



**U.S. Consumer Product
Safety Commission**

Testing for Lead in Consumer Products

Dr. Joel R. Recht
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Director, Division of Chemistry
Directorate for Laboratory Sciences
Consumer Product Safety Commission

301-424-6421 x123
jrecht@cpsc.gov

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Outline

- Background
 - Consumer Product Safety Act (CPSA)
 - Federal Hazardous Substances Act (FHSA)
- Lead testing
 - Lead paint
 - FHSA testing
 - X-Ray Fluorescence (XRF)
 - Demonstration

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Lead Guidance on CPSC Website

<http://www.cpsc.gov/businfo/leadguide.html>



US Consumer Product Safety Commission

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Information, Regulations and Guidance about Lead in Consumer Products

This page includes links to documents regarding lead in consumer products including Regulatory Summaries in Plain Language, Testing Laboratories & Methods, specific product information, and more.

Candy Wrappers

- ➔ [Letter to US Candy Importers](#) (July 2004)
- ➔ [Letter to Mexican Candy Exporters \(Español\)](#) (July 2004)

Consumer Products

- ➔ [CPSC Staff Report: Evaluation of Lead Test Kits](#) (October 2007)
- ➔ [Evaluation of Consumer Products for Lead](#) (September 2007)
- ➔ [Guidance for Lead in Consumer Products](#)

Federal Hazardous Substance Act (FHSA)

- ➔ [Requirements under the Federal Hazardous Substance Act: Labeling and Banning Requirements for Chemicals and Other Hazardous Substances](#) (August 2002)

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Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint

- 16 CFR Part 1303 (CPSA)
- Lead-containing paint
 - Exceeds 0.06% lead (0.06%=600ppm)
- Children's products, furniture
- Scrapeable surface coating
 - Not substrate, not ceramic glaze, not internal parts (solder, etc.)

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Evaluating Painted Consumer Products for Lead

- Remove paint from substrate
- Digest in hot, concentrated Nitric Acid (AOAC 974.02)
- Analyze by Inductively Coupled Plasma (ICP) or Atomic Absorption (AA) Spectroscopy (ASTM E1613)

Acid Digestion of Paint to Determine Lead Concentration



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Evaluating Products for Lead Under Federal Hazardous Substances Act

- FHSA – 16 CFR Part 1500
- Exposure-based
 - Hazardous substance may cause *substantial personal injury/illness* as a result of reasonably foreseeable use, including ingestion by children
- Banned hazardous substance
 - Children's product which bears/contains *accessible* hazardous substance
 - Includes accessible lead

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FHSA Lead Testing – Exposure

- Initial screening – total lead content
- Common potential scenarios tested
 - Potential ingestion – simulated stomach acid extraction
 - Ex: Children's metal jewelry SOP
 - <http://www.cpsc.gov/businfo/pbjeweltest.pdf>
 - Potential mouthing – simulated saliva extraction
 - Analogous to acid extraction in children's metal jewelry SOP
 - Using 0.9% saline instead of acid
 - Potential hand-to-mouth – moist wipe testing
 - Ex: vinyl products methodology
 - <http://www.cpsc.gov/phth/vinyltest.html>

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Procedure for Determining Total and Accessible Lead in Children's Metal Jewelry

<http://www.cpsc.gov/businfo/pbjeweltest.pdf>

<http://www.cpsc.gov/businfo/LeadFAQ.pdf>

- Initial screening – total lead content
 - Grind, digest in hot, concentrated Nitric and Hydrochloric Acids
 - Analyze by ICP
- Simulated stomach acid exposure
 - Extract in 0.07N Hydrochloric Acid
 - Analyze by ICP



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Methodology for Accessible Lead in Vinyl

