



RCS

Total X-Ray Garment Solutions

Lead Aprons & Litigation: Best Practice Solutions

radcareservices.com

Lead Aprons & Litigation

“Litigation...really?”



Lead Aprons & Litigation \$

🏢 2017 – *Evansville, Indiana* – Hospital

🏢 Surgeon brings lawsuit against the network (2017)

🏢 The Concern:

7 people in 5 years got cancer working there. 5 of them were diagnosed with thyroid cancer – 2 of them have since died from brain cancer (one was a busy, young surgeon)

🏢 Settled – The health network settled each of the lawsuits --- Settlement amounts \$ were not disclosed

🏢 *“The general condition of the lead (PPE) provided to physicians and staff in the hospital OR’s at its main facility was decrepit – Namely, the leaded skirts, jackets, aprons and thyroid shields were filthy, tattered and torn.”*

🏢 Attorney - *There was no process for cleaning, repair, x-ray or assignment of them...There really was no system...*

Objectives – “*What Will We Explore Today?*”

- 🌸 Interactive – Fun (Slow me down if needed!)
- 🌸 Current Practices vs. Best Practices
- 🌸 Explore liability concerns
- 🌸 Proper cleaning, proper repair, proper x-ray inspection, and compliance documentation
- 🌸 “*What is the envelope for?*” (*Don’t open, Don’t peek!*)
- 🌸 My Goal Today – You...No Facebook, Grocery List, Playing Black Jack, etc.
- 🌸 *Any questions before we get started?*



WHO BUILT THIS PRESENTATION?

This presentation has been assembled in consultation with...

- **Radiation Safety Officers**
- **Physicists**
- **Infection Prevention Directors**
- **Board Certified Surgeons**
- **Radiology Directors**
- **Surgical Directors**
- **Joint Commission Surveyors (Retired)**
- **Cath Lab Leadership Teams**
- **X-Ray Garment Manufacturing Companies**



My Credentials, CV & Background

Just Kidding – Let's Get Started!



RIP Chris Farley

Garment 101 – “What Is A Lead Apron?”

- 🏆 Aprons – Gowns – Shields – “Lead”
- 🏆 *“What are lead aprons?”*
- 🏆 *Where/Why are they used? Who uses them?*
- 🏆 *“Is that a bullet proof vest?”*



Common Practices Today

- ❖ “CLEANING” – Clinically ineffective and sporadic use of a sanitizing wipe
- ❖ GARMENT DAMAGE – Damage accumulates – Garments do not fit properly – are discarded & replaced
- ❖ X-RAY SCAN INSPECTION – “Visual Inspection?” – Looking at garments to find holes/cracks
- ❖ DISPOSAL – Improper disposal – junkyard/scrapyard – barrels of old lead in the basement
- ❖ Rolling The Dice – Patient & staff safety uncertain, litigation door remains open



Best Practices Today

- ❖ CLEANING – Multi-step, cleaning & sanitization process (*guided by the CDC and endorsed by garment manufacturing companies*)
- ❖ GARMENT DAMAGE – Damage is routinely repaired, extending their lifespan - Garments fit & provide proper protection
- ❖ X-RAY SCAN INSPECTION – Radiographic garment exam – *Staff safety is the priority (checks for holes, cracks & tears)*
- ❖ DISPOSAL – EPA approved disposal process – Quick & easy process
- ❖ BEST PRACTICES & COMPLIANCE – Patient & staff safety in place, provides network risk mitigation



Evansville – “*There was no system...*”

RCS Provides The System



RCS

Total X-Ray Garment Solutions

Radiological Care Services (RCS)

2013 Convenience - Garment Cleaning Company

2023 Compliance - Comprehensive Solutions Provider

- 🏆 CLEANING - Scheduled Garment Cleaning & Sanitization Services
- 🏆 REPAIRS - Complimentary Garment Repairs
- 🏆 X-RAY SCANS - Radiographic Scanning Services (checks for holes, cracks and tears)
- 🏆 INVENTORY MANAGEMENT – Asset tags assigned to garments – Department specific inventories built and maintained for the customer
- 🏆 RADCOMPLY™ – All documentation provided for survey/audit purposes through RADCOMPLY™ (Proprietary, Cloud-Based, Compliance Software)
- 🏆 NEW PURCHASES - New garments, equipment and accessory purchases

Garment Cleaning & Sanitization

What Do Most Infection Control Checklists Look Like?

