Monitoring the presence of heavy metals in foods intended both for human and animal is of interest because of their toxic effects. In general, heavy metals disrupt basic metabolic functions leading to chronic diseases. For example, aluminum is involved in the onset of Alzheimer's disease. In most developing countries, much of the urban population and almost all rural population still use traditional cooking utensils. Examples are the clay and aluminum made pots. Unlike modern utensils, traditional one does not have a protective layer of inert material to prevent contamination of food. In this study, atomic absorption spectrophotometry is used for determination of the transfer rate of aluminum in food during cooking in aluminum pot. The heavy metal content of a traditional cooking utensil made of clay is also quantified. Results showed that aluminum content of cooked rice increased from 1.6 to 18.1 mg/g. Analysis of the mineral composition of the traditional utensil made of clay gives a high content of aluminum (8.75 mg/g) showing that it is also a potential source of food contamination by aluminum. The results also revealed the presence of several other metals among such as lead, chromium and nickel, which are potentially toxic to humans. Whatever with low concentrations, these metals like aluminum present a risk for the consumer especially in the prolonged exposure materialized by the daily use of kitchen utensils. Following this study will attempt to establish a causal relationship between use of these utensils and onset of certain chronic diseases in target populations.