



Handheld XRF for CPSIA Compliance

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Additional Resources

My esteemed colleagues here to assist with this webinar

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A Worthy Mission

ThermoFisher S C I E N T I F I C

Healthier



Cleaner



Safer



We enable our customers to make the world healthier, cleaner and safer

History and Scope of the new Law

- The original Lead (Pb) Paint law from FEB 27, 1978 at 600 ppm
 - Code of Federal Regulations
 - Title 16, Part 1303
 - (a) Paint and other similar surface-coating materials
 - (b) Toys and other articles intended for use by children
 - (c) Furniture articles
- This old law applies to consumer goods, including all furniture, not just children's furniture, and also buckets of household and commercial paint.
 - There are many exemptions, including cars, boats, and specialty uses of paint.
- The CPSIA alters the old law, Amendment published December 19, 2008, in 73 FR 77493
- Reduces the level of Pb in paint for all products previously covered
 - Now includes all children's products, not just toys
- Adds new regulations for Pb in all materials, not just paint, commonly referred to as "substrates".
 - Plastic, metal, ceramic, etc.
 - Applies only to children's products

The Lead Law HR4040

- Consumer Product Safety Improvement Act of 2008
 - “CPSIA,” Public Law 110-314, signed by Pres. Bush Aug.14, 2008
- Major Lead-Related Provisions
 - For children’s products...
 - ... Lowers lead limits to...
 - ... 600 ppm, effective Feb. 10, 2009
 - ... 300 ppm, effective Aug. 14, 2009
 - ... 100 ppm, effective Aug. 14, 2011 (*if technologically feasible*)
 - Limits apply to “total lead content by weight” ... not just accessible or bioavailable lead
 - ... Lowers lead paint limits to ...
 - .. 90 ppm, effective Aug. 14, 2009 (from 600ppm) not exclusively for children’s products

**Retroactive for existing
inventory!**

What the CPSIA Said about XRF when Law was established

- XRF can be used for Screening Lead in Small Painted Areas...
 - ... if total weight of the paint or coating is < 10 mg ...
 - ... *or* if the coating is < 1 cm²
 - Why? “The dot of the dolls eye”
- CPSC *shall* study XRF to determine its “effectiveness, precision, & reliability” for measuring lead in paint (timeline: until Aug. ‘09)
- Then, CPSC *may* issue regs to use XRF
- In the meantime... CPSC & others can use “alternative methods” for detecting lead to determine if more testing needed

... **BUT** CPSC Has Pushed Back Testing & Cert

- The CPSC voted to wait until Feb 2011 to implement testing & cert for *total lead content in substrates*. *Pb in paint testing not stayed*.
 - **But products must still meet the new lead limits!**
Analogy: You don't have to have a speedometer, but if you get caught speeding, you're gonna get a ticket
- What does this stay mean for XRF?
 - XRF can continue to be used to determine whether lead is present above legal limits
 - The CPSC continues to endorse XRF and is exploring additional certification usage
 - Stay has created time for the CPSC to establish a method for the certification testing of Pb in paint

What the CPSC Report Says About XRF (Aug. 2009)

Lead in Substrate

- “the foundations required for XRF analysis of polymers are in place”
 - Methods exist, SRMs available
- “Quantitative analysis of homogeneous plastic or polymeric materials for Pb content using XRF technologies is possible at this time.”
- “XRF technology is suitable in many cases for the accurate determination of lead in plastics provided appropriate test methods are followed, with the use of appropriate SRMs.”

Lead in Paint

- XRF “has the potential to accurately measure lead content in painted films on children's products at the limits required”
 - Need to develop SRMs, methods
- “It may still be possible to use in-situ XRF as a screening tool.”
- “Quantitative analysis of lead in paint on a mass per mass unit basis is possible using ex situ XRF techniques in which the paint is removed from the product and analyzed by an XRF spectrometer as a homogeneous sample.”