- Sterile Field
- Prophylactic Antibiotic Use
- Ioban
- Skin Prep
- Scrubs
- Gloves
- Masks
- Shoe Covers
- C-Arm Drapes
- Light Handle Covers
- Surgical Caps
- What Else?



“What about X-ray garments and protective wearables?”





*“A cleaning program...
...is that really necessary?”*

“What Percentage of Our Garments are Actually Contaminated?”

🏛️ **ABSTRACT** – “Lead aprons worn by Interventional Radiologists contain pathogenic organisms including MRSA and Tinea species.”

🏛️ **AUTHOR** – Dr. Jaber/Wayne State University, Detroit (randomly cultured 25 lead aprons from the IR department)

25 X-Ray Garments Tested ... (Envelope Reveal)



21 were quietly carrying Staph aureus (3 of which confirmed MRSA)
and 21 were carrying Tinea species (Ringworm)

2017 AORN Article



AORN Journal, December 2017, Vol. 106. *“Health Care Workers’ Use and Cleaning of X-Ray Aprons and Thyroid Shields.”* – Honigsberg, et al.

173 clinicians surveyed:

-  135 clinicians (78%) reported wearing soiled X-ray garments
-  83 clinicians (48%) acknowledged garments are never cleaned

 **NOTED** – 66% of inventory...“contact a patient 1-10 times per shift.”

“Got Gas?”



Case Study - ATP Testing of Gas Pump (Handle)

“Got Gas?”

- (Left) Circle K, Gas Pump – 109,000 RLU's...Gross!
- (Right) X-Ray Garment (OR) – 938,000 RLU's...Speechless.

Garments 9x dirtier than a gas pump handle?



Before



After




Cleaning & Sanitization (Two Steps)



Sweat – MakeUp – Skin Flora



A pair of blue cargo pants with dark brown straps and buckles is laid out on a white plastic surface. The pants show several yellowish-brown stains, particularly on the right leg and the waistband area. The text "Vomit? Fecal?" is overlaid in white on the center of the pants.

Vomit? Fecal?



BEFORE



AFTER



Blood



Hair – Lint – Cotton - Fuzz

A pair of dark, worn-out pants is laid out on a patterned surface. The pants are heavily creased and show signs of use. A prominent, light-colored, irregular stain is visible on the right leg, near the knee area. The background consists of a white surface with large, dark, irregular spots, resembling a cow print or a similar pattern. The text "Peanut Butter? (No Idea)" is overlaid in white on the lower right portion of the pants.

Peanut Butter? (No Idea)

“We Don’t Need Help Cleaning Garments”

- #1 - *“We use wipes on our garments.”* (Dr. Jaber Study – They “Used Wipes”)
- #2 - *“We have on our own lead – Nobody wears my garment, but me!”* (Doctor Peanut Butter)
- #3 - *“We wear a disposable gown or cover over our X-ray garments during cases.”* (Not in trauma cases)



“Does The Joint Commission have a standard for the servicing of X-ray garments?”

JCAHO Infection Control Standard IC.02.02.01

“The organization reduces the risk of infections associated with medical equipment, devices, and supplies EP 1 - CLEANING AND performing low-level disinfection of medical equipment, devices, and supplies.”



“Why Can’t We Clean and Sanitize These Garments Ourselves?”

- **Since 2012** - Wipes? Garden Hoses? Cart Washers? Lysol? Febreeze? Soaking in Scrub Skink? Car wash?
- **Not For Environmental Services Department** – Proper protocol is based upon recommendations from the garment manufacturing companies, the CDC, AORN, HFAP and TJC.



“Why Can’t We Clean and Sanitize These Aprons Ourselves?”

