

ABSTRACT

POTENTIAL HEALTH IMPACTS OF RESIDUAL LEAD, NICKEL AND POLYAROMATIC HYDROCARBONS ON RESIDENTS OF GUIMARAS COMMUNITIES EXPOSED TO THE MT SOLAR I RESIDUAL OIL

Ana Trinidad F. Rivera
University of the Philippines, 2012

Adviser: Flerida A. Cariño, PhD
Co-adviser: Tolentino B. Moya, PhD
Reader: Lynn Crisanta R. Panganiban, PhD

Coastal residents from the Province of Guimaras reported signs of weathered oil on the surface and deposits of fresher oil buried beneath bedrocks and sediments in the coastal areas. This was even after reported completion of the removal of the oil debris. Results of our environmental monitoring from 2006-2011 in the Province of Guimaras showed that levels of Lead (20/56), Nickel (9/41) and PAH (1/20) in drinking water exceeded the PNSDW standards. It was observed that lead and nickel levels in drinking water that concentration a month after the spill declined after twenty-four (24) and sixteen (16) months, respectively. It is an important indicator that monitoring for lead and nickel in drinking water and soil be undertaken at least two (2) years after an oil spill incident. Calculated level of concerns (LOCs) for BAPe were 2 ppb for children, 8 ppb for adults and 10 ppb for pregnant women. These may be used in the fish advisory criteria in the re-opening of seafood harvesting in impacted areas. Calculated total cancer risks were exceeded with BAPe and dibenz (a,h,anthracene) as the highest contributors in the calculation of the cancer risks among children. Results showed that ingestion may be the main potential pathway for non-cancer health risk for all populations. The hazard quotient was also exceeded which means that there is a potential non-cancer health risks at the present time via ingestion of contaminated of gastropods/shellfish. Furthermore, this study may provide additional information that will facilitate the articulation of guidelines for rehabilitation and restoration activities including long-term monitoring of seafood for toxic substances, issuance of fish advisory guidelines and preservation of marine water quality and sensitive marine environments.

Keywords: oil spill, polycyclic aromatic hydrocarbons (PAH), lead, nickel, Hazard quotient (HQ)