Performing Due Diligence

- Due Diligence is a strategy to ensure that all reasonable steps were taken to comply with applicable regulations
- What can you do?
 - Establish a screening/testing program
 - *Testing/Auditing/Inspections/Continued Surveillance*
 - Require certificates of compliance from suppliers
 - Require suppliers to perform testing as the basis of supplier's material declaration. Spot checks of suppliers to confirm compliance
 - Perform testing above and beyond what is minimally required to comply with the law
 - Remember that Consumer Advocate groups and local governments are testing!
 - Retailers are testing, before they buy



Discussion Points

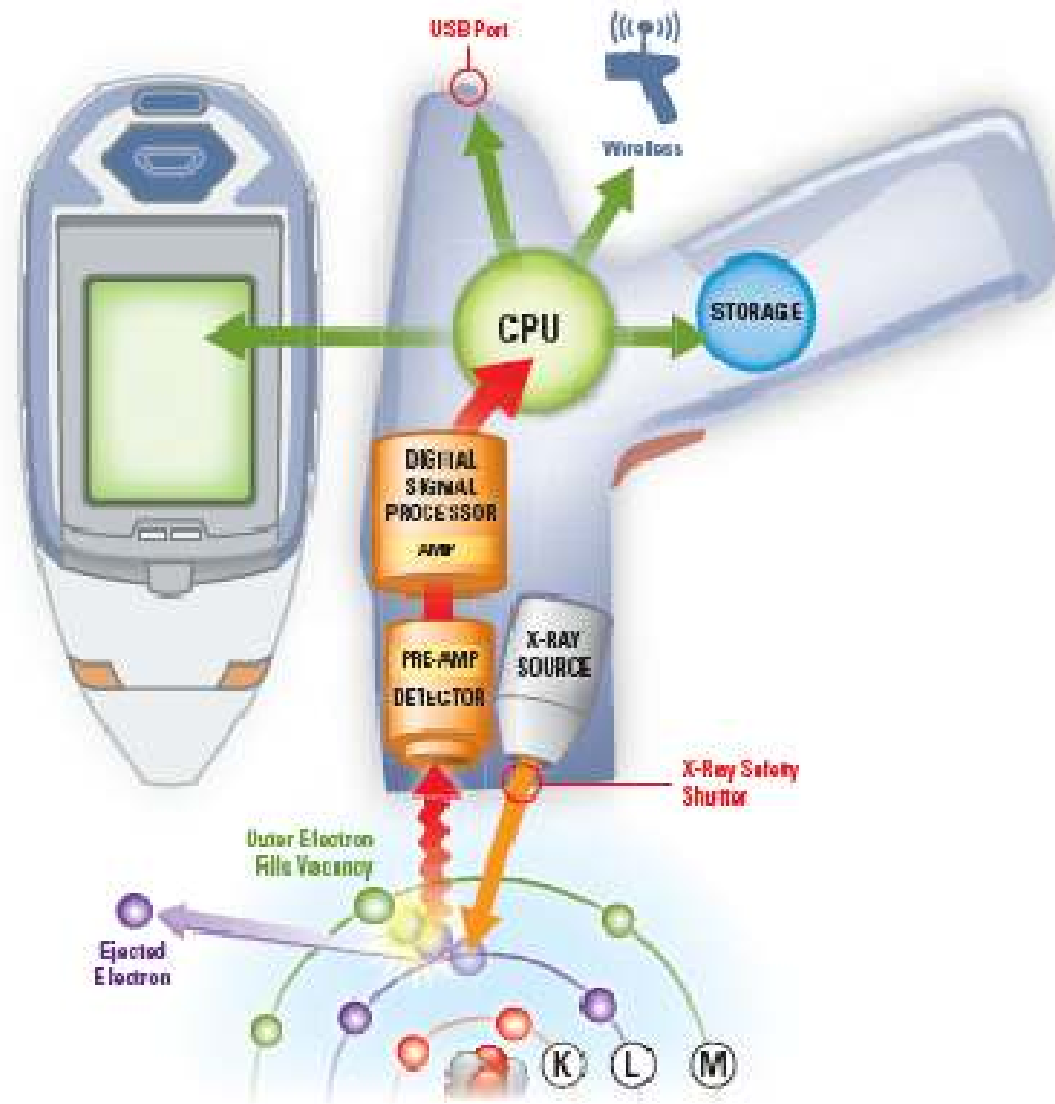
- Component Testing Ruling
- Changes coming for CPSIA?
- More Material Exclusions coming? Manufactured wood, brass, bronzes, though will have to label product with a warning notice?
- Less 3rd. Party analysis if have 1st. Party XRF analysis program in place
- Functional Purpose Exceptions (not technologically feasible to produce without Pb, not likely to be placed in mouth, no effect on public health, etc.)
- Alternative (not 3rd. Party) testing requirements provide relief for LVM's and thrift re-sellers
- Penalties have increased significantly

