Research shows that children in the U.S are being seen in emergency departments for swallowing small objects at an increasing rate, with 7.0% of visits attributed to swallowing jewelry. Treatment for lead poisoning occurs when the concentration of lead in blood is 45 μg/dL (450 ppb), however, no level of lead is considered safe and the CDC uses 3.5 μg/dL (35 ppb) as a reference as to when a pediatrician should consider “follow-up services” to reduce possible long-term effects. This experiment measures the concentration of lead extracted by stomach acid from various samples of children’s jewelry.

Simulated stomach acid solution heated to body temperature was used to attempt extraction of lead from children’s jewelry samples that had previously been determined to contain lead in their metal alloy composition. The simulated stomach acid samples were analyzed for lead content using AA spectrophotometry. Preliminary results indicate that while stomach acid does not dissolve jewelry, it is capable of extracting lead, which could lead to lead poisoning depending on the amount of lead extracted and absorbed into a child’s bloodstream should they swallow a piece of jewelry.

Citations

