

THE EVALUATION OF URINARY 1HYDROXYPIRENE AS A MARKER OF EXPOSURE TO AROMATIC POLYCYCLIC HYDROCARBONS IN A POPULATION OF 3573 INDUSTRIAL WORKERS

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Introduction

The study of urinary 1hydroxypirene as a marker of aromatic polycyclic hydrocarbons (P.A.H.) exposure is commonly carried out in groups of workers.

Every single result has to be evaluated considering the possible presence of different misleading factors as relevant tobacco smoke, some specific diets or urban residence.

Methods

To verify the use of 1hydroxypirene as a valid index of exposure to P.A.H., we tested 3573 workers exposed to mineral oils in 137 firms.

The exams were carried out at the end of one working week.

We evaluated possible misleading factors, especially in the last 15 days before sample collection.

We analyzed the safety sheet of every oil used, to check possible presence of P.A.H..

Results

In 196 workers (5.5%) we found a level of 1hydroxypirene higher than 2.7 mcg/creat. gr..

Among these workers, 45 (1.3%) had possible misleading factors in personal anamnesis (tobacco smoke, specific diets or urban residence), which could be the cause of the abnormal values registered.

The other 151 workers (4.2%) had high level of 1hydroxypirene but no referred extra professional exposure to P.A.H.. Among these 151 workers, only 75 had a warning about the presence of P.A.H. in safety sheets of mineral oils used.

For the other 76 workers we carried out further research on oils, acquiring chemical data from producers or directly measuring possible presence of P.A.H. in samples of oils, before and after use. We found unpredicted presence of P.A.H. in the oils used by 65 of them.

Discussion

The results confirm that urinary 1hydroxypirene can be a useful marker of exposure to P.A.H. if misleading factors are considered.

Positive exams can emerge in workers not officially exposed according to information available from oil safety sheets, which are frequently not exhaustive.

We think urinary 1hydroxypirene should be used in occupational medicine to verify possible exposure to P.A.H., in workers known as exposed, but also as valid marker of possible unknown exposure to P.A.H..