

# PAPUA NEW GUINEA INSTITUTE OF MEDICAL RESEARCH



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### ENVIRONMENT AND HEALTH: CHEMICALS AND CHANGE IN PNG

In PNG, many communities are moving quickly from traditional subsistence agriculture to cash economy farming. Chemicals such as pesticides and heavy metals are introduced rapidly to the local ecosystem, with potential effects for local residents and the crops they grow.

Dr Masahiro Umezaki is a researcher at the University of Tokyo in Japan who has conducted research for 20 years with IMR in Goroka.

“We looked at six communities, three in Goroka and three in Madang, to investigate the relationship between the transition from subsistence agriculture and changes in the local chemical environment, and their health impact,” Dr Umezaki said.

“More than 1000 people took part in the study, providing us with samples of their urine, saliva, blood, and hair,” he said.

“We tested these samples for biomarkers of exposure to pesticides, heavy metals, essential trace elements and stress indicators. We also checked their general health, including blood pressure, and factored in their age and gender.

“In Goroka, our analysis showed that in communities transiting to a cash economy, people had a higher body mass index, higher haemoglobin and less urinary excretion of arsenic and lead. In Madang, transiting communities had less haemoglobin, higher urinary excretion of essential trace elements such as arsenic, zinc and selenium, and lower exposure to pesticide.

“Our study showed that subsistence transition had simultaneously both positive and negative environmental and health impacts, and that indicators varied widely between the regions of Goroka and Madang,” Dr Umezaki said.

**Symposium Paper:** Evaluation of Environmental Burden due to Subsistence Transition in Papua New Guinea (EASTPNG Study).

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