Journal of Toxicology and Environmental Health, Part A: Current Issues

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/uteh20

Occupational exposure to Aspergillus by swine and poultry farm workers in Portugal

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Version of record first published: 24 Oct 2012.

To cite this article: R. Sabino, V. M. Faísca, E. Carolino, C. Veríssimo & C. Viegas (2012): Occupational Exposure to Aspergillus
by Swine and Poultry Farm Workers in Portugal, Journal of Toxicology and Environmental Health, Part A: Current Issues,
75:22-23, 1381-1391
To link to this article: http://dx.doi.org/10.1080/15287394.2012.721170

ABSTRACT

Aspergillus is among a growing list of allergens that aggravate asthmatic responses. Significant pulmonary pathology is associated with *Aspergillus*-induced allergic and asthmatic lung disease. Environments with high levels of exposure to fungi are found in animal production facilities such as for swine and poultry, and farmers working with these are at increased risk for occupational respiratory diseases. Seven Portuguese poultry and seven swine farms were analyzed in order to estimate the prevalence, amount, and distribution of *Aspergillus* species, as well as to determine the presence of clinical symptoms associated with asthma and other allergy diseases in these highly contaminated settings. From the collected fungal isolates (699), an average incidence of 22% *Aspergillus* was detected in poultry farms, while the prevalence at swine farms was 14%. The most frequently isolated *Aspergillus* species were *A. versicolor*, *A. flavus,* and *A. fumigatus*. In poultry farms*, A. flavus* presented the highest level of airborne spores (>2000 CFU/m3), whereas in swine farms the highest was *A. versicolor*, with an incidence fourfold greater higher than the other mentioned species. Eighty workers in these settings were analyzed, ranging in age from 17 to 93 yr. The potentially hazardous exposure of poultry workers to mold allergens using sensitization markers was evaluated. Although no significant positive association was found between fungal contamination and sensitization to fungal antigens, a high incidence of respiratory symptoms in professionals without asthma was observed, namely, wheezing associated with dyspnea (23.8%) and dyspnea after strenuous

activities (12.3%), suggesting underdiagnosed respiratory disturbances. Further, 32.5% of all exposed workers noted an improvement of respiratory ability during resting and holidays. From all the analyzed workers, seven were previously diagnosed with asthma and four reported the first attack after the age of 40 yr, which may be associated with their occupational exposure. Some of the fungi, namely, the *Aspergillus* species detected in this study, are known to induce hypersensitivity reactions in humans. This study confirmed the presence and distribution of *Aspergillus* in Portuguese poultry and swine farms, suggesting a possible occupational health problem and raising the need for preventive and protective measures to apply to avoid exposure in both occupational settings.