

High Lead Level in Rainwater Necessitates Effective Technology Use

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The small water resources availability from tap water, surface water, and ground water in Pontianak, West Kalimantan has caused the use of rainwater high. Rainwater is abundant here while the quality has met health requirements as compared to the water from surface and ground water.

"West Kalimantan is of tropical climate with high humidity and precipitation," said Khayan, SKM., M.Kes, Director of Health Polytechnic of Pontianak at Faculty of Medicine UGM on Tuesday (11/7) during his doctoral promotion.

He found out that in all regencies and municipalities in West Kalimantan Province, in average the monthly rain and precipitation are high. In Pontianak it is 29 days/months at 383.04 mm/month. The highest precipitation is in December at 445.4 mm/month and the lowest in June at 128.1 mm/month.

Khayan said unfortunately, the rainwater was caught in zinc roof before it got into water catchment tanks. All this while the lead or Plumbum (Pb) that strengthens the zinc coating is dissolved along with the rainwater that flows to the tank.

Such exposures of Pb to the rainwater, said Khayan, would affect the health of the people. The

effects are among others, enzyme disruptions in the body, anemia, mental disorder, IQ decrease, and hyperactivity in children.

"It also affects the low weight of baby birth and premature babies and also hypertension in adults. In the body, Pb is accumulating in the bone and in the long run it may cause chronic poisoning. This aggravates with Pb exposures coming from industries, motorised vehicle emissions, and peat land fires," he said.

Khayan revealed almost 90 percent of West Kalimantan people use zinc rooftop. The zinc plates use black lead (Pb) that acts to strengthen the zinc binds that prevent corrosion.

Due to the corrosive nature of the rainwater in its aggressive CO² and low pH at 5.40, the zinc is easily corroding. It is possible that the Pb in the zinc is dissolved in the rainwater, hence increasing the Pb level in the water tank.

Khayan's research showed that the average Pb level in the rainwater in the tank in the Mulyo village in Kubu Raya regency is 0.0129 mg/l (129 ug/l). The rainwater that is caught without zinc roof has lower Pb level, which is 0.0022 mg/l (2,2 ug/l).

"The Pb rate in the rainwater stored in water tanks through zinc roofs is above the limit stated by the Indonesian Health Ministry and the WHO, while the rate that is permitted for drinking water is 0.01 mg/l (10ug/l)," he said, defending his dissertation entitled Catchment Timing Arrangement and Exposures of Plumbum (Pb) in Rainwater in Relations to Public Health in Pontianak.

Khayan suggested, the people of Pontianak and Kubu Raya need to process it first before using the rainwater as drinking water sources due to the Pb content and rainwater pH that are above the required levels.

"We suggested to manage the timing of the water catchment using effective technology," he said.

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