

Heavy metal levels in spent engine oils and fingernails of auto-mechanics

Chris Oche IKESE*,¹ Peter Agorye ADIE,¹ Christie ADAH,¹ Raphael AMOKAHA,² Grace ABU,¹
and Timothy YAGER¹

¹ *Department of Chemistry, Benue State University, Makurdi, Nigeria*

² *Department of Biochemistry, Benue State University, Makurdi, Nigeria*

Abstract. The levels of some heavy metals in spent engine oils and in the fingernails of auto-mechanics were studied. Engine oils and fingernails were collected from auto-mechanics who had practiced between ≤ 5 years, ≤ 10 years and ≤ 15 years in 3 auto-mechanic workshop clusters. Pb, Ni, V, Cd, and As levels were determined using Atomic Absorption Spectrophotometer. The mean levels of Pb, Ni, V and Cd in spent engine oils were 14.31, 2.25, 0.38 and 2.07 ppm respectively, and these far exceeded their permissible exposure limits. The mean levels of heavy metals in the fingernails of auto-mechanics who had practiced for ≤ 5 years, ≤ 10 years and ≤ 15 years were all considerably below their pathological thresholds. Thus, auto-mechanics in the study area are exposed to unsafe levels of Pb, Ni, V, and Cd, but no immediate threat of their toxicities in the study population exist. However, a progressive bioaccumulation of the heavy metals was observed with increase in years of practice.

Keywords: auto-mechanics; heavy metals; fingernails; spent engine oil; occupational exposure.

* Corresponding author. *E-mail address:* chrisjieng@yahoo.com (C. O. Ikese)