manuscript; ordinarily, a response from the authors of the original mansucript would be included in the same issue with the letter(s). Owing to an administrative oversight, it was not possible to do so in this case. The following letter from the original authors should have been included in the June 2005 issue of the *Journal*. The editorial staff regrets this omission.