- **PHYSICALITY** – Some can weigh 8-10lbs per set – 500 garments in your inventory?
- **Hospital Staffing Issues - Short Staffed**
- **Lack of Square Footage**
- **Lack of Proper Equipment, Procedure and Process**
- **Lack of Time – *Focus on Patient Care!***

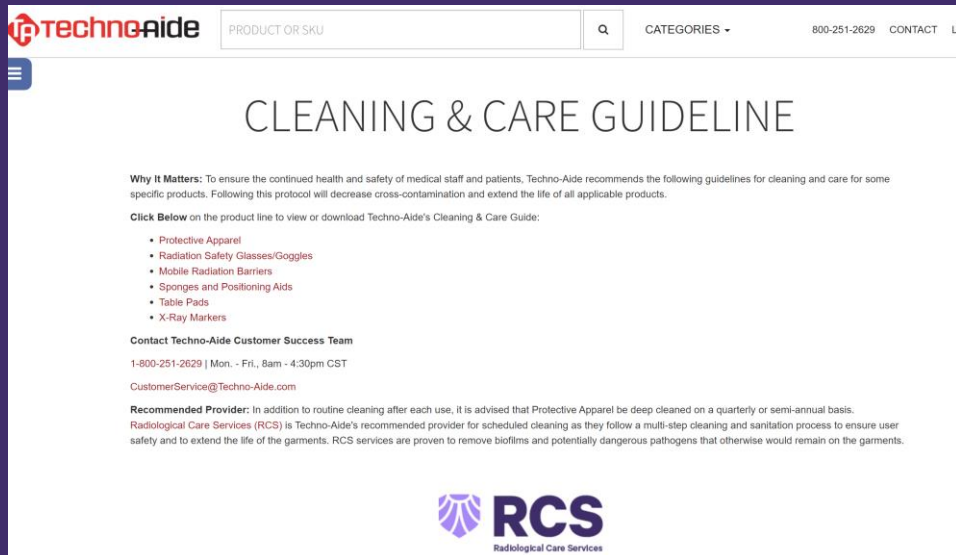


Nationally Endorsed & Recommended

Burlington Medical, BarRay, TechnoAide, etc.

CLEANING YOUR APRON AND PROTECTIVE APPAREL

- Deep cleanings should be done by a professional X-ray garment cleaning company such as Radiological Care Services (RCS).



TechnoAide PRODUCT OR SKU CATEGORIES 800-251-2629 CONTACT

CLEANING & CARE GUIDELINE

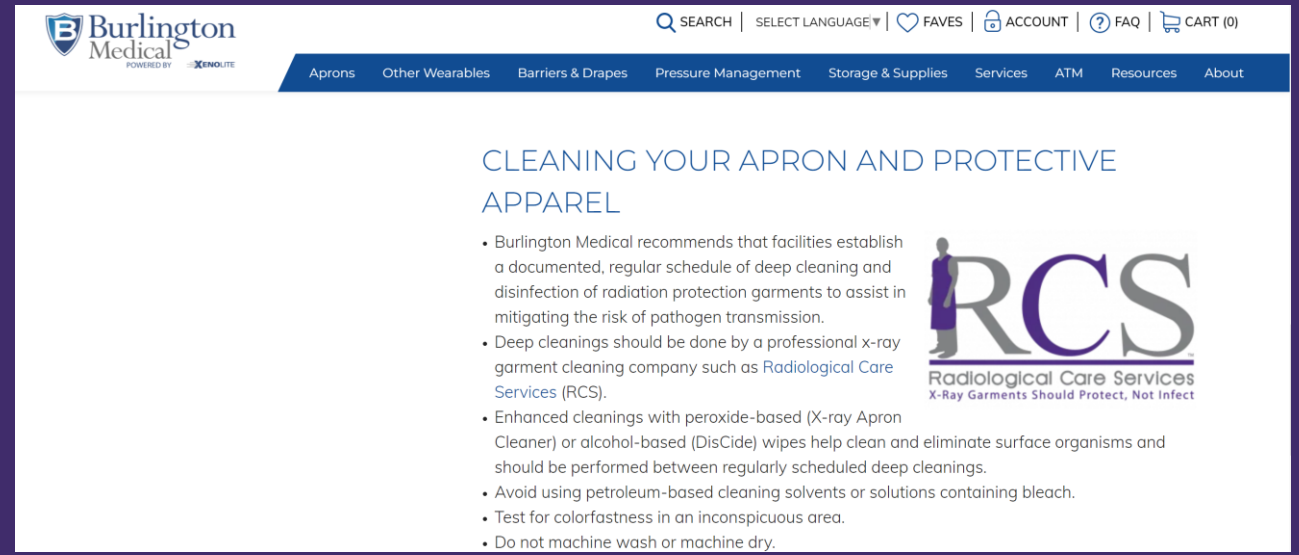

Why It Matters: To ensure the continued health and safety of medical staff and patients, Techno-Aide recommends the following guidelines for cleaning and care for some specific products. Following this protocol will decrease cross-contamination and extend the life of all applicable products.

