Alcohol and water may be an important source of exposure to arsenic, nitrate, nitrite and phosphate. Increased cases of deaths as a result of consuming home made brews/spirits have been a major concern in this country. Recently, many lives have been lost due to the ignoranceof the brewers and their patrons. Additives like methanol and use of untreated river waters that contain the effluents from chemical industries, domestic wastes from urban settlements and run-offs from agricultural activities can cause high levels of arsenic, nitrate and phosphorus in alcoholic drinks, which could be sources of health hazards to consumers since they are toxic. Arsenic, nitrate and nitrite are carcinogenic; phosphate does not have any notable health effects. Nitrite also causes metheglobinemia. Therefore, this study was carried out to determine the levels of these substances in home- made brews, home made spirits, raw materials and water. One hundred and thirty two (132) homemade alcoholic beverages, fourty eight (48) water and twelve (12) raw materials samples obtained from various parts of Nairobi slums and its environs were analyzed for arsenic, nitrate, and nitrite and phosphate. Methods of analysis included; colorimetry, hydride generation atomic absorption spectroscopy and UV -visible spectrophotometry. Some samples of brews and water had higher levels than those recommended by the Kenya Bureau of Standards (KEBS) and World Health Organization (WHO). Concentrations of arsenic ranged from non detectable to 0.88 ± 0.028 mg/l, nitrate from non detectable to 46.3 ± 1.404 mg/l, nitrite from non detectable to 11.919 ± 0.36 mg/l and phosphorous from 0.14 ± 0.008 to 4.16 ± 0.62 mg/I. The recommended maximum contamination levels set by KEBS/WHO for arsenic, nitrate, nitrite and phosphorus in water were as follows; arsenic, 0.01 mg/l for drinking water and beer and raw materials; nitrite, 0.03 mg/l; nitrate 50 mg/l and 2.2 mg/l for the phosphates in water. Most of the home made brews/spirits and water analyzed in this study had lower levels of nitrates than recommended by the Kenya Bureau of Standards, while a few had higher levels of nitrites. Arsenic recorded values lower than the maximum contamination limit of 0.01 mg/I. Nitrate levels were higher than the maximum contamination levels in some cases. Brews had low levels of nitrate, phosphorus and arsenic had low levels of the nutrients. Raw materials also had high levels of these nutrients while water had non detectable levels. The raw materials used may have contributed in elevating the levels of these pollutants in the brews. These findings are therefore useful since they provide a justified cause for the Kenyan Government to reconsider fighting the selling of local alcoholic beverages. Therefore the consumption of the brews with higher levels than those recommended could pose a problem for consumers and hence sensitization should be enhanced.