
Anritsu Industrial Solutions USA

X-Ray Inspection Systems 101



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Introduction

Welcome to Anritsu Industrial Solutions X-Ray 101 Presentation.

We are pleased that you are interested in learning more about x-ray technology and how the installation of an x-ray system can help you protect your brand and ultimately protect the consumer.

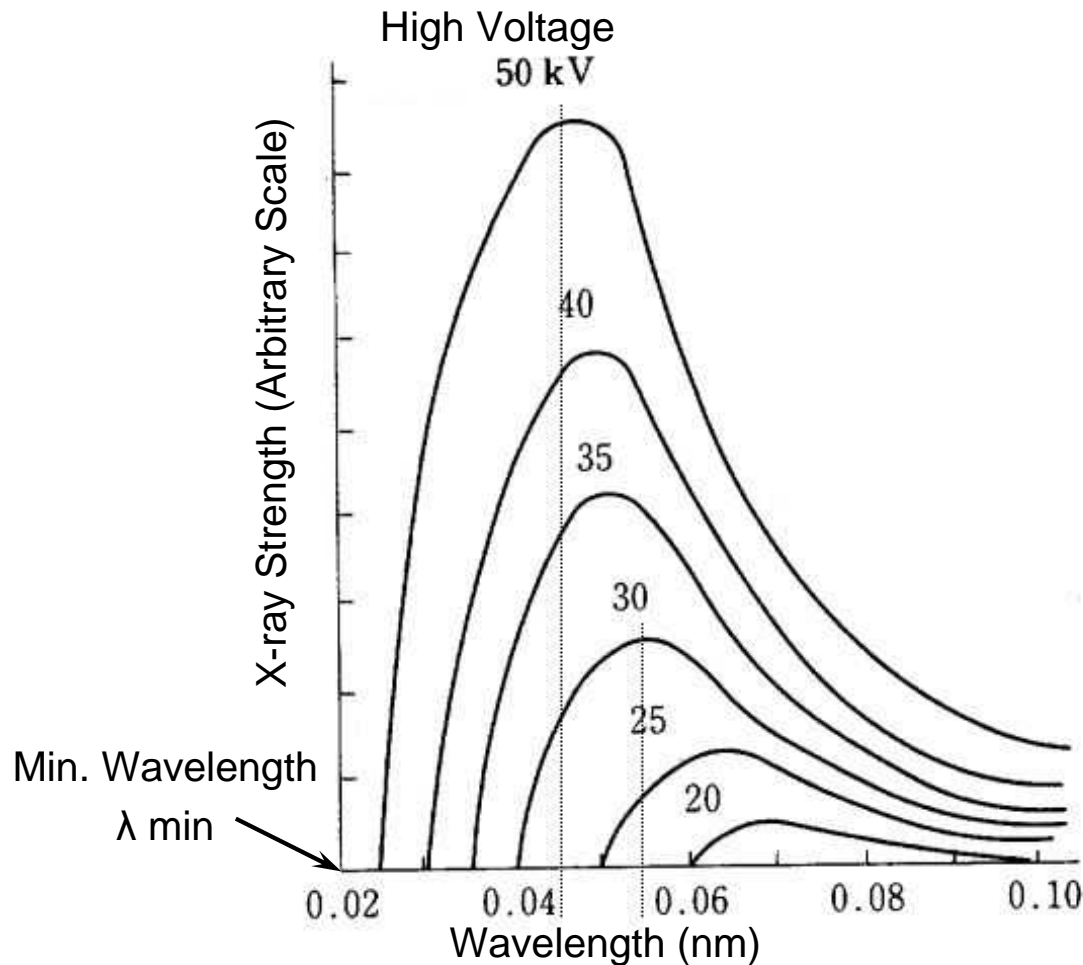
Food safety and quality is always a major component of a food manufacturer's vision statement. Producing low quality, tainted products can and will be the demise of a food processor and could lead to expensive lawsuits and recalls when contaminants are found within a product. Packaging anomalies can create many consumer complaints and result in the loss of brand integrity and profitability. There are various technologies available to protect your interests from various consumer claims and many technologies are complements to each other. A fully managed food safety plan includes the use of various technologies under the watchful eye of a solid HACCP or quality control plan managed by the quality control team and ultimately understood and accepted by the entire organization.



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X-Ray 101

Voltage vs Wavelength



Relationship between tube voltage and X-ray minimum wavelength

$$\lambda_{\min.} (10^{-10} \text{ m}) = 12.395/E \text{ (kV)}$$

Example: when $E = 50 \text{ kV}$
 $\lambda_{\min.} = 12.395/50 = 0.2479 \times 10^{-10} \text{ m}$
(0.02479 nm)

Wavelength depends on the tube voltage and changes.

High voltage: Short wavelength

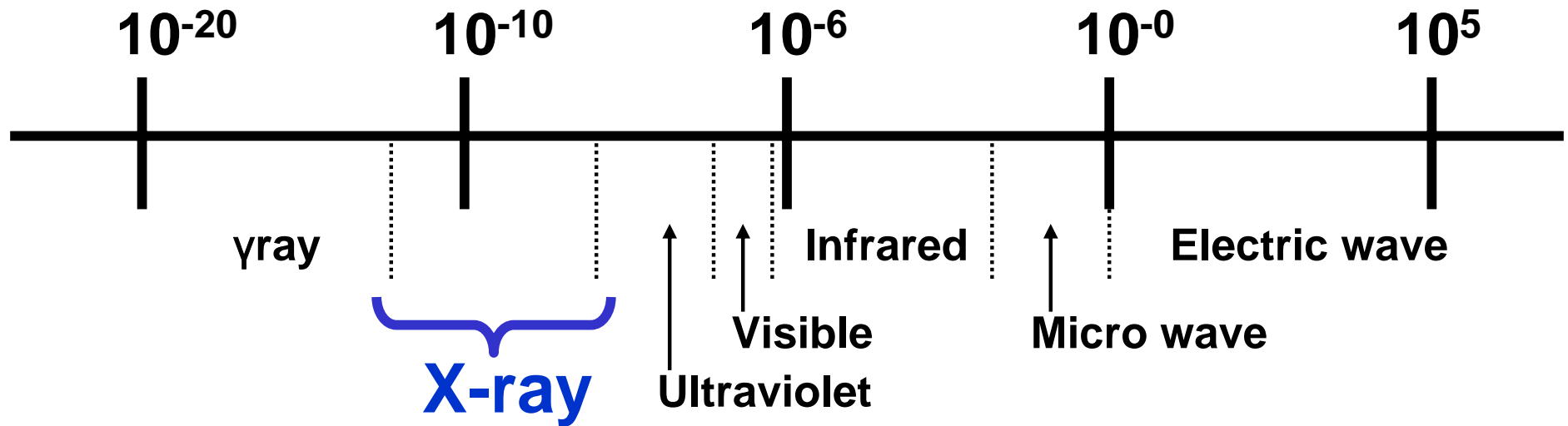
Low voltage: Long wavelength

Gray level is strong when wavelength is short

Bremsstrahlung X-ray Spectrum (Target Core: W) ⁽²⁰⁾

X-Ray 101

Wave length



Classification of electromagnetic waves

- X-ray is ionized radiation.
- Wave length is $10^{-8} - 10^{-12}$ m (100-0.01Å)

X-Ray 101

Does radiation remain in X-ray irradiated foods?

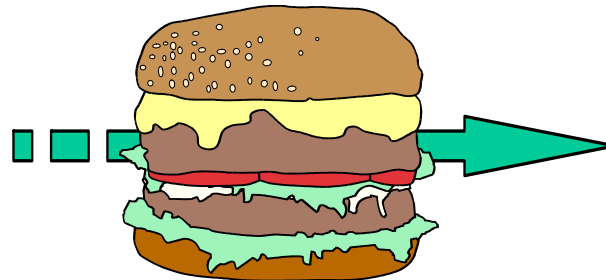
Sunbathing: Visible and UV light (electromagnetic waves) does not remain in the body.

Microwave oven: Microwave light (electromagnetic waves) does not remain in foods.

On the same principle:

X-ray light (electromagnetic waves) does not remain in the food.