Click Below on the product line to view or download Techno-Aide's Cleaning & Care Guide:

- Protective Apparel
- Radiation Safety Glasses/Goggles
- Mobile Radiation Barriers
- Sponges and Positioning Aids
- Table Pads
- X-Ray Markers

Contact Techno-Aide Customer Success Team
1-800-251-2629 | Mon. - Fri., 8am - 4:30pm CST
CustomerService@Techno-Aide.com

Recommended Provider: In addition to routine cleaning after each use, it is advised that Protective Apparel be deep cleaned on a quarterly or semi-annual basis. Radiological Care Services (RCS) is Techno-Aide's recommended provider for scheduled cleaning as they follow a multi-step cleaning and sanitation process to ensure user safety and to extend the life of the garments. RCS services are proven to remove biofilms and potentially dangerous pathogens that otherwise would remain on the garments.




Burlington Medical POWERED BY XENOLITE

SEARCH | SELECT LANGUAGE | FAVES | ACCOUNT | FAQ | CART (0)

Aprons Other Wearables Barriers & Drapes Pressure Management Storage & Supplies Services ATM Resources About

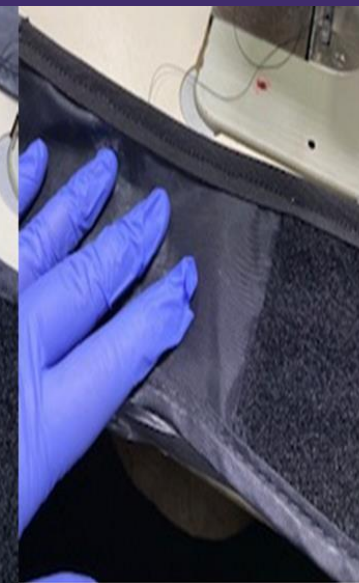
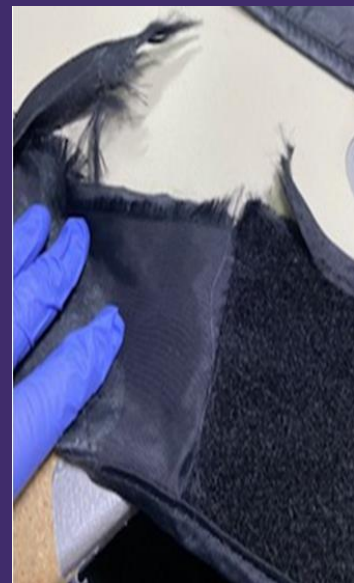
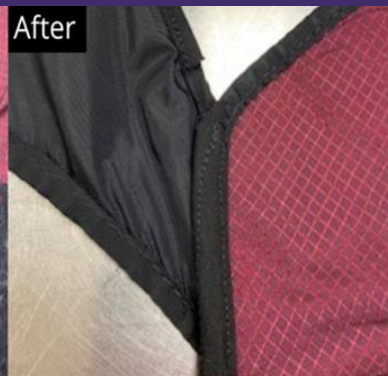
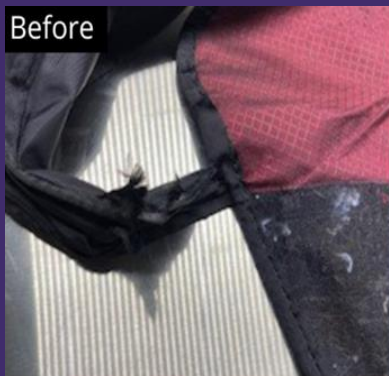
CLEANING YOUR APRON AND PROTECTIVE APPAREL

- Burlington Medical recommends that facilities establish a documented, regular schedule of deep cleaning and disinfection of radiation protection garments to assist in mitigating the risk of pathogen transmission.
- Deep cleanings should be done by a professional x-ray garment cleaning company such as Radiological Care Services (RCS).
- Enhanced cleanings with peroxide-based (X-ray Apron Cleaner) or alcohol-based (DisCide) wipes help clean and eliminate surface organisms and should be performed between regularly scheduled deep cleanings.
- Avoid using petroleum-based cleaning solvents or solutions containing bleach.
- Test for colorfastness in an inconspicuous area.
- Do not machine wash or machine dry.