U.S. CPSC Uses the Thermo Scientific Niton XRF Analyzer for Inspection

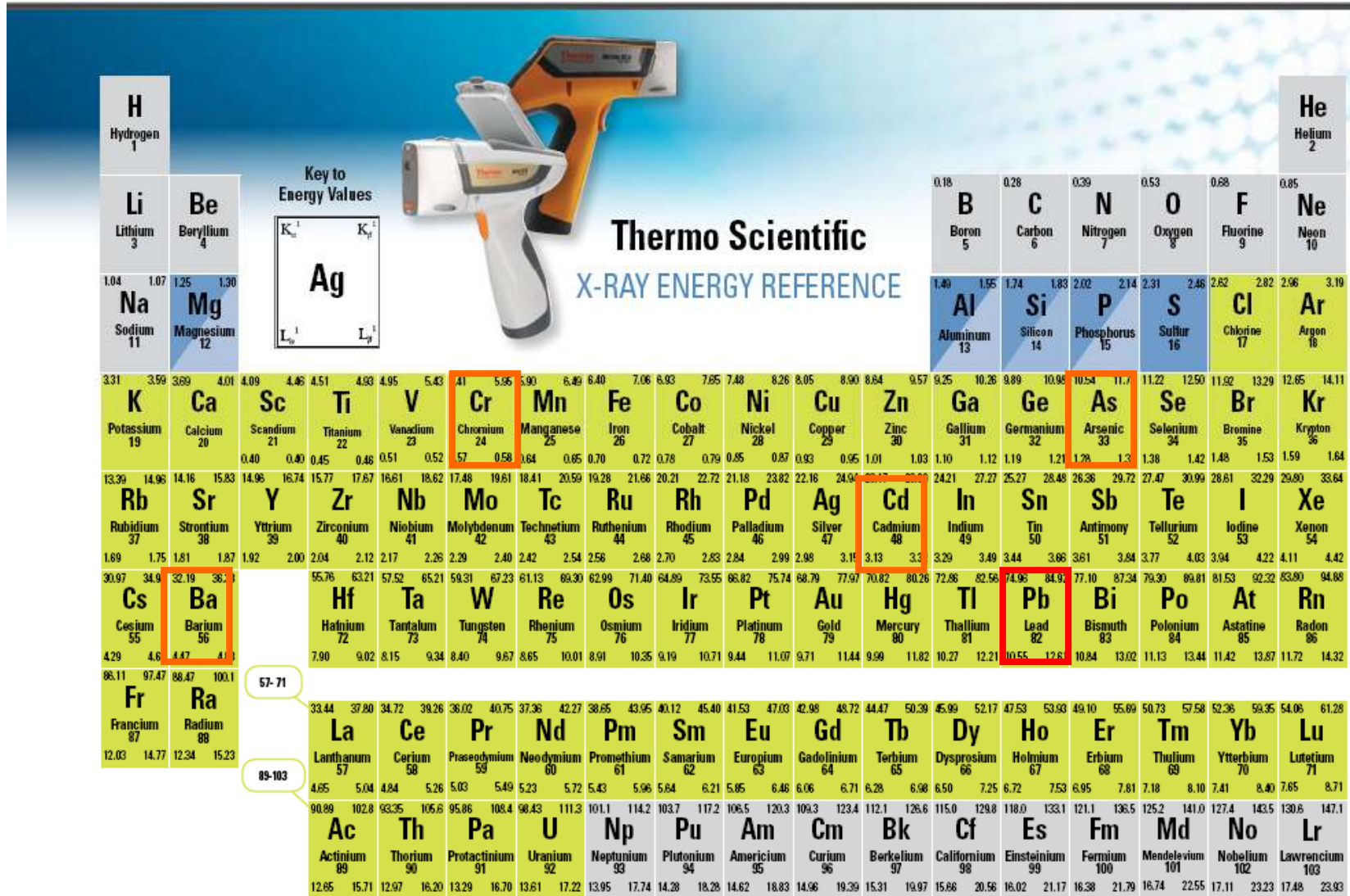
- "As part of our year-round commitment to protecting the safety of children, CPSC has purchased a number of x-ray fluorescence (XRF) analyzers."
 - Nancy Nord, Commissioner, CPSC
- "The XRF analyzer allows us to do a quick, on the spot check for lead. It's portable, and we can use this technology to get immediate results."
 - Dr. Joel Recht, Director Chemistry Division, CPSC
- The CPSC has "officially approved use of XRF for lead in plastics certification"
 - John Gibson Mullan, Director Office of Compliance, CPSC



How XRF Works



What Can XRF Analyze? Most Elements on the Periodic Table



Unique Features of Handheld XRF

- TestAll™ Technology – Removes decision-making steps from the users' hands
- On-board CCD Camera – Offers more precise sample positioning
- Small Spot Feature – Allows testing of parts 3mm and smaller



