

ADVANTAGES OF MEASURING LEAD IN PAINT BY XRF USING AREAL MASS APPROACH

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The recently introduced legislation, Consumer Product Safety Improvement Act (CPSIA) of 2008, restricts the amount of total, elemental lead in paint applied on children toys and articles to not more than 90 mg/kg. It can be argued, however, whether measuring and reporting lead content of paint in mass/mass units is useful and meaningful.

Mass/mass unit provides only relative fraction of lead in paint. To assess the degree of potential exposure of child to lead from paint one must determine the absolute mass of lead that may have entered the child organism. In order to do so one needs to know the mass of paint that was removed and ingested by child, the task almost impossible after the fact. On the other hand, if lead content of paint is reported as areal mass, that is in mass/area units, we will show that it is very easy to estimate the absolute mass of lead that could be ingested by child and thus to determine the risk of exposure.

Measurement of lead in areal mass is also more accurate than those techniques that derive mass/mass concentration from spot of 1 mm diameter or less.

Additionally, it can be shown that paint with less than 90 mg/kg of lead, while compliant, may still pose considerable risk of exposure.