CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)

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Project Number

J2008

Project Title

Hidden Danger: Investigating Compliance to Lead Standards for Retail Jewelry

Abstract

Objectives/Goals

My mother owns a shop that sells jewelry. I often visit her there, and notice that some of the items are labeled lead-free. Lead in jewelry is especially hazardous because young children sometimes chew on jewelry and may even swallow small pieces. I decided to investigate whether local stores and small wholesale jewelry vendors complied with the government standards. I hypothesized that larger brand-name retailers might follow regulations more strictly due to their reputations.

Methods/Materials

I tested 52 pieces of jewelry from ten different suppliers: six large brand name stores (Walmart, Target, Claire's, TJ Maxx, Marshall's, and Dollar Tree) and four small wholesale vendors (Anna Beauty, Beauty Accessories, June, and Girly Jewelry). I documented my results through lead leaching. I used the Lead Inspector lead-detecting solution to evaluate my results.

Results

According to my findings, 35% of the samples tested contained > 50 ppm leachable lead, which exceeds the 40 ppm government compliance warning level for children's jewelry. None of these samples were labeled with the requires content warning. Approximately 37% of the jewelry from the large brand name stores; including Walmart, Claire's, Marshall's, and Dollar Tree, exceeded 50 ppm leachable lead. Jewelry from Target and TJ Maxx did not contain high levels of lead. Approximately 27% of the jewelry from wholesale vendors (Anna Beauty, Beauty Accesories, June, and Girly Jewelry) contained > 50 ppm leachable lead.

Conclusions/Discussion

I found 57% of samples from Claire's and 75% of jewelry samples from Dollar Tree contained > 50 ppm leachable lead, which violates state standards for children's jewelry. These results are especially alarming because Claire's, in particular, is a very popular jewelry store for children and adolescents, who are more susceptible to lead exposure than adults. Even more important, one of the jewelry samples from a wholesale vendor that tested over 50 ppm leachable lead level was labeled lead free!

Summary Statement

My project tested the lead content in jewelry from retail and wholesale stores.

Help Received

I conducted the testing and leaching of the jewelry samples independently. My parents helped supply the jewelry samples used in order to test lead levels using the process of leaching.