

# EVALUATION OF PRECOCIOUS MARKERS OF RENAL DAMAGE FROM TOLUENE EXPOSURE IN A GROUP OF WORKERS ON GUMMED TEXTURE

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## Introduction

Evaluation of precocious renal damage in workers exposed to toxic substances is not commonly carried out in practical Occupational Medicine. In fact possible renal damage is frequently evaluated only using old indicators of exposure/absorbed dose which are not useful at the usual low exposure levels actually present in Italian industrial firms.

## Methods

To verify the possible presence of renal damage in a group of workers in a firm specialized in the production of gummed texture, we studied a group of 187 workers exposed to different levels of toluene.

We evaluated the exposure to toluene with personal and environmental samplers.

We measured the urinary hippuric acid (at the beginning and at the end of the working day) and the haematic toluene in all the workers.

We evaluated azotaemia and creatininaemia as parameters of renal function and a urine sample.

We also evaluated the glutathione S transferases (alfa and pi) as precocious tubular damage markers and Cistatin C as a marker of glomerular filtration.

## Results

The results showed that the toluene exposure was under the T.L.V. value in every personal and environmental sample.

The haematic toluene values showed strong correlation with the environmental exposure and were all below B.E.I..

In all samples collected at the end of the working day hippuric acid was under the value of 1.0 gr./creat. gr. (using high pressure liquid chromatography).

The traditional parameters of renal function were altered in 3.5% of the workers.

The markers of precocious renal damage were found altered in 11.0% of the workers.

## Discussion

Results showed that usual exams carried out in practical occupational medicine can't find out a relevant number of light renal damage caused or concaused by low exposure to renal toxic substances

We think that precocious renal damage markers should be regularly used in medical surveillance of workers exposed to renal toxic substances.