

ABSTRACT

Children begin to use art materials such as crayons and colour pastels at early ages in their homes and schools. The products marketed to children should not contain chemicals linked to adverse health impacts. But, it was found that some crayons and colour pastels contain toxic heavy metals like lead (Pb), chromium (Cr), and cadmium (Cd). Current specifications for the toxic substances in crayons and oil pastels are based on the acid soluble heavy metal content. Therefore, this study was conducted to investigate and develop a profile about total amount of lead, chromium and cadmium content in several types of popular crayons and colour pastels available in Sri Lankan market.

Four types of oil pastels and two types of crayons were selected and some types have the labels on their packs and some types have not mentioned about safety of the products. Dry - ashing followed by acid digestion was applied for the extraction and then the lead, chromium and cadmium levels were determined in triplicate using a flame atomic absorption spectrophotometer. High levels of lead and chromium were detected in the type that was not been tested according to the current regulation, with the maximum lead content of (2796 ± 218) mgkg^{-1} in the orange colour and the maximum chromium content of (742 ± 4) mgkg^{-1} in the yellow green colour. Cadmium content was less compared to lead and chromium in all brands. Maximum cadmium content was also detected in the brand A with the value of (14 ± 2) mgkg^{-1} in the brown colour. A statistical approach was employed to investigate the correlations between lead and chromium in different brands. This shows that there is a considerable positive correlation in between lead and chromium for each brand.

Due to lack of colour pastel industry regulations in the Sri Lanka, some colour sticks contain dangerous heavy metals and toxic substances that are banned or restricted in the other countries. Unfortunately, people assume these crayons and colour pastels are safe and they allow the children to use them freely. Lack of information on the packages and the unawareness of the people prompt the authorities expedite the remedial actions. Furthermore, it is desirable to use only non-toxic ingredients and safer products to prepare these items and their quality needs to be assessed to safeguard younger generation.