Automatically Determine How to Analyze Any Sample

TestAll Technology

- Removes decision-making steps from the users' hands

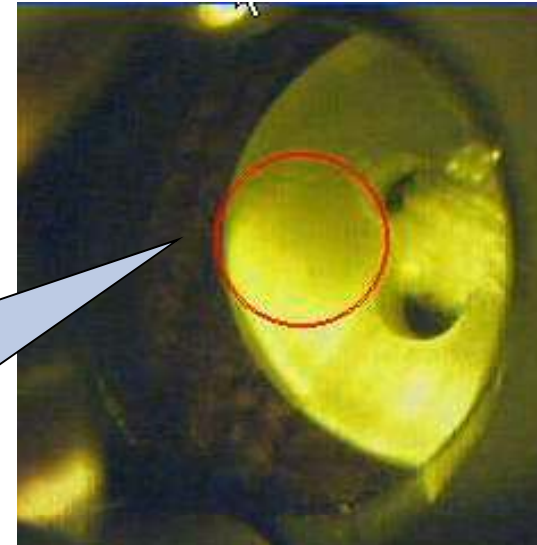


Small Spot Feature – Analysis of Plastic Button



Test parts 3mm and smaller

Test button
plastic only
- not holes
- not thread



Certificate of Verification Report

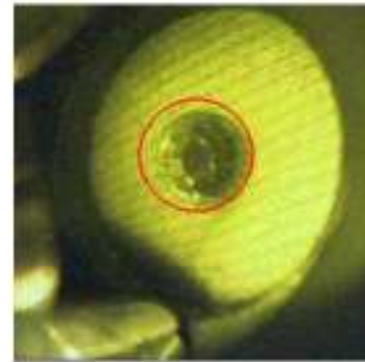


Thermo Fisher Scientific
900 Middlesex Turnpike, Building #8
Billerica, MA 01021

Certificate of Verification

XL31-33404

Reading No: 110
Mode: PLASTIC
Time: 2003-12-11 08:34
Duration: 10.22
Sequence: Final
Result: Fail
Flags: 3mm
SAMPLE: 6
LOCATION:
INSPECTOR:
MISC:
NOTE:

