Several studies have shown the benefits for human health deriving from the consumption of fish oil, especially due to the presence of omega-3 fatty acids (ω3). These fatty acids may prevent the incidence of coronary diseases, cerebrovascular accident, high blood pressure and high levels of triglycerides. However, similar to other fishery products, these food supplements may also contain some contaminants such as mercury and polycyclic aromatic hydrocarbons (PAHs). The objective of the present study was to evaluate the composition of 12 encapsulated fish oil samples regarding the presence of ω3, total mercury and 13 PAHs. Fatty acid composition was determined by GC-FID. For Hg determination, digestion of the samples in a closed microwave-assisted system and quantification by HG-ICP OES were used. PAHs analysis involved SPE extraction and clean-up followed by HPLC-FL determination. Levels of total ω3 fatty acids ranged from 26.18 to 86.32 mg/100g, with main fatty acids present being the C20:5ω3 (EPA) and C22:6ω3 (DHA), which varied from 14.72 to 64.37 and from 6.82 to 20.12 mg/100g, respectively. Mercury and PAHs were detected in all samples. Total mercury levels ranged from 4.26 to 29.02 µg/kg and the sum of the 13 PAHs analyzed presented levels from 0.49 to 14.60 µg/kg. While these products might represent a good source of ω3, they may also contribute to the intake of Hg and PAHs. Results obtained show that more studies are necessary for this type of food supplement.