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Urine biomarker for benzene exposure and precancerous chromosome damage among gas station attendants in Bangkok, trend after implementation of declaration of standards for control of air quality

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Dear Editor,

The benzene is an important volatile hydrocarbon, which is the present environmental problem. Benzene is considered toxic and carcinogenic.[1] It is accepted that many occupations are at risk to get high benzene exposure and take risk for cancer development.[1] Of several occupations, gas station attendant is the group with an extremely high risk.[2] The precancerous chromosomal damage risk of these workers is significantly higher than controls.[3] To manage the problem, it is recommended that closed monitoring of the risk workers is needed. Of several techniques, the use of standard urine biomarker, trans, trans-muconic acid is acceptable.[4] In addition to this, the legal implementation of standards for control of air quality is needed. In Thailand, the problem of benzene can also be seen. The declaration of standards for control of air quality was proposed by Thai National Environment Board in 2006. According to the standard, the benzene is controlled to be below 1.7 μg/m^3. Here, the author discusses on the experience from Thailand on following up a group of gas station attendants in Pathumwan District Bangkok in a 10-year period, 5 years before[5] and 5 year after[3] implementation of the standard for control of air quality. In 2001 and 2011, the ratio of urine biomarker average level between gas station attendants and controls are equal to 33.3 and 2.3, respectively. Based on this observation, it can imply that the ratio decreased 14.4 times within 10 years, under the condition of the standards for control of air quality. Based on the observation on the risk for chromosomal damage that doubled the urine biomarker corresponding to 1.3 times, increased the risk of precancerous chromosomal damage risk. The estimated decreased precancerous damage risk is equal to 18.72 times after implementation of the standards. This observation can guarantee that the legal method for control of benzene in atmosphere is a good mean to reduce the risk of cancer among the workers.

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