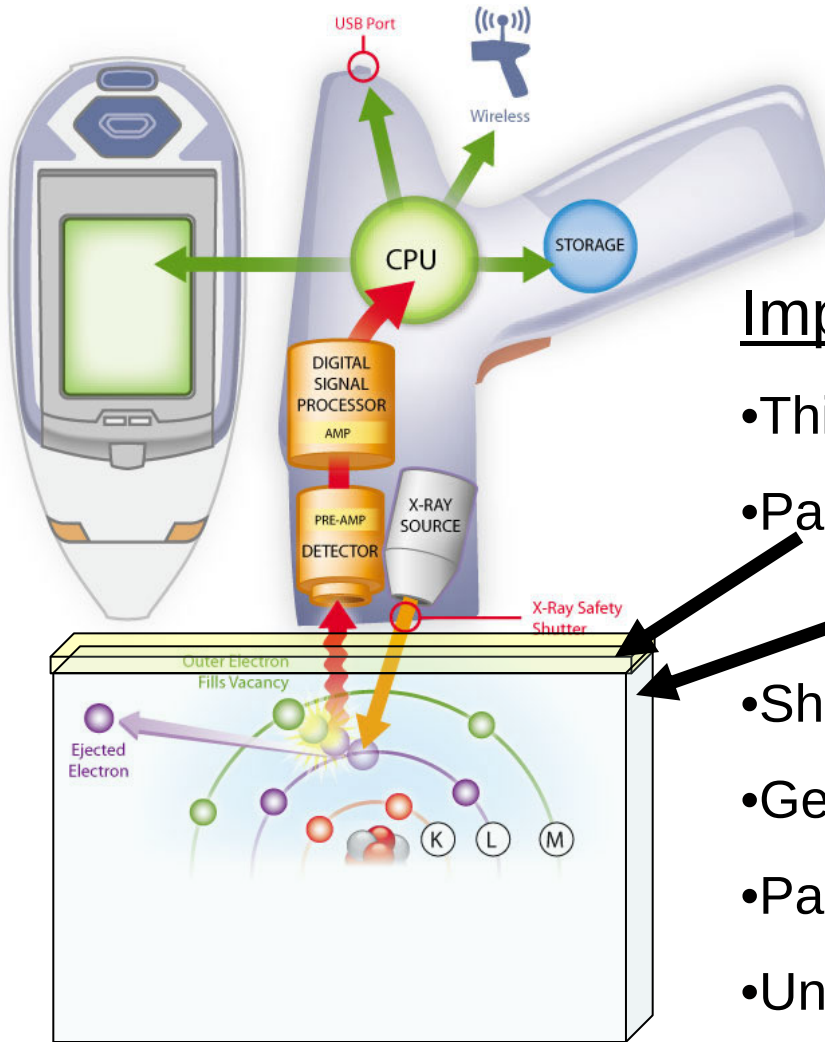
Excerpt from <http://www.cpsc.gov/phth/vinyltest.html>

Gently wipe....
area on the item
being tested....
10 times each with
3 wipes for a total of
30 strokes over the
area....



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XRF Screening For Lead



Important Screening Considerations

- Thin vs. thick: x-ray penetration
- Paint vs. substrate
- Shielding (jewelry)
- Geometry
- Paint quantity (thickness, spot size)
- Underlying materials (solder, etc.)

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Lead Testing by XRF

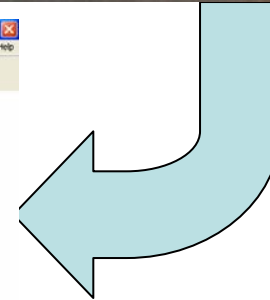
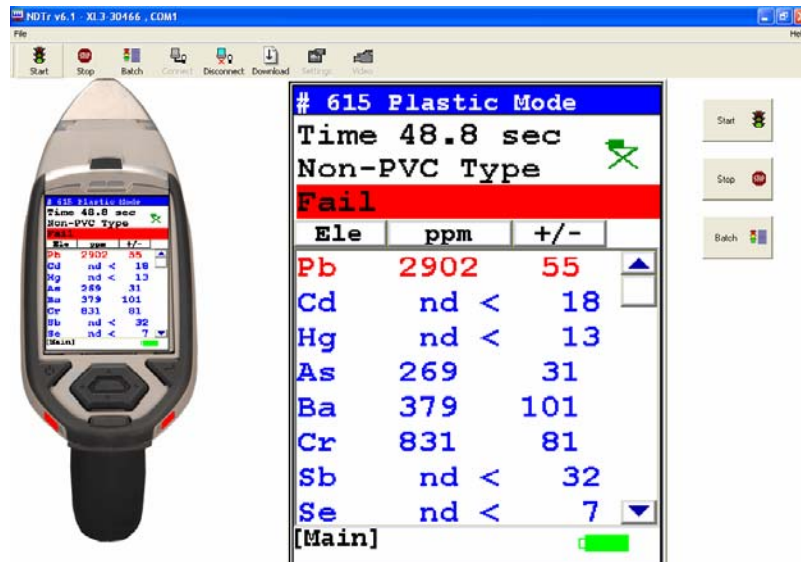
Frequently Asked Questions (FAQ)