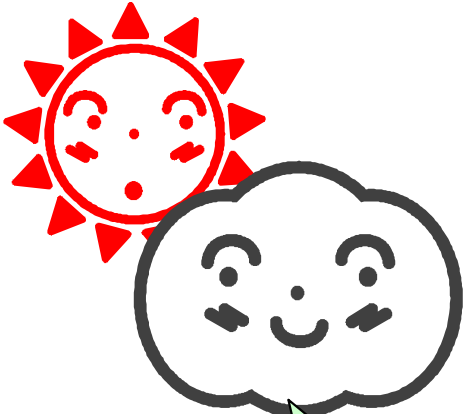
X-rays



X-rays:
None remaining

X-Ray 101

The natural background radiation the we all experience is about 1.1 mSv

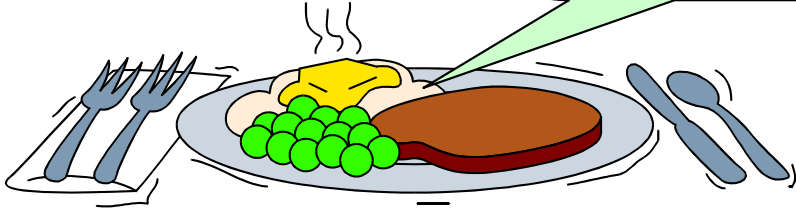


From atmosphere
0.35 mSv

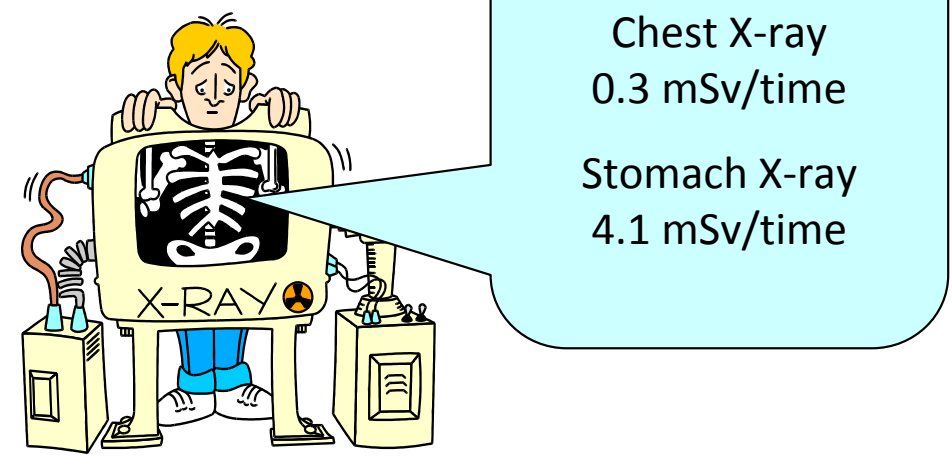
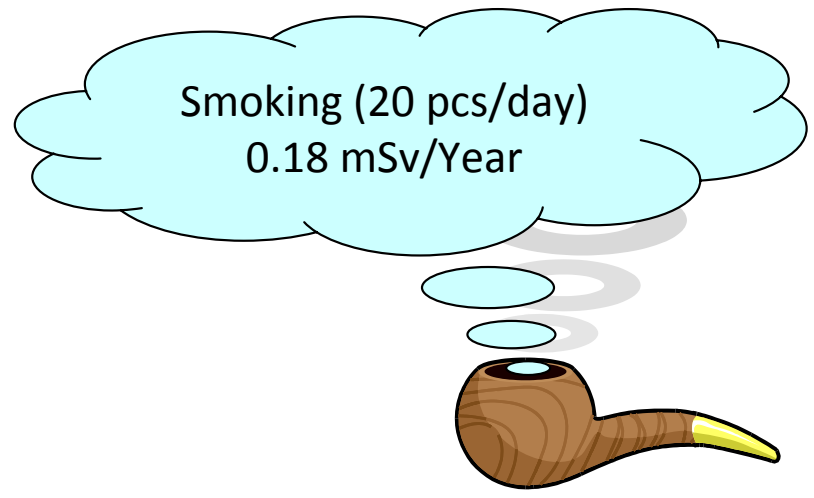
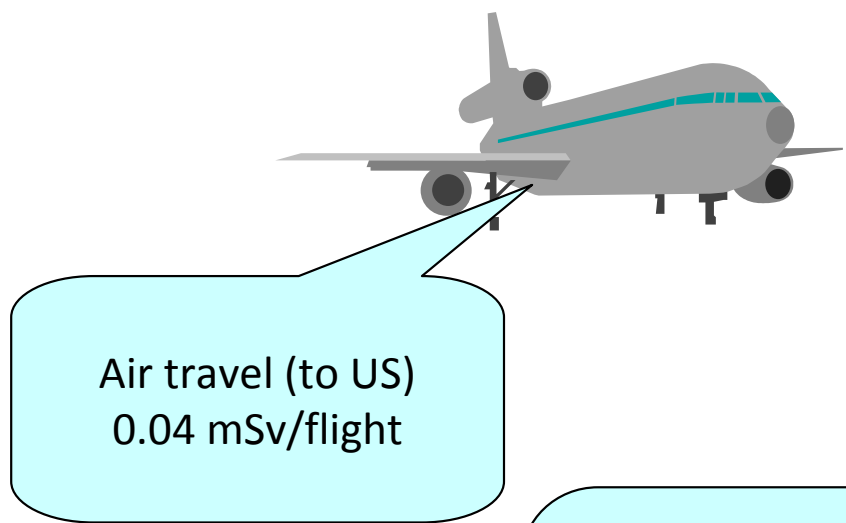
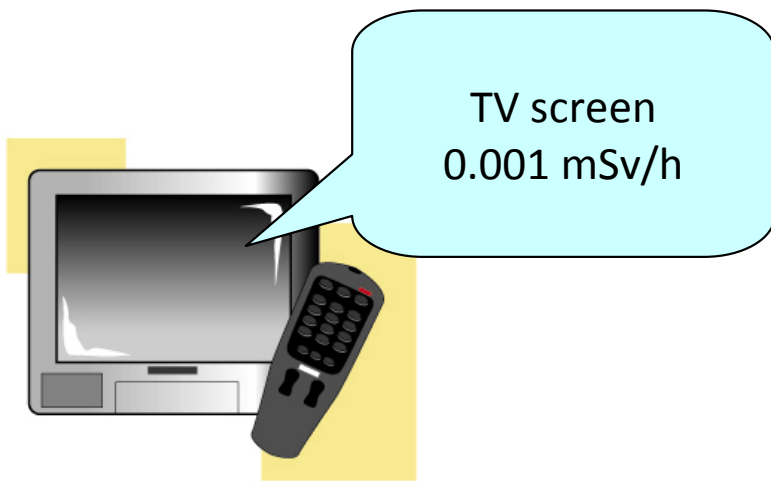
From earth
0.4 mSv



