

Environmental Services & Solutions

Arin Goldberg – CEO
Seth Goldberg – President



Agenda

- Introduction
- XRF Technology
- Key Questions
- Demonstration
- Q & A





Introduction

Essco Safety Check – Who We Are

- Environmental Services & Solutions Corporation (ESSCO)
- Based in Bellevue, WA
- Owners
 - Arin Goldberg – CEO
 - Seth Goldberg – President

**We Provide Environmental Testing Services
Utilizing Advanced Technology and Producing
Custom Reports**



Essco Safety Check – What We Do

- Testing Services
 - In-home Testing
 - Retail Testing
 - Industrial Testing
- Advanced Technology
 - XRF Analyzer
 - Custom Software Platform
- Report Generation
 - Custom Reporting



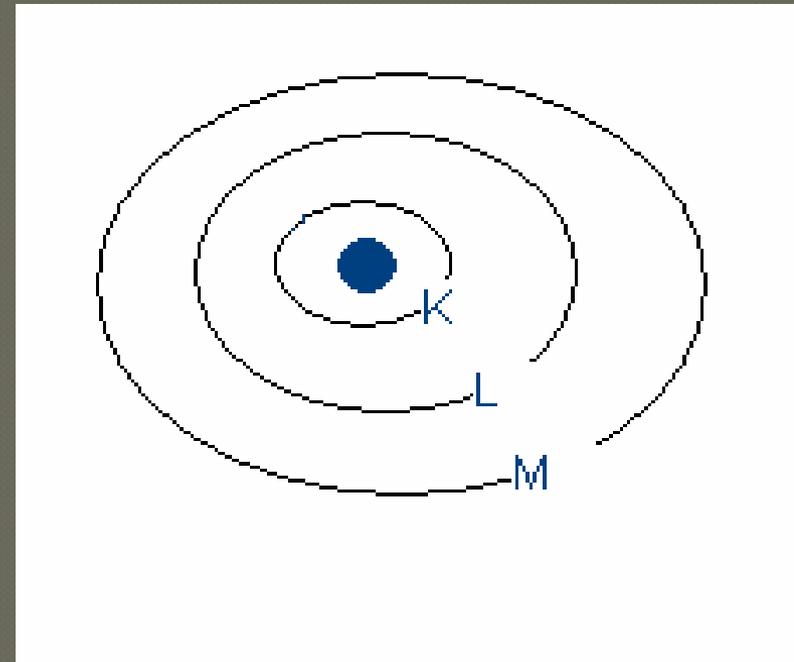


XRF Technology Overview

XRF Technology Overview

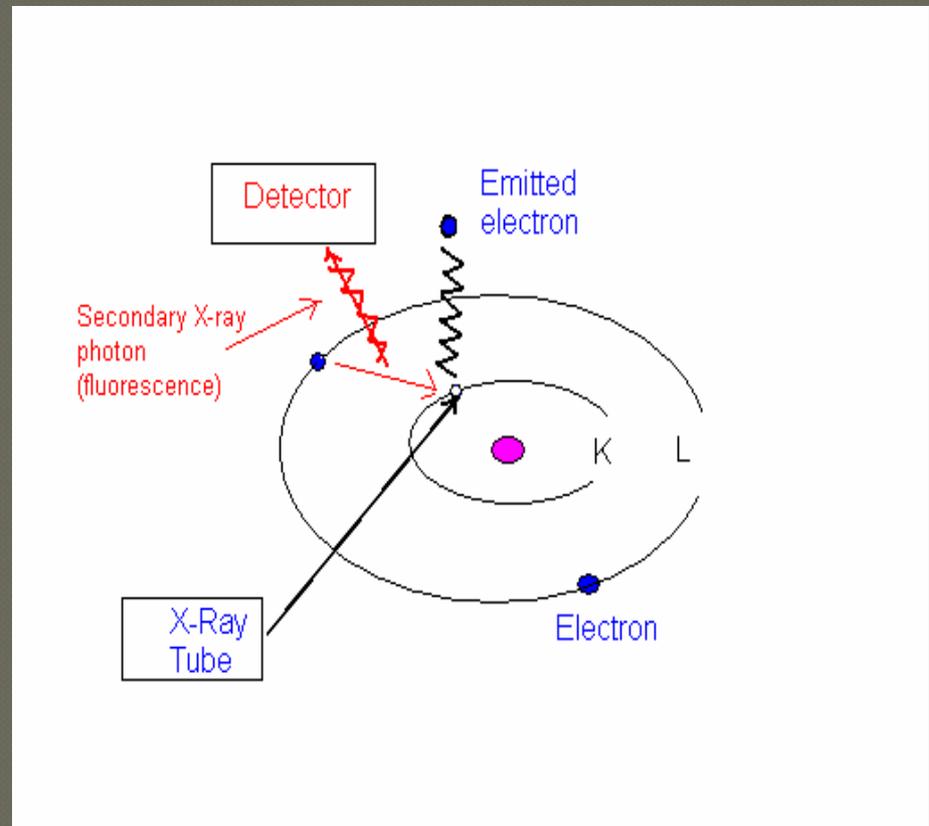
Starting With A Brief Physics Primer

- Atomic Anatomy
 - Nucleus is found in center
 - Electrons can be found orbiting the nucleus in different energy level “orbitals” called k,l,m,n...

