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TITLE: HEALTH AND ENVIRONMENTAL IMPACT OF MERCURY IN THE PHILIPPINES USING NUCLEAR TECHNIQUES

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HIGHLIGHTS AND ACHIEVEMENTS

Health assessment for mercury exposure:

This is the first comprehensive health evaluation made by the Department of Health of the mining community's exposure to total and methyl mercury. Previous studies have mainly focused more on the health risks associated with occupational exposure to mercury. Other sources of mercury exposure such as diet and other environmental media was not investigated and the population studied did not include high risk groups such as pregnant women and children.

Results:

Fifty-three (53) research subjects were selected by stratified random sampling in a mining community in Sibutad, Zamboanga del Norte, Philippines. There were 40 (75.47%) adults aged from 26 to 50 years and 13 children aged 6 months to 11 years.

Environmental monitoring results showed that ambient air monitoring of three sampling station exceeded the standards for mercury in ambient air. Water quality monitoring of a drinking water source showed a slightly higher level than that obtained from a nearby river. Mercury levels in marine/aquatic samples ranged from 4.03-62.97 ng/g for total mercury and 3.75-35.98 ng/g in 9 species. These levels were below the recommended USFDA standard of 500 ng/g. The proportion of methyl mercury ranged from 22.98%-89.78%.

Hair samples in 51 respondents showed total mercury and methylmercury levels which ranged from 0.95-68.68 ng/g and 0.73-5.81 ng/g. The proportion of methyl mercury in hair ranged from 2.66-99.98%. 10 had elevated total mercury levels and 23 with elevated methylmercury levels.

Blood samples from 50 respondents showed total mercury and methylmercury levels ranged from 2.74-29.47 ug/L and 1.63-23.11 ug/L. A total of 23 blood samples from the 50 tested showed total mercury values will be followed up for possible detoxification while 10 had elevated methylmercury levels.

Conclusions drawn:

- A significant number of biomarkers from adults showed elevated total and methyl mercury levels in both blood and hair.
- There were 23 subjects with elevated total blood mercury levels who could be candidates for possible chelation if other criteria are fulfilled.
- All marine samples analyzed showed values of total and methyl mercury within acceptable limits.
- Environmental monitoring results showed ambient air monitoring for mercury levels in three sampling stations exceeding permissible levels. Likewise mercury levels in the receiving water body and in the sediment exceeded the recommended standards.