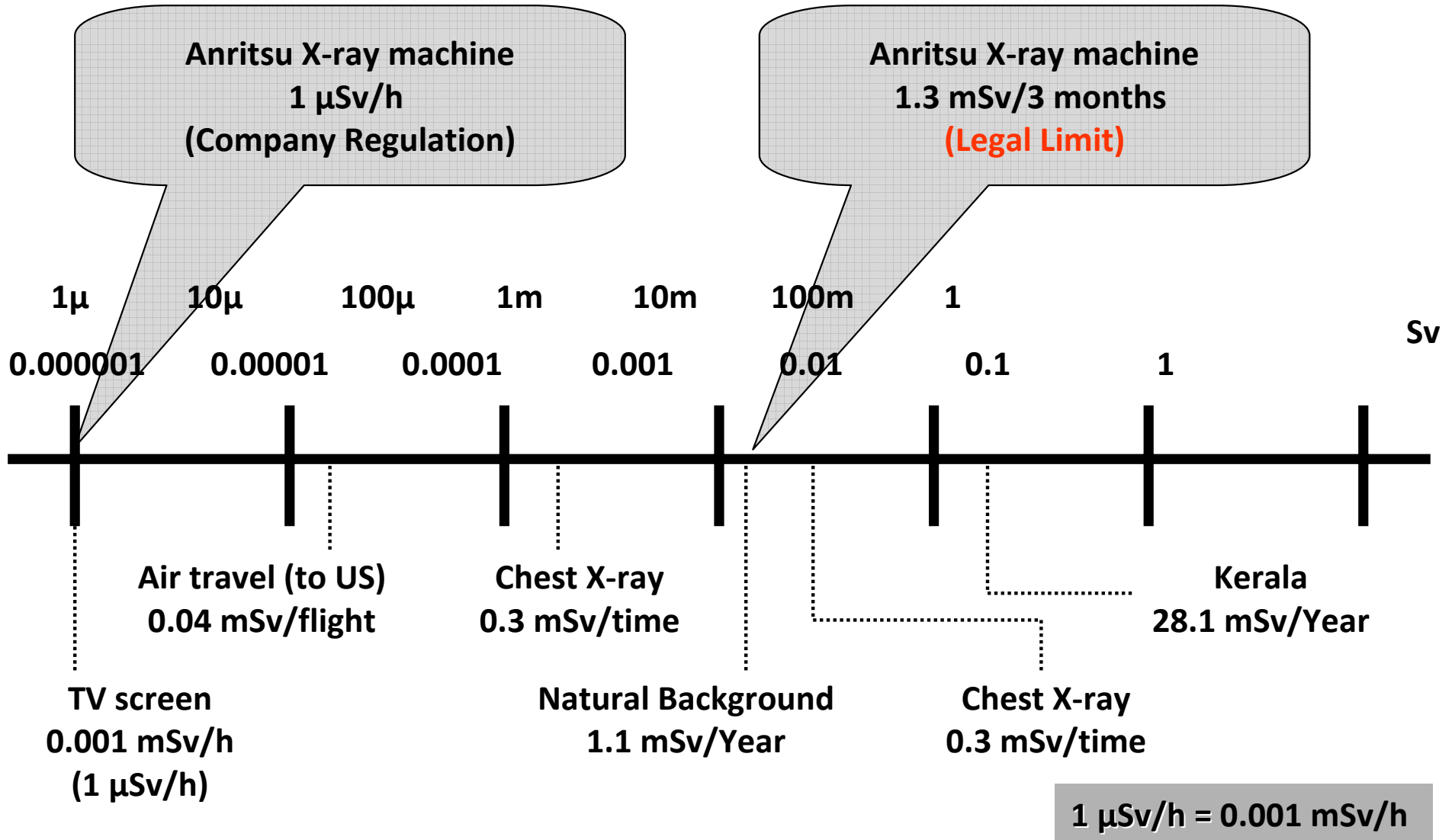
From food
0.35 mSv



Definition of X-Ray



Definition of X-Ray



Definition of X-Ray

In case of Japan

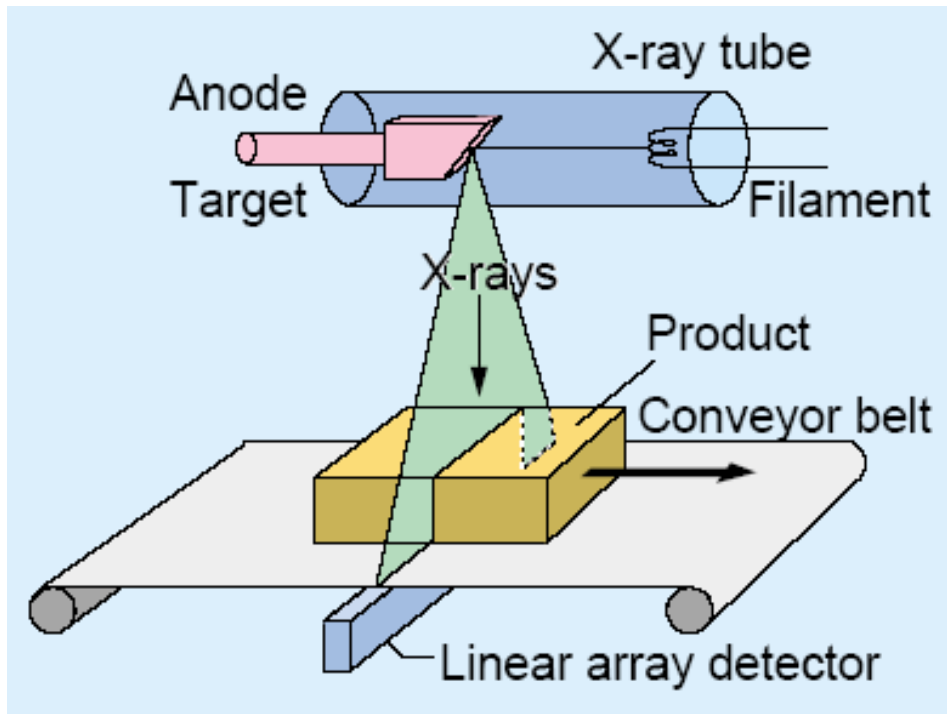
- Actual Anritsu X-ray leakage: Less than $1 \mu\text{Sv/h} = (1.25 \text{ mSv/3 months})$
- It is not necessary to establish a control zone
- It is not necessary to appoint operator supervisors in most states and provinces
- Anritsu X-ray machines are designed to be safe per regulations
 - FDA 21CFR1020.40 Cabinet X-Ray Regulations
 - Canadian RED ACT regulations

(Note): 3 months: 13 weeks (52 weeks/year x 3/12 months) @ 2" from the system

$1 \mu\text{Sv/h} \times 16 \text{ hours} \times 6 \text{ days} \times 13 \text{ weeks} = 1.25 \text{ mSv/3 months}$



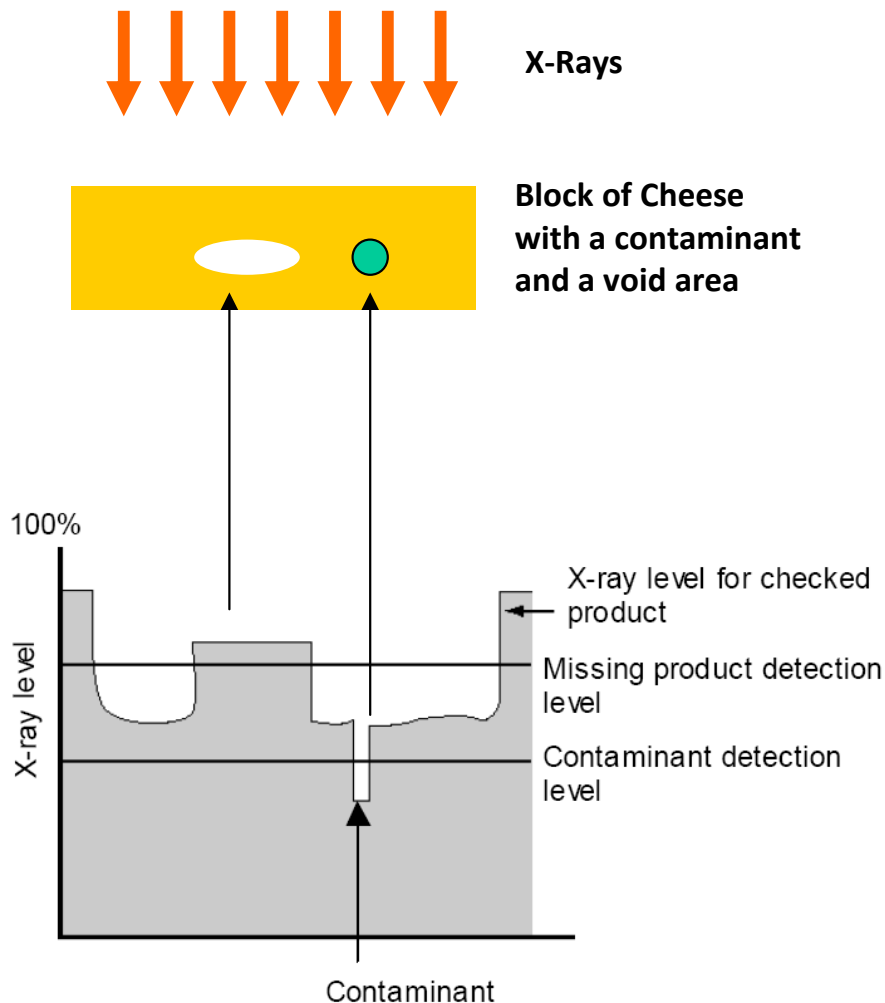
X-Ray Principles and Theory 101



X-Ray rays are generated electronically and do not create any radioactivity. When the power source is eliminated, the tube does not generate x-rays.

As indicated, the machine generates a small slice of x-rays that is measured by the linear array detector under the belt and product. Smaller diodes generate better image resolution and data and therefore allows for better detection of contaminants and image analysis. As product passes through this beam, the detector measures the density of the product at specific point per the amount of xray blocked by the product itself. When a contaminant is darker than the product because it blocks more x-ray light, it is highlighted and rejected from the production line.

X-Ray Principles and Theory - Basic



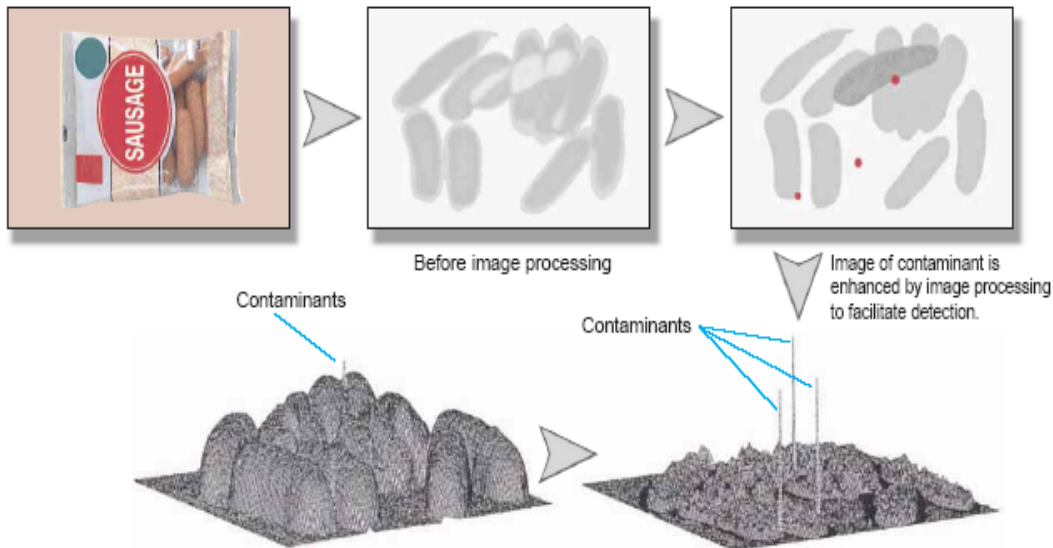
The image to the left represents the data of a single slice of the product as it passes through the beam. The lower the curve is to the 0% level of the graph, the more dense it is and the fewer x-rays that we received by the detector.

In simple terms, basic thresholds are established indicating what is classified as a good grayscale value versus and a bad grayscale value. The dark spike below the contaminant detection threshold indicates a dense contaminant as compared to the product itself.

Missing items thresholds can also be established.

The following slides improves upon this basic concept by using various and simultaneous imaging techniques.

X-Ray Principles and Theory - Complex



When all of the individual slices are placed back to back, a virtual 3-D density image is created on x and y coordinates created by each .4mm diode across the detector width. Slices are created and placed together at rates greater than 2500 times per second.

Proprietary software techniques and then applied to the imaging data to focus in on various criteria.

These techniques allow the analysis and detection of various densities, shapes, sizes and grayscales to pinpoint low density contaminants, small high density contaminants, small wires, large conglomerates and other anomalies such as missing items, underweight conditions and mis-packaged products. Additional techniques are used to look for small wires hidden in products that are particulate or variable in density.