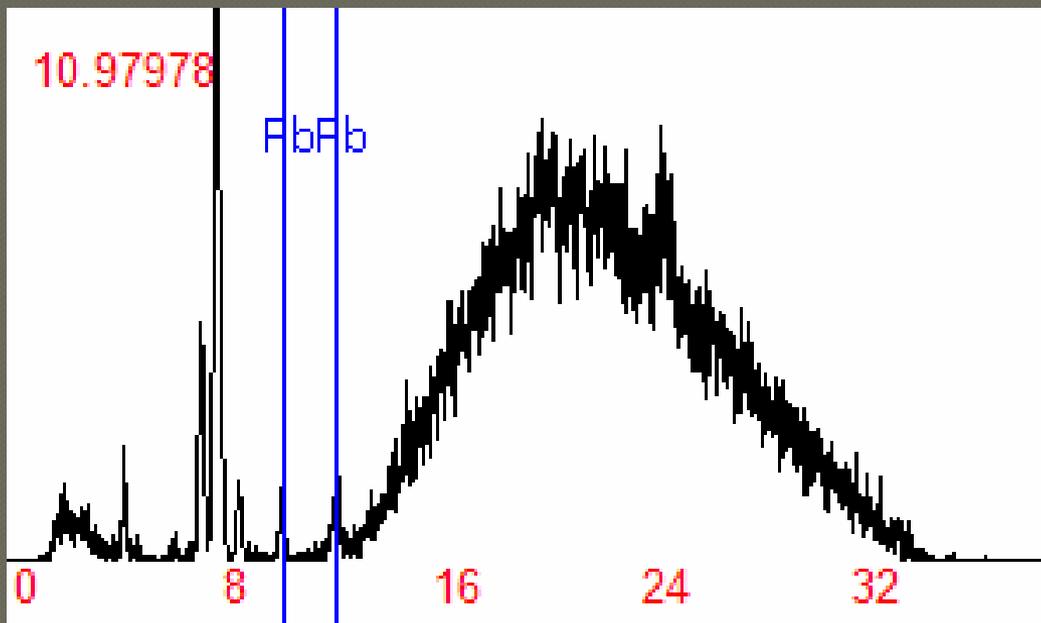


XRF Technology Overview

- X-Rays from tube knock out “inner shell” electrons creating an unstable state
- Outer shell electrons drop down to fill vacancy in inner shell
- Characteristic x-rays from sample are produced and detected
- Each element has multiple, distinct x-ray lines (K, L, etc.)



XRF Spectrum



○ Spectrum

- Counts of specific eV values
- Each element has a unique set of peaks



Handheld XRF Detection Limits

- Pb: 10ppm
- Cd: 25ppm
- Hg: 10ppm
- As: 10ppm
- Sb: 45ppm
- Br: 5ppm
- PVC: Detection





Key Questions

What We Look For

Color

- Colors can suggest areas of concern
- Brighter colors are more likely to be problematic

Texture

- Synthetic areas
- PVC

Access

- What level of access does the child have to the testing location?

Relationship

- Is the toy likely to be mouthed?



How Products Are Tested

- We Test Each Item
 - One or more tests per item
 - Minimum of 30 seconds to 5 minutes per test
- We Collect Metadata
 - Photograph each test
 - UPC/Name/Manufacturer information
 - Test Notes
- We Generate a Report





Demonstration

What percentage of toys need to be tested to assure compliance?

- It depends
- Our Suggestions
 - Random inspections
 - Traceability
 - Batch Numbers on all products
 - Full Inspections of at least one item from each batch
 - Positive results should be confirmed with additional tests



What We've Found In Our Testing

○ Retail Testing

- PVC (detected): 17%
- Pb (>40ppm): 7%
- Cd (>40ppm): 3%

○ In-home Testing

- PVC (detected): 16%
- Pb (>40ppm): 7%
- Cd (>40ppm): 5%



What is the cost of testing, using the XRF technology?

● Testing Efficiency

- 50-60 tests per hour
- 400-500 tests per day
- 3-5 tests per item
- Reports returned within 24-48 hours of completed testing

● Our Rates

- ½ Day (4 hours): \$500
- Full Day: \$750
- Full Week: \$3500



How does the XRF technology compare to other technologies?

- Sensitivity
- Speed
- Utility
- Waste generation
- Field portability
- Compatibility
- Reliability
- Cost



Does every toy need to be tested for phthalates or just PVC toys?

- ◉ Just PVC (Polyvinyl Chloride)

- ◉ Why

- Phthalates are a chemical most commonly used to make plastics softer.
- Almost all phthalates are used in PVC products
- Testing only PVC products will reduce expenses
- In our testing we find 17% of products are PVC





Questions?
