Studies show that the consumption of omega-3 polyunsaturated fatty acids fosters numerous benefits to health, which is why the supplementation of fish oil has been stimulated. However, the contamination risk of fish with mercury can compromise the efficiency of eicosapentaenoic (EPA) and docosahexaenoic acids (DHA) contained in fish oil. This way, the objective of the study was to determine the mercury concentration in commercial samples of fish oil and to compare it with the maximum concentration allowed by Brazilian legislation. Thirteen different commercial brands of fish oil supplements were analyzed using a high performance spectrometer CID86 Echelle. Capsules containing 1000mg of fish oil were previously digested in nitric acid and hydrogen peroxide solutions, and subsequently, the mercury concentrations (Hg) contained in each sample were evaluated. From the samples evaluated, 15.4% (n=2) obtained mercury concentrations above the limit established by the National Agency of Sanitary Surveillance (ANVISA). These findings give security in the consumption of fish oil supplements sold by manipulation drugstores available in the Brazilian market. Results showed that the two samples infected with Hg surpass more than 30 times the levels established as secure by current legislation. The present study shows that the consumption of the majority of fish oil supplement brands industrialized and manipulated seems to be secure regarding mercury toxicity, according to ANVISA and the Health World-Wide Organization.