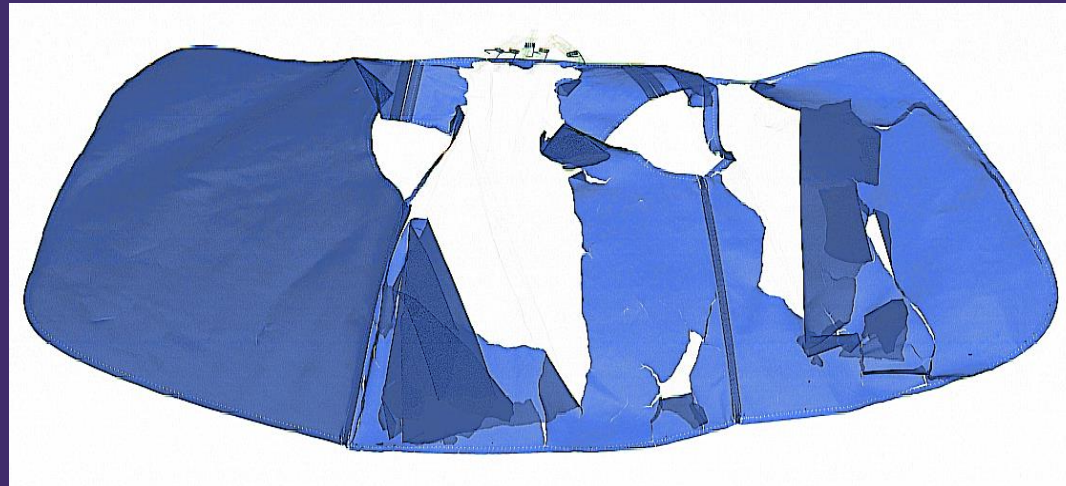
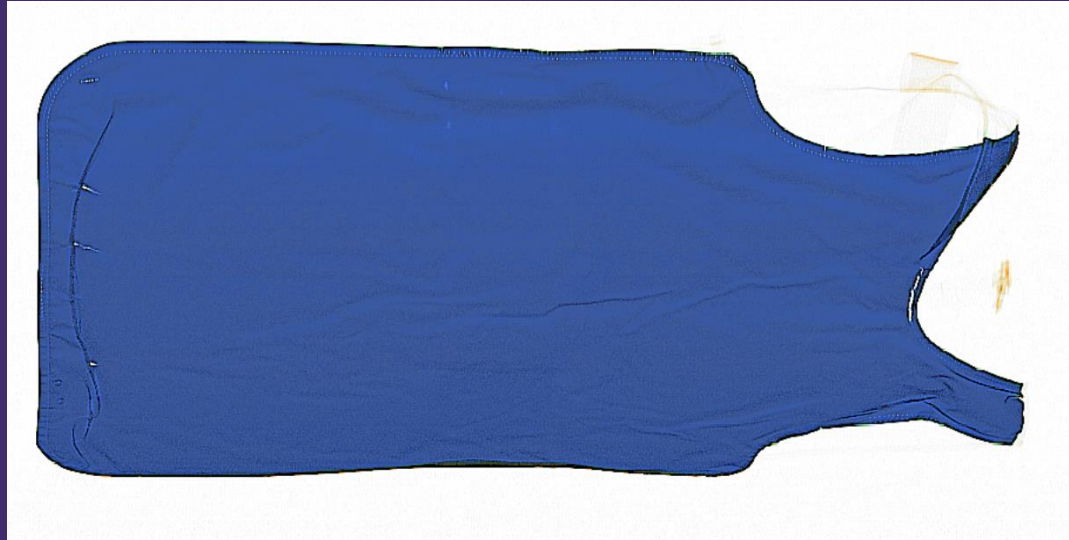
Garment Repair & Maintenance

Fit? - Garments Providing Protection



