

# HUMAN HEALTH EFFECTS FROM CADMIUM EXPOSURE: COMPARISON BETWEEN PERSONS LIVING IN CADMIUM-CONTAMINATED AND NON-CONTAMINATED AREAS IN NORTHWESTERN THAILAND

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**Abstract.** Environmental cadmium contamination is present in some rural villages of Mae Sot District, Tak Province, northwestern Thailand. We compared the health of 751 persons aged  $\geq 35$  years living in 3 contaminated villages with 682 people from 3 non-contaminated villages with similar socio-demographic and lifestyle characteristics in the same district. All the subjects were screened for urinary cadmium (a biomarker for long-term cadmium exposure), renal function, hypertension, diabetes, hypercholesterolemia, hypertriglyceridemia, urinary tract stone disease and bone mineral density in 2012. The study renal functions included urinary excretion of  $\beta_2$ -microglobulin (early tubular effect), total urine protein and glomerular filtration rate (glomerular effects). The geometric mean of urinary cadmium level was significantly higher among persons living in the contaminated areas (2.96  $\mu\text{g/g}$  creatinine) than those in the non-contaminated areas (0.60  $\mu\text{g/g}$  creatinine). Persons living in contaminated areas had a significantly higher prevalence of renal dysfunction, bone mineral loss, hypertension and urinary stones than those living in non-contaminated areas. There were no significant differences between the 2 groups in the prevalence of diabetes, hypercholesterolemia and hypertriglyceridemia. This study shows health effects due to environmental cadmium exposure. The prevalences of diabetes, hypercholesterolemia, and hypertriglyceridemia were not associated with cadmium exposure.

**Keywords:** cadmium, environmental exposure, health effect, Thailand

## INTRODUCTION

Cadmium is a widely but sparsely distributed element found in the earth's crust and is primarily association with

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