Letter to the Editor

Comments on the Respiratory Exposure to Toxic Gases and Metal Fumes Produced by Welding Processes and Pulmonary Function Tests

Hamed Jalilian

Department of Occupational Health Engineering, Institute of Health, Shiraz University of Medical Sciences, Shiraz, Iran

Dear Editor,

I read with interest the article recently published in *The IJOEM* on respiratory exposure to toxic gases and metal fumes produced by welding processes by Mehrifar, *et al.*[1] This paper has reported respiratory symptoms among welders and supported by field measurements of welding gases and fumes. However, there are certain issues that need to be addressed.

This study has conducted on a small population of welders. Under such circumstances, controlling all confounding variables is necessary to minimize bias. Nevertheless, several confounders were not controlled. For example, alcohol consumption, a variable with well-documented effects on the respiratory system has not been controlled at all.[2] Additionally, although the authors excluded smokers, it was not clear whether the study participants were past/second smokers or not. Moreover, although the authors report no significant difference (p_{age}= 0.13, p_{weight}= 0.20) between demographic characteristics of cases and controls, the age and weight have clear direct effects on respiratory functions,[3-5] and should be controlled by statistical methods.

The most important weakness of this study, however, was the way gases and fumes were measured. At first, the authors state that the concentration of magnesium has been measured (page 43, Metal Fumes and Gases section) but no comments on this issue could be found throughout the manuscript, neither in the Results nor in the Discussion. The second point is about air sampling zone, where the elements and gases were captured. The authors expressed that the air samples were collected from the "respiratory tract." However, for obvious reasons, such a measurement is neither possible nor ethical to do so. Probably, this is just a misspelling and it has to be corrected to the "berating zone." The third point, and the most important one, is that the authors do not declare how many samples and for how long were collected from welders. Generally, air-sampling time has a direct relationship to the minimum and maximum required air volume, but there is no statement about none of these important points.[6] Recently, the Occupational Safety and Health Administration (OSHA) has published a guideline for air sampling, indicating in-site air moni-

Correspondence to Hamed Jalilian, PhD, Department of Occupational Health Engineering, Institute of Health, Shiraz University of Medical Sciences, Shiraz, Iran
E-mail: jalilianh@hotmail.com
Received: Apr 27, 2019
Accepted: May 1, 2019

Cite this article as: Jalilian H, Mehrifar Y, Zamanian Z, Pirami H. Comments on the respiratory exposure to toxic gases and metal fumes produced by welding processes and pulmonary function tests. *Int J Occup Environ Med* 2019;**10**:151-154. doi: 10.15171/ijoem.2019.1679

toring strategies, and any occupational air sampling must use one of the approaches mentioned therein.[7] On the other hand, recording the sampling times is important for the calculation of time-weighted average exposure of workers—the most important index for comparison of results with the threshold limit values (TLV). The authors have not calculated this index, have not compared the mean value to TLV, and incorrectly concluded that the welders' exposures were beyond the TLV. This big mistake has affected the whole document, their results and discussion.

Finally, the concentration of fumes or gases has not been measured in the control group. This is necessary as the authors claim that the control group has had no exposure to these pollutants and that the expected outcomes have been caused by the exposure.

Conflicts of Interest: None declared.

Financial Support: None.

Reference

1. Mehrifar Y, Zamanian Z, Pirami H. Respiratory Exposure to Toxic Gases and Metal Fumes Produced by Welding Processes and Pulmonary Function Tests. *Int J Occup Environ Med* 2019;**10**:40-9.
2. Langhan ML. Acute Alcohol Intoxication in Adolescents: Frequency of Respiratory Depression. *J Emerg Med* 2013;**44**:1063-9.
3. Sharma G, Goodwin J. Effect of aging on respiratory system physiology and immunology. *Clin Interv Aging* 2006;**1**:253-60.
4. Maiolo C, Mohamed EI, Carbonelli MG. Body composition and respiratoryfunction. *Acta Diabetologica* 2003;**40**:s32-s8.
5. Jalilian H, Neghab M, Tatar M, Taheri S. Respiratory and Dermal Symptoms and Raised Serum Concentrations of Biomarkers of Oxidative Stress among Pesticide Retailers. *Int J Occup Environ Med* 2018;**9**:194-204.
6. Eller PM. NIOSH 7300. *NIOSH Manual of Analytical Methods*, Diane Publishing, **1994**.
7. Occupational Safety Health Administr. SECTION II: Sampling, Measurement Methods and Instruments. *01-00-015: Occupational Safety and Health Administration Technical Manual, Government* Institutes, **2014**.

Authors' Reply

Dear Editor,

The shipbuilding industry in Iran is not a common industry and there are just a few welders working in this sector in each work shift. Therefore, access to all industry welders is practically not possible and we had to stick to the number of welders studied. Furthermore, the number of welders studied in most reports is in the same range.[1-4]

Drinking alcoholic drinks in Iran is illegal and thus, consumers are very unlikely to report it. In this study, in a briefing held for workers to clarify stages of the study, we noted that those consuming alcoholic beverage should not participate in this study. This is an unfortunate fact that most of the participants of studies conducted in Iran refuse to report alcohol consumption, if any, for legal and cultural reasons.

We excluded smokers from the study. The main factor is in fact, lack of smoking, not the duration of smoking.

We did not mean to investigate the relationship between age, weight, and respiratory function. That is why we do not mention such a relationship in the article. In addition to weight and age, other items such as exercise and physical fitness also affect the person's respiratory function. In field and human studies, there are many confusing factors including psychological and personality factors that may affect the outcomes. Controlling of all these factors is obviously impossible.

We measured the total fume and six