

# Chromium Exposure Affects Health of Metal Coating Industry Workers

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Chromium (Cr) is naturally a heavy metal which is an essential micronutrient that is required to improve the performance of insulin in the body; but clinical and laboratory evidence showed that hexavalent chromium corresponds to Cr toxicity that can cause lung cancer, nasal irritation, nasal ulcer, hypersensitivity to reaction of dermatitis and asthma.

This was said by Public Health lecturer from UNDIP, Yuliani Setyaningsih, SKM, M.Kes., on her research into 66 workers of metal coating industry in informal sector in Tegal regency, Central Java. Her research showed the damage in DNA due to protein oxidative change that can be seen in the concentration of 8-hydroxydeoxyguanosine (8-OhdG). "There is a simultaneous effect of chromium, Malondialdehyd (MDA) levels, worker's habit to the DNA damage among metal coating workers," said Yuliani in her doctoral promotion at Faculty of Medicine UGM on Monday (14/11).

According to Yuliani, the 8-OhdG level in urine can be made an indicator of oxidative DNA damage and as early detection of disease due to chromium exposure among metal coating workers. Even logistical regression calculation showed that over a duration of 14 years of work, alcohol and energy drinks consumption have the risk to cause a probability of 8-OhdG more than 24.5 ng/mL as high as 99%. Meanwhile, level of chromium in work characteristics, personal capacity, psychological characteristics and MDA level gave a contribution by 48.9% to the level of 8-OhdG in the urine of the

worker.

As an illustration, said Yuliani, the workers in Tegal of this research have worked in average over one year, some many more years with 8 working hours per day. “It is confirmed that the workers are exposed to chromium that gets into the body through inhalation,” she said.

Yuliani recommends owners of metal coating business to provide masks, boots, gloves, and long sleeved clothing, as well as body protection to avoid heavy metal exposures.

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