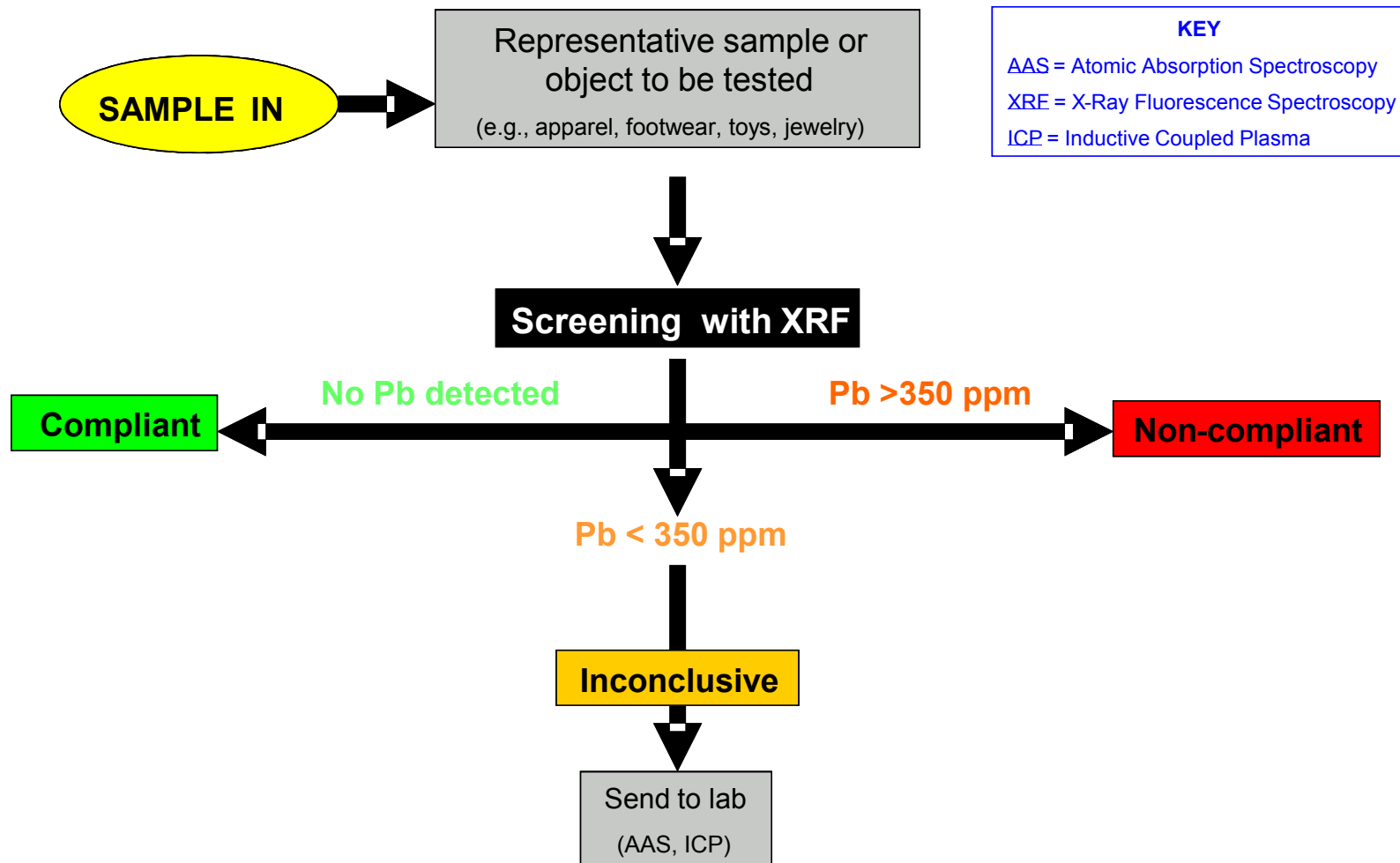


	ppm		Error
Ba	< LOD		2753.463
Sb	1032.145	±	750.617
Sn	< LOD	:	414.594
Cd	< LOD	:	310.890
Bal	854923.125	±	30680.309
Bi	< LOD		1996.782
Pb	54595.047	±	11526.997
Br	< LOD		492.575
Se	< LOD		637.896
As	< LOD	:	4394.908
Hg	< LOD	:	676.584
Au	< LOD	:	1328.892
Zn	2153.994	±	831.527
Cu	79746.906	±	17652.469
Ni	685.946	±	449.945
Fe	< LOD		798.817
Cr	< LOD		1299.272
V	< LOD	:	4014.760
Ti	< LOD	:	6842.481
Cl	< LOD	:	190000.000

Supervised By: HEM _____

Reviewed by: _____

Screening Scenario with Possible Results



XRF Advantages

- Can be utilized for periodic testing at each stop in the supply chain and is a key component in your manufacturing QC process.
- Nondestructive, near instantaneous analysis allows you to make immediate Go/No decisions.
- Demonstrates "Due Diligence", helps with a "Good Faith Enforcement Policy", and provides "Reasonable Certainty."
- Becomes a key component of a "Reasonable Testing Program."
- Endorsed by the CPSC. There is a provision for XRF testing stated in the *Federal Register*, October 29, 2009.
- Complements third-party testing.

Helps you prevent non-compliant products from reaching store shelves!

In Conclusion

- **CPSC** encourages the use of, and utilizes handheld XRF as a screening tool to complement traditional lab analysis. **Testing more samples, faster.**
- The CPSC recommends a **Continued Compliance Testing program** and XRF is a simple, inexpensive option to accommodate this recommendation.
- XRF provides easy, nondestructive, operator-independent analysis for the entire supply chain. **Immediate results.**
- Retailers/Manufacturers/Importers/Distributors have incorporated XRF testing as additional insurance and a Due Diligence effort for **CPSIA compliance.**
- In August 2009, the CPSC completed an **official study of XRF**, showing that XRF compares favorably to lab testing for plastics analysis.
- This study **allows XRF certification testing for plastics** and the screening of Pb in paint. Certification testing of Pb in paint will follow when representative thin paint reference materials become available.

In Conclusion

- 3rd Party Testing only handles a small percentage of a company's products and XRF compliments 3rd Party Testing by providing a cost effective, fast, easy to operate and nondestructive method to verify that most, if not all, components or final products are within Pb compliance.
- The CPSC recommends Voluntary Testing, Continued Certifications, Redundant testing, Pre-market testing and Testing when the manufacturing process changes or when there's a material change or change in the material source.
- "As part of a good QC audit, you should periodically verify that the manufacturers processes or the material in the items have not changed therefore risking contamination." - AAFA FAQ's
- XRF assists in a "TRUST BUT VERIFY" philosophy.