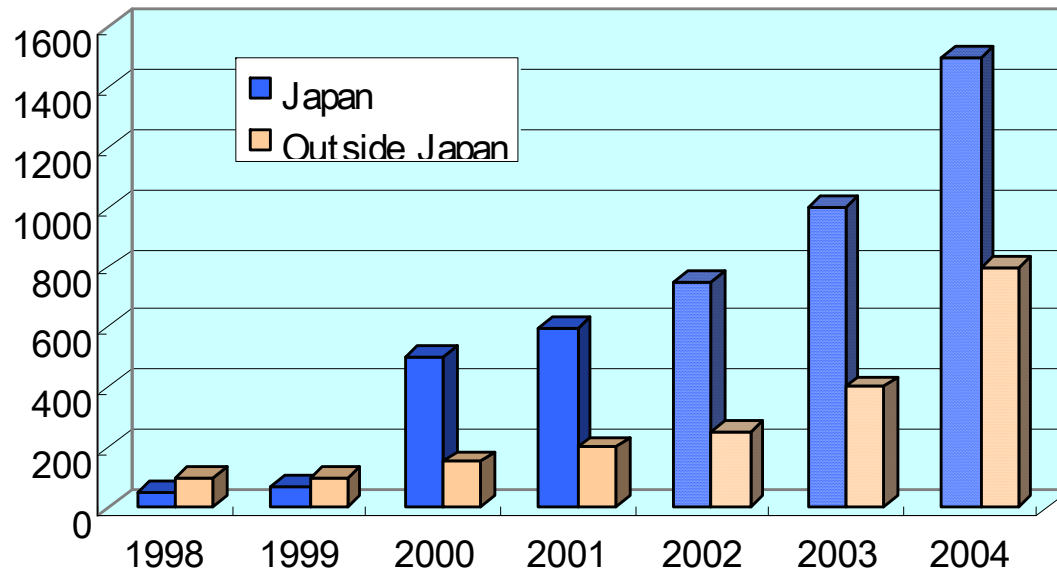
X-Ray Systems 101

Market Awareness
Imaging
Inspection Capabilities



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The Growing Demand for Food X-Ray Systems



X-Ray technology has been gaining notoriety and acceptance in the global market place as a proven and reliable tool for food inspection. Many consumer complaints, as indicated on the following slide, are detected by x-ray technology.

Consumer Contaminant Complaints

Refer to Japan consumer Information Center

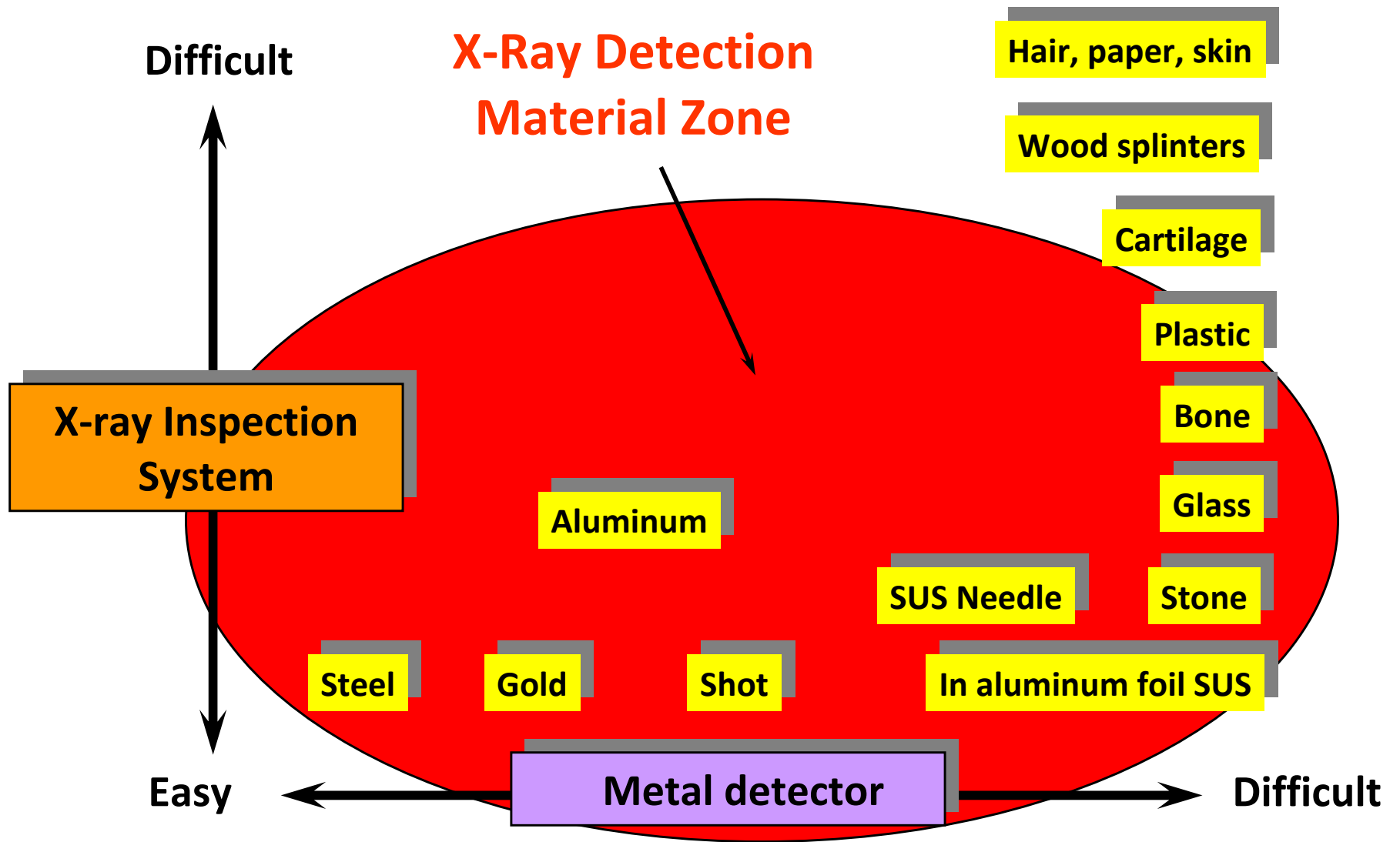
Contaminant	Number	Contaminant	Number
Insects	938 (24.5%)	Vinyl	76 (2.0%)
Metal piece (*1)	279 (7.3%)	Fly	68 (1.8%)
Hairs	253 (6.6%)	Wood chips	56 (1.5%)
Needles, wire, hooks	250 (6.5%)	Blade chips	47 (1.2%)
Plastics and rubber	204 (5.3%)	Staples	37 (1.0%)
Glass fragments	149 (3.9%)	Rat excrement	31 (0.8%)
Cockroach	118 (3.1%)	Other	580 (15.2%)
Stone and sands	116 (3.0%)	Unclear	537 (14.1%)
Paper, threads and clothes	82 (2.1%)		
Total: 3821 (100.0%)			

Note 1: Metal fragment, bolts, nuts, can fragment, etc.



Hard Dangerous contaminants: about 30%

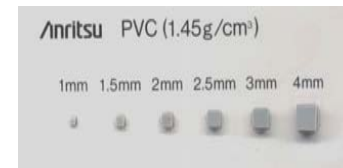
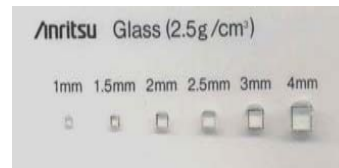
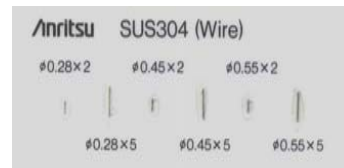
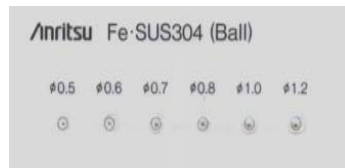
X-Ray Capabilities



X-Ray Benefits over Metal Detection

		X-ray Inspection System	Metal Detector
Contaminants only	Fe sphere	φ 0.3	φ 0.4
	SUS sphere	φ 0.3	φ 0.7
Sausage	Fe sphere	φ 0.6	φ 1.0
	SUS sphere	φ 0.6	φ 2.0
	SUS wire	0.28 diameter	2.0 diameter
	Bone chip	1.0 to 2.0 thickness	Undetectable
Aluminum packaged food product	Fe sphere	φ 0.5	φ 2.0
	SUS sphere	φ 0.5	Undetectable
	Bone chip	1.0 to 2.0 thickness	Undetectable

- Better detection accuracy on all metals
- Improved accuracy on wire detection
- Ability to detect dense contaminants
- Ability to review total mass of the product
- Ability to easily pinpoint location of the contaminant
- Ability to look for other packaging anomalies
- Ability to inspect through metallic and foil packaging
- Long term flexibility with variable x-ray power settings
- No effects from the environment
- No effects from 'product signal'
- No effects from vibration
- No effects from product temperature
- No effects from salt or other reactive contents



(Anritsu's internal test results used KD7305AW X-ray and KD8013A metal detector)

Cabinet X-Ray System Safety

21CFR1020.40 Design Regulations - summary
FAQs - Cabinet X-Ray System
Use and Operation



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Electronically Generated X-Rays

Cabinet x-ray systems generate x-rays electronically via an x-ray tube.

This tube is a light bulb that is under vacuum and produces low energy x-rays.

This is not a source generated x-ray such as an isotope.