Excerpt from <http://www.cpsc.gov/businfo/xrffaq.pdf>

- Area versus concentration
- Thick versus thin materials
- Use primarily as a screening tool

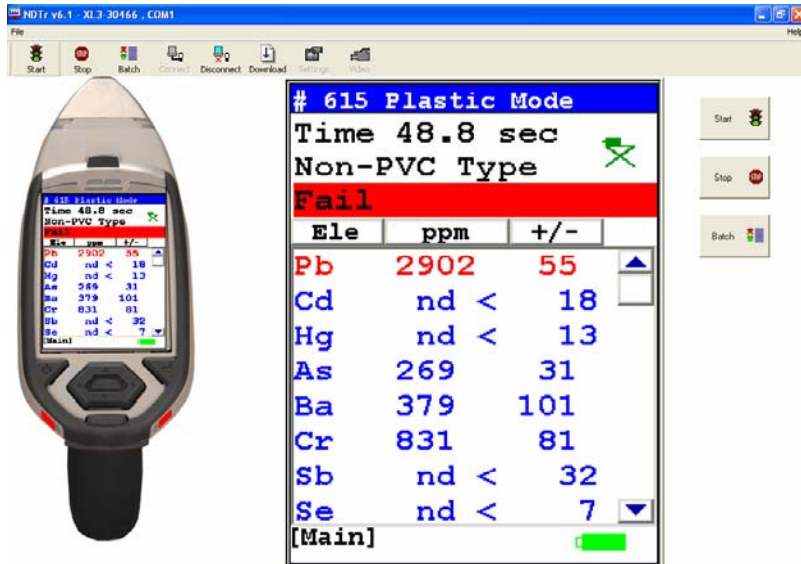
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XRF Screening For Lead



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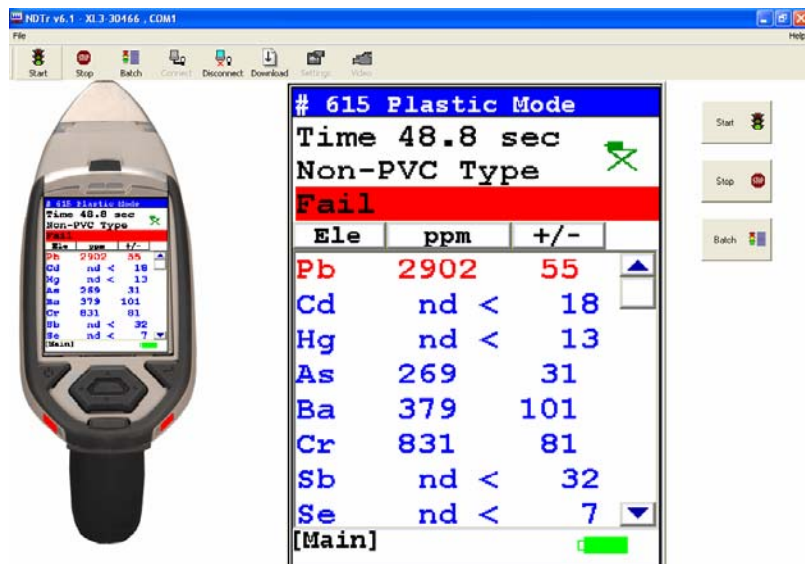


- Result > 600ppm not necessarily lead paint*
- Result < 600ppm may be lead paint*

*as currently defined by 16 CFR 1303

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XRF Demonstration



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