This type of x-ray technology cannot make anything radioactive.

When the tube is OFF, x-rays are OFF just like a light bulb.

CABINET X-RAY SYSTEMS – FDA 21CFR1020.40 and RED ACT Summary

21CFR1020.40 Cabinet X-Ray Design Requirements - Highlights

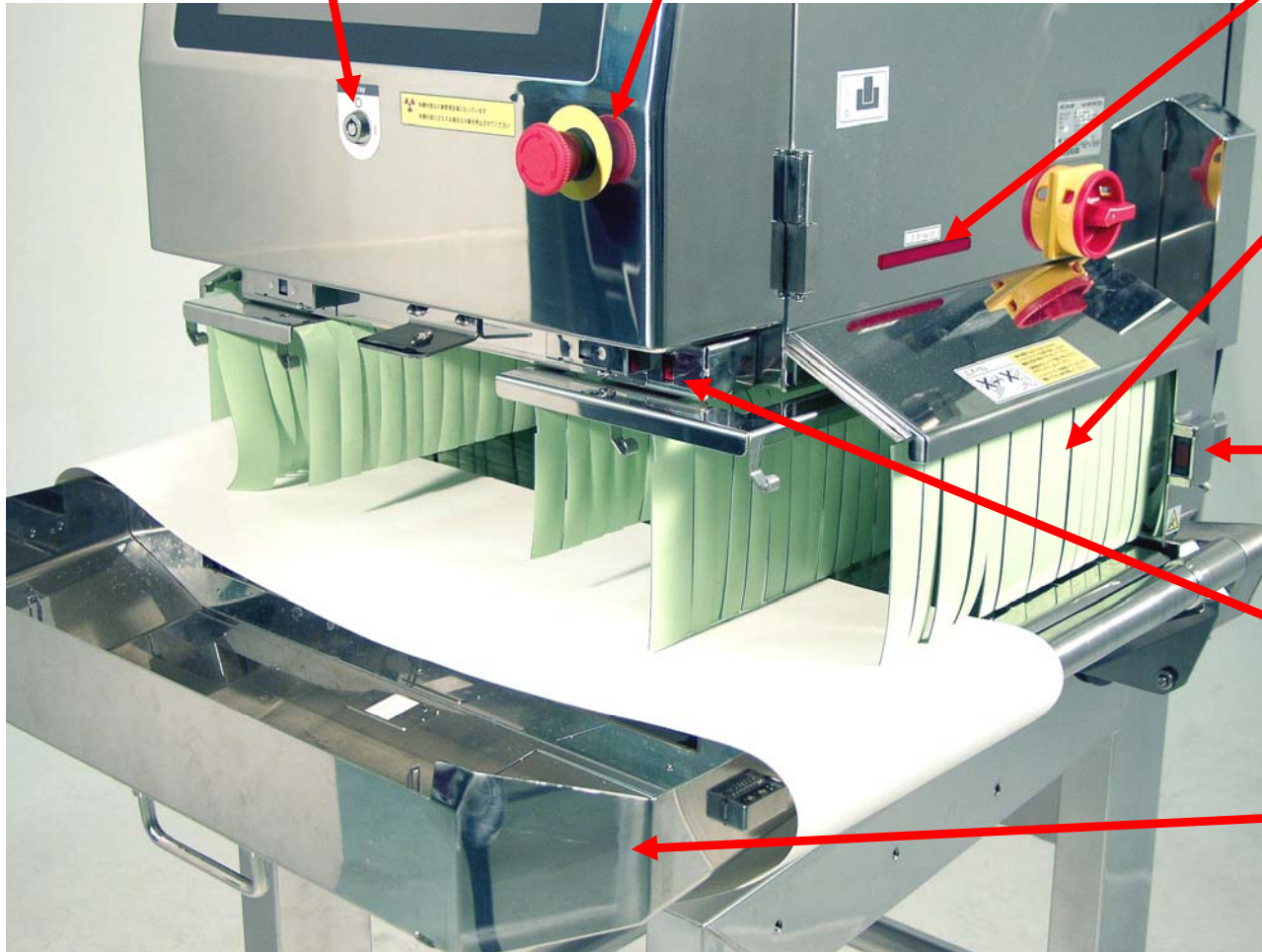
- (c) *Requirements--(1) Emission limit.* (i) Radiation emitted from the cabinet x-ray system shall not exceed an exposure of 0.5 milliroentgen in one hour at any point five centimeters outside the external surface.
- (3) *Ports and apertures.* (i) The insertion of any part of the human body through any port into the primary beam shall not be possible. (ii) The insertion of any part of the human body through any aperture shall not be possible.
- (4) *Safety interlocks.* (i) Each door of a cabinet x-ray system shall have a minimum of two safety interlocks. One, but not both of the required interlocks shall be such that door opening results in physical disconnection of the energy supply circuit to the high-voltage generator, and such disconnection shall not be dependent upon any moving part other than the door.
 - (ii) Each access panel shall have at least one safety interlock.
 - (iii) Following interruption of x-ray generation by the functioning of any safety interlock, use of a control provided in accordance with paragraph
- (c)(6)(ii) of this section shall be necessary for resumption of x-ray generation.
 - (iv) Failure of any single component of the cabinet x-ray system shall not cause failure of more than one required safety interlock.
- (5) *Ground fault.* A ground fault shall not result in the generation of
- x-rays.
- (6) *Controls and indicators for all cabinet x-ray systems.* For all systems to which this section is applicable there shall be provided:
 - (i) A key-actuated control to insure that x-ray generation is not possible with the key removed.
 - (ii) A control or controls to initiate and terminate the generation of x-rays other than by functioning of a safety interlock or the main power control.
 - (iii) Two independent means which indicate when and only when x-rays are being generated, unless the x-ray generation period is less than one half second, in which case the indicators shall be activated for one half second, and which are discernible from any point at which initiation of x-ray generation is possible. Failure of a single component of the cabinet x-ray system shall not cause failure of both indicators to perform their intended function. One, but not both, of the indicators required by this subdivision may be a milliammeter labeled to indicate x-ray tube
- (8) *Warning labels.*
 - (i) There shall be permanently affixed or inscribed on the cabinet x-ray system at the location of any controls which can be used to initiate x-ray generation, a clearly legible and visible label bearing the statement: Caution: X-Rays Produced When Energized
 - (ii) There shall be permanently affixed or inscribed on the cabinet xray system adjacent to each port a clearly legible and visible label bearing the statement: caution: Do Not Insert Any Part of the Body When System is Energized—Xray Hazard

21CFR1020.40 Safety in Design

X-ray ON/OFF key

Emergency Stop Switch

X-ray irradiation display



Shield curtain (Leakage prevention curtain)

Monitoring sensor for hand insertion

X-ray shield cover open/close sensor

X-ray shield cover

CABINET X-RAY FAQs

Q1: What is a cabinet x-ray system?

A1: A cabinet x-ray system is an x-ray system installed in an enclosure. The enclosure is intended to protect people from the x-rays generated and to exclude people from the enclosure's interior. Cabinet x-ray systems are primarily used for security screening and industrial quality control. Security applications range from screening baggage at an airport to examining whole trucks at the border. Industrial quality control applications include the x-ray examination of foods, circuit boards, and tires. Some cabinet x-ray systems are also medical devices, such as a cabinet x-ray system used for analysis of tissue samples in a medical laboratory.

Q2: What are other common names for cabinet x-ray systems?

A2: Other common names for cabinet x-ray systems are X-ray Inspection Systems, X-ray Screening Systems, X-ray Security Systems, and Baggage X-ray Systems. The words inspection, screening, security, and baggage might also be used interchangeably with or in addition to the description of a cabinet x-ray system.

Q3: Which agency has responsibility for assuring that manufacturers produce cabinet x-ray systems that do not pose a radiation safety hazard?

A3: The US Food and Drug Administration (FDA) has responsibility for assuring manufacturers produce cabinet x-ray systems that do not pose a radiation safety hazard. For most electronic products that emit radiation, safety regulation is divided between FDA and state regulatory agencies. Typically, FDA regulates the manufacture of the products and the states regulate the use of the products. For further information on FDA regulations that apply to manufacturers of electronic products that emit radiation (such as a cabinet x-ray system) see the FDA web site (<http://www.fda.gov/cdrh/comp/eprc.html>).

Q4: What other Federal Agencies are involved in radiation safety when the source of the radiation is an x-ray product?

A4: The US Environmental Protection Agency (EPA) is responsible for issuing general radiation guidance to Federal Agencies. Additionally, basic information about radiation is available on the EPA web site (<http://www.epa.gov/radiation/index.html>). The US Occupational Health and Safety Administration (OSHA) has regulations on worker safety from radiation in the workplace (<http://www.osha.gov>).

Q5: Is it safe to stand or walk near a cabinet x-ray system while it is producing x-rays?

A5: Yes. Manufacturers are required to certify that their products meet the Federal radiation safety performance standard for cabinet x-ray systems. Specifically, the standard requires that the radiation emitted from a cabinet x-ray system not exceed an exposure of 0.5 milliroentgens in one hour at any point five centimeters from the external surface. Most cabinet x-ray systems emit less than this limit. In addition, the standard also requires safety features that include warning lights, warning labels, and interlocks. For comparison, the average person in the United States receives a dose of about 360 millirem of radiation per year from background radiation. (Note: 1 milliroentgen of exposure to x-rays will result in approximately 1 millirem of dose. These terms are defined later in this document.) Background radiation is radiation that is always present in the environment. Eighty percent of that exposure comes from natural sources: radon gas, the human body, outer space, rocks, and soil. The remaining 20 percent comes from man-made radiation sources, primarily medical x-rays. For additional information on certification and labeling, see Title 21 Code of Federal Regulations (CFR) 1010. For the details of the cabinet x-ray performance standard see Title 21 CFR 1020.40. For further information on recommended limits of radiation exposure, we recommend the National Council on Radiation Protection and Measurements Report 116, *Limitation of Exposure to Ionizing Radiation* (1993).



CABINET X-RAY FAQs

Q6: Is it safe for pregnant women to stand or walk near a cabinet x-ray system while it is producing x-rays?

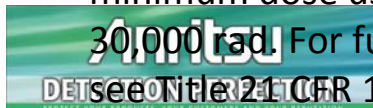
A6: Yes. The limit on radiation emission established by the performance standard is sufficiently restrictive that there is no additional hazard for specific populations such as children or pregnant women.

Q7: Are the operators of cabinet x-ray systems required to wear a “radiation badge”?

A7: Personnel monitoring equipment is not required by Federal regulation for operators of cabinet x-ray systems. It is possible that some state regulations or the policies of the operators’ employer require use of personnel monitoring equipment. Personnel monitoring equipment means devices designed to be worn or carried by an individual for the purpose of measuring a radiation dose received (e.g. film badges, pocket dosimeters, film rings, etc.). For more information, please see the OSHA regulations found in Title 29 CFR 1910.1096(d) *Precautionary procedures and personal monitoring* and contact OSHA. The OSHA regulations are based on the amount of radiation that a worker can receive in a specific area from all radiation sources. The Federal limit on cabinet x-ray system emissions ensures the maximum possible exposure from cabinet x-ray systems in the workplace will always fall below the minimum threshold where personnel monitoring might be required.

Q8: Is it safe to eat my lunch if it went through a cabinet x-ray system?

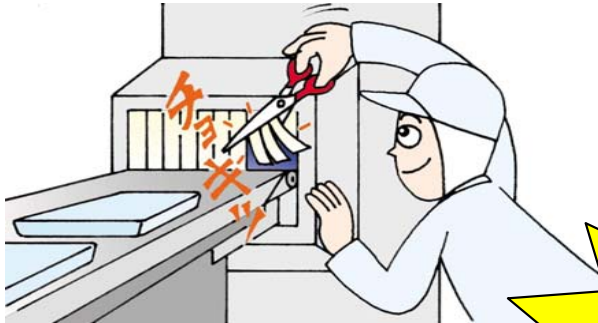
A8: There are no known adverse effects from eating food that has been irradiated by a cabinet x ray system used for security screening. The radiation dose typically received by objects scanned by a cabinet x-ray system is 1 millirad or less. The average dose rate from background radiation is 360 millirad per year. The minimum dose used in food irradiation for food preservation or destruction of parasites or pathogens is 30,000 rad. For further information on the limits on radiation used for food inspection or food irradiation see Title 21 CFR 179 and contact FDA’s Center for Food Safety and Nutrition or the United States



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Operator Safety

1. Never cut or tape UP the shield curtain for product flow



2. Never open the shield curtain with X-Rays ON



Caution

3. Never put your hands into the cabinet during operation

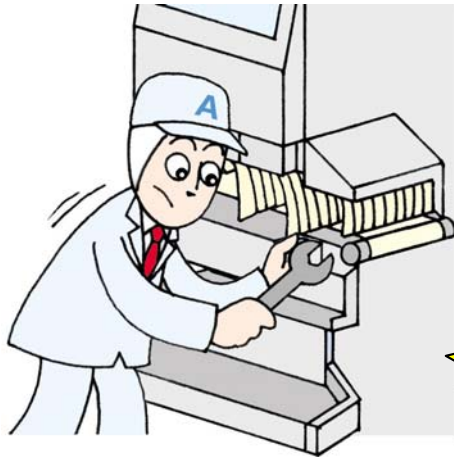


4. Never peep into the shield curtain with x-rays ON

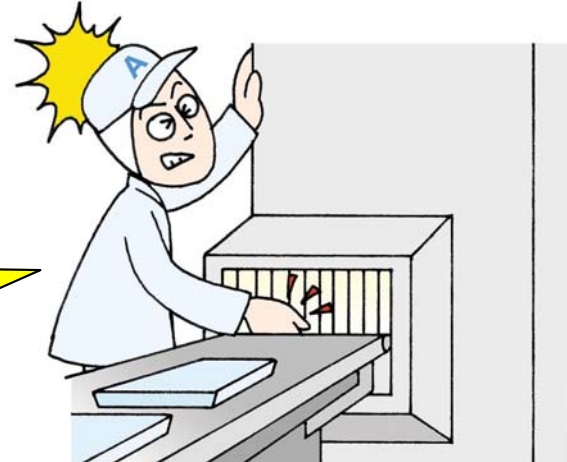


Operator Safety

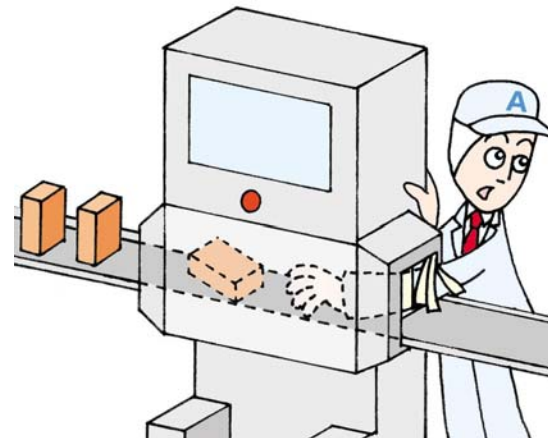
5. Never remove or modify the X-ray Inspection System Guarding



6. Do not touch conveyor parts when in operation – pinch point concerns



7. When the product jammed inside conveyor, the system should be stopped before attempting to clear the production jam.



Daily Inspection Items for Safety

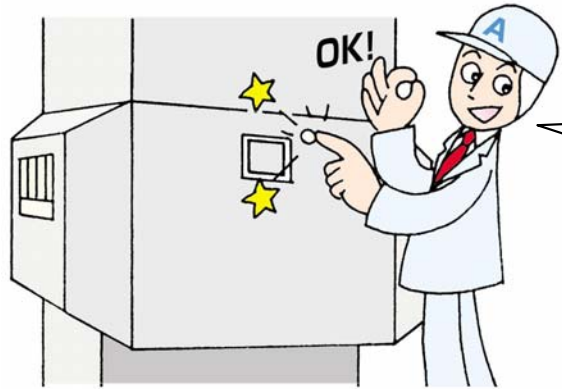


1. Check the Shield curtain
Injury, dirty, location, loose, etc.,

2. Check the shield cover and safety cover
External, location, etc.,

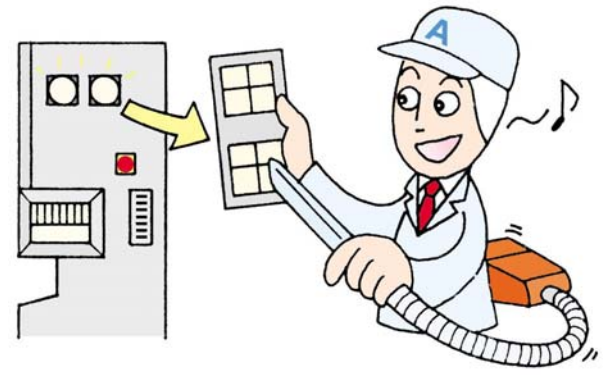


Daily Inspection Items for Safety



3. Check the operation of Emergency Stop Switch
Emergency stop switch, X-ray irradiation ON/OFF key,
Shield cover sensor, etc.,

4. Clean the Air Filter
Air filter, filter of Air conditioner, etc.,



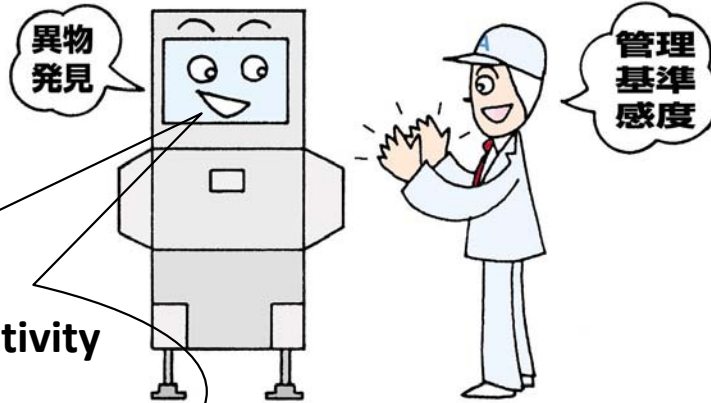
5. Clean the inside of the conveyor as allowed by model number



6. Check the rollers and conveyor belt
Belt edge fray, belt worn, belt wander,
belt dirt, roller shake, etc.,



7. Check the detection sensitivity
and reject accuracy
Standard test piece, etc.,



Radiation Survey may be required by state law or province

X-Ray Inspection System X-Ray Leak Measurement Results

Model: _____
 Serial No.: _____
 Measured by: _____
 Measurement Date: _____
 Used Measuring Instrument: (Maker: _____ Model: _____ Serial No.: _____) _____
 Measurement Location: (Company: _____ Factory: _____ Line: _____) _____

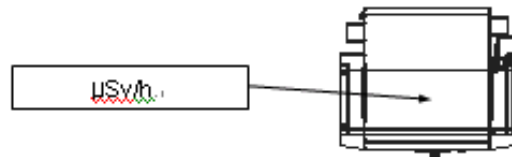
Document No.: _____

Date: _____

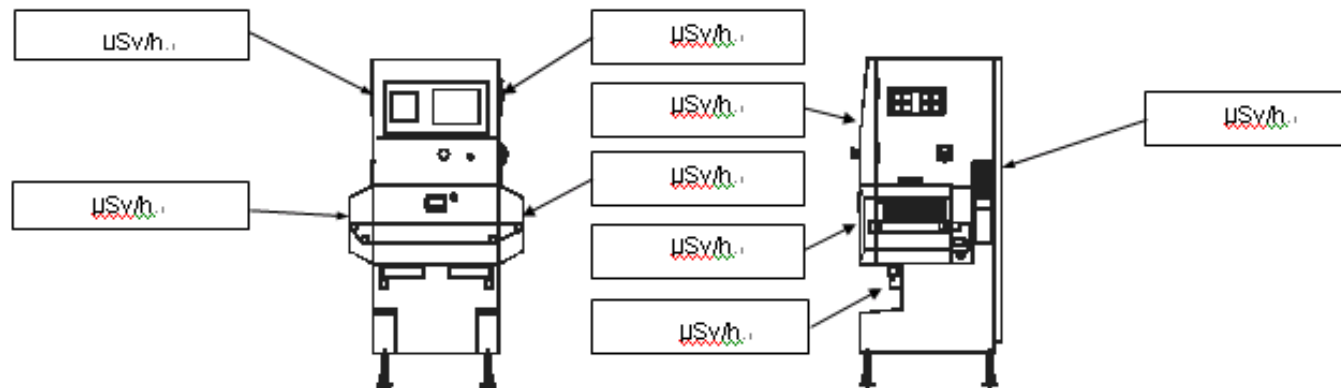
Anritsu Corporation Industrial Solutions

Product Assurance Sect.

Approved by	_____
Checked by	_____
Written by	_____



[Maximum X-ray Leak = \pm uSv/h]



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DISCOVER WHAT YOU'VE BEEN MISSING ...
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APPLICATIONS



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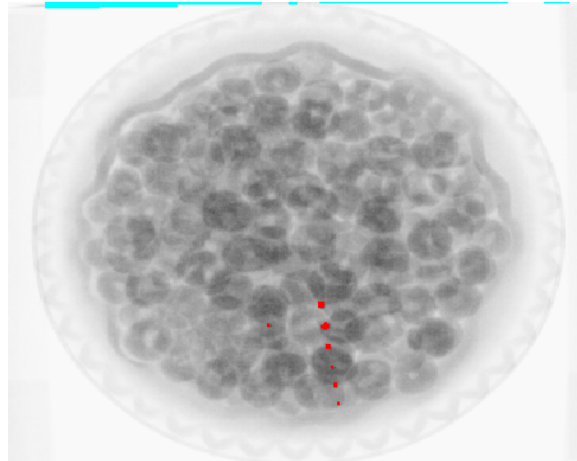
GENERAL APPLICATIONS

X-RAY CONVEYOR SOLUTIONS



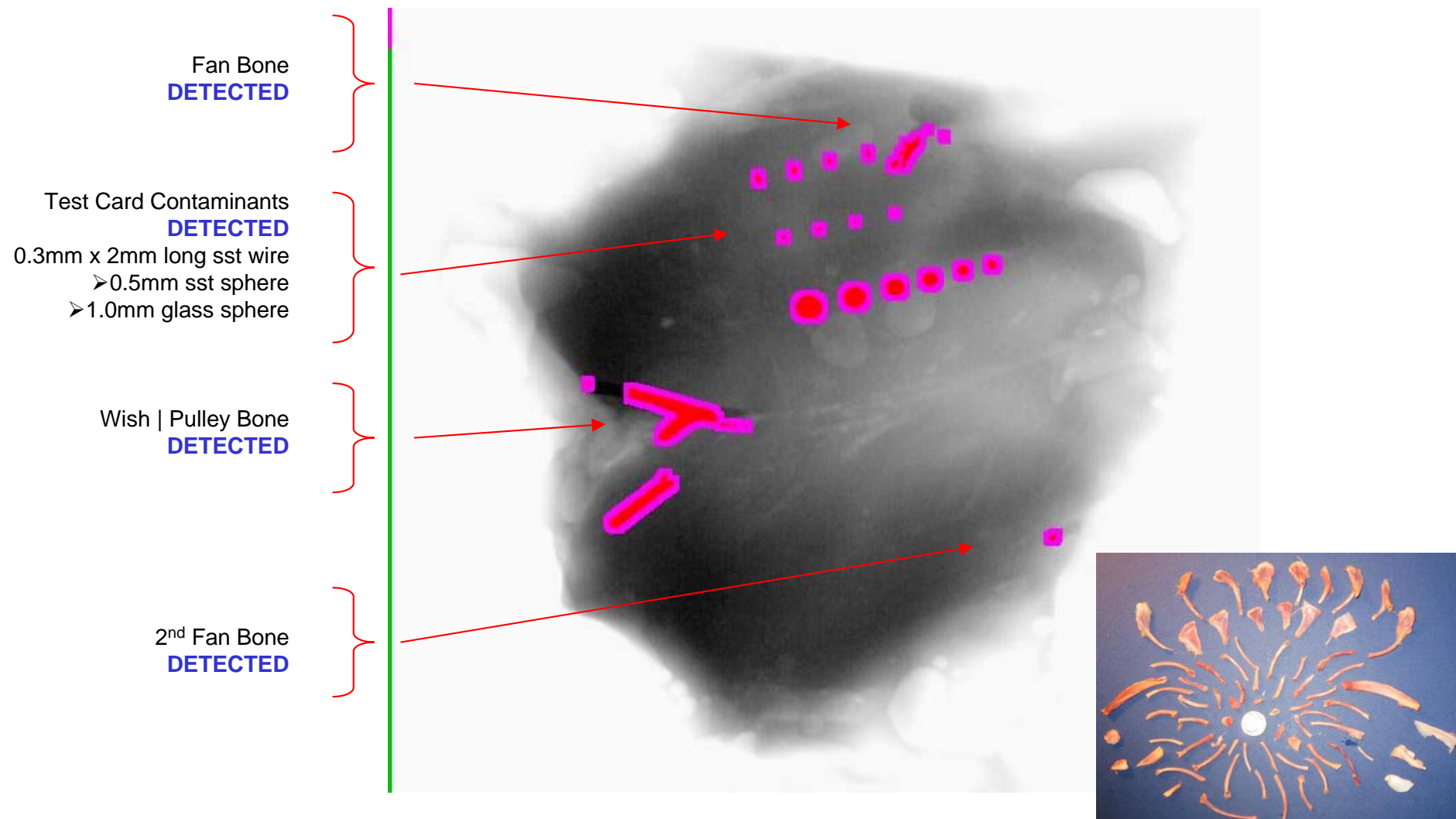
ANRITSU X-RAY CAPABILITIES and BENEFITS

- Detection of metal contamination as small as 0.3mm fe, non-fe and stainless spheres
- Detection of metal wire contamination as small as 0.2mm x 2mm long fe, non-fe and stainless
- Detection of 1mm glass, 2mm stone, 1mm bone and other dense contaminants
- Analysis of package weight using x-ray technology
- Detection of missing items, broken products or mis-shaped products
- Inspection through metallic packaging without degradation of detection
- Inspection of 'chubbed' products while confirming the presence of the clip
- Inspection of products with O2 scavengers while confirming their presence
- Detection of product trapped within the seal of a flow wrapped product
- ... and other analyses



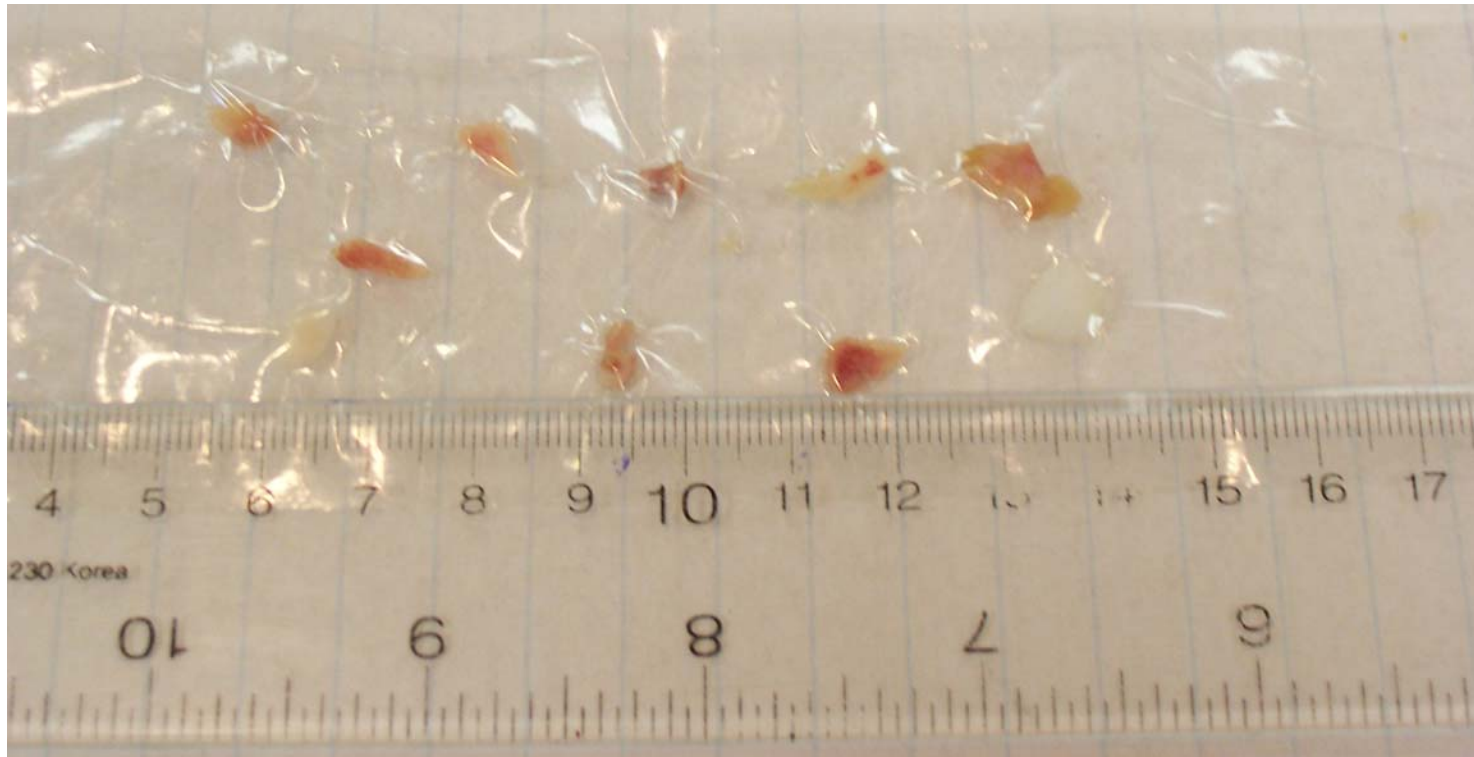
Detecting Poultry Bones in Whole Chicken Filets and Tenders

IP69k Conveyor Application **AFTER** automatic image processing



Detecting Poultry Bones in Bulk Trim Meat

IP66 Pipeline X-Ray Solution – BONE DETECTION SAMPLES



Anritsu X-Ray Systems

Features and Benefits



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Anritsu KD7400 Series X-Ray Technology

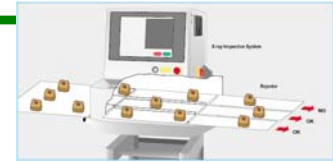


Standard Features

- 20+ Detection and Analysis Algorithms
 - Multi-Layer Contaminant Detection Algorithms
 - Mass Measurement Technology with +/- 1% to 2% Accuracy
 - Missing Item Detection by Density and Area
 - Missing Count Detection
 - Broken Product Detection
 - Missing Meat Chub Clip Detection
 - Specific Beef and Pork Bone Detection Algorithms
- Auto-Learn Wizard for New Product Setup
0.4mm resolution standard – Industry leading resolution
Polished Stainless Steel Finish
Graphical and Color Coded Product Setting Adjustments
15" High Touch Screen
Tool Free, 30 second, Belt Removal Procedure for cleaning
Direct, Variable Speed Drive System controlled by product number
Ethernet Connection
USB Data Port
RS232 Connection
Password Protection
Meets 21CFR1020.40 and Canadian Red Act Regulations

Optional Features

- KD74-H High Sensitivity Models (0.2mm sphere detection)
- Poultry Bone Detection Algorithm
- IP66 Upgrade Available
- IP69k – AMI SANITARY Design Upgrade
- Fat/Lean Analysis in a Pipeline
- Reject Systems
- Printer
- Multi-Lane. Multi-Product Technology
- Angle | Side View Solutions
- Pipeline Solutions
- Bulk Flow Solutions



IP69k – Sanitary Design

Anritsu KD7400 series x-ray technology



Slagteriernes
Forskningsinstitut

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DETECTION ACCURACY PROVEN AS NUMBER #1 BY INDEPENDENT SOURCES

Anritsu Industrial Solutions x-ray technology has been designated as #1 by the Danish Meat Research Institute for accuracy, ease of use and reliability in a multi-vendor extensive test in 2008.

New Knowledge on Meat Production and Processing

Test Reveals Quality of X-Ray Equipment

A number of producers offer X-ray equipment for the detection of small pieces of bone, steel, plastic and glass in meat. Danish Meat Research Institute (the Meat Producers' Research Institute) has developed a method for the evaluation of the equipment's capacity to spot foreign bodies, i.e. whether they keep their promises. The Anritsu Model KD7416AW is clearly the best of the leading equipments in the Danish market.

By Jakob Søholt-Jensen

Customers in a number of markets, among them Japan, make very strict demands for the absence of foreign bodies in fresh meat cuts and processed meat products. It is far from being only a question of metal splinters. The products must also be free from bone splinters and bits of glass and plastic. A metal detector is not sufficient to spot the unwanted foreign bodies, and therefore the meat producers use the far more advanced X-ray equipment.



There is a great difference between the X-ray systems' capacity to detect foreign bodies. Therefore

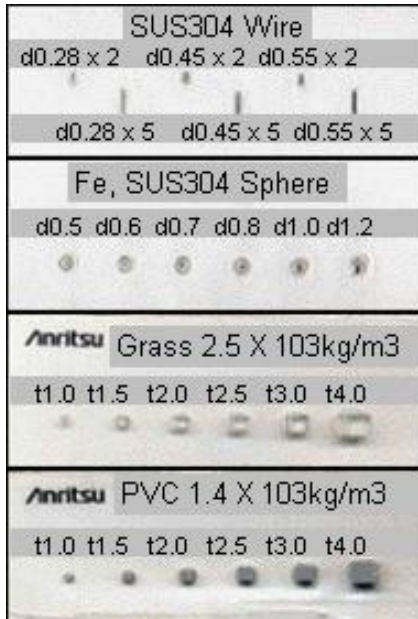
Danish Meat Research Institute offers to test the equipments to supply the meat producers and meat processing companies with comparable figures illustrating the relationship between the capacities of the various equipments. In this testing the two best equipments in the Danish market have been compared: The Anritsu Model KDT416AW and the Henda Model H0-GA4075.

Comprehensive Test

Both equipments have been tested with a meat producer on a production line. A total of 200 pieces of belly and 200 pieces of loin have been through two different testings for the detection of foreign bodies. The first testing examines the capacity of the equipments to detect pieces of bone, glass and steel that have been added to the products.

The second testing examines how many real foreign bodies – i.e. bone splinters – the equipments can detect in loin and belly. Moreover a test is carried out to find out whether an automatic brush-off of the belly after X-raying can bring down the occurrence of foreign bodies.

Before the testing the suppliers' experts set their equipment according to guidelines in a test manual drawn up by Danish Meat Research Institute.



TYPICAL ON-LINE DETECTION RESULTS

- Stainless Steel Spheres: 0.6mm or smaller
- Ferrous Steel Spheres: 0.6mm or smaller (aluminum not included)
- Non-Ferrous Spheres: 0.6mm or smaller
- Metal Wire: 0.4mm dia x 2mm long
(0.2mm x 2mm long with new KD-H technology)
- Glass Spheres: 1.0 to 2.0mm or smaller
- Stone: 2.0mm or smaller
- Mass Measurement: +/- 1% to 3% application dependent



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sales@us.anritsu-industry.com

ANRITSU INDUSTRIAL SOLUTIONS



www.detectionperfection.com
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Anritsu Support and History

History

- Over 40 years of food inspection experience
- Over 12 years of food x-ray experience
- Over **5000** dedicated food x-ray installations Worldwide
 - Over 900 food x-ray systems are delivered annually
- Over **2500** checkweighers delivered annually
- Over **2500** metal detectors delivered annually
- Quick lead times with many orders shipping within 4 to 5 weeks
- Engineered to provide the most reliable design and the most accurate detection of contaminants and packaging anomalies available in the World today while maintaining a fair valued competitive price.
- Our X-Ray Inspection System was awarded the 3rd Best Food's Machinery and Material Prize by the Japan Food Journal.
- **ISO9001 Certified**
As part of our best-partner goals, Anritsu has been awarded ISO9001 Certification of the International Organizations for Standardization (ISO) in recognition that our management system governing product design, manufacturing and after-care services meet world standards.
- **ISO14001 Certified**
The Anritsu Group has been awarded ISO14001 Certification in recognition for its management system governing product development, design, manufacturing and disposal. All meet world environmental standards.



DISCOVER WHAT YOU'VE BEEN MISSING...

DETECTION PERFECTION

X-RAY INSPECTION SYSTEMS
Over 5,000 Installed



Checkweighers
Over 60,000 Installed



Metal Detectors
Over 40,000 Installed



No.1
for X-ray Inspection,
as ranked by
the Danish Meat
Research Institute

X-RAY

- **NEW!** Sanitary Design
- **NEW!** Inspection and Contaminant Detection Tools
- **NEW!** Fat Lean Ratio Analysis
- **NEW!** Pipeline X-Ray System
- **NEW!** QuiCCA SPC Data Collection Software

SEE US AT
Pack Expo E-7158
November 9 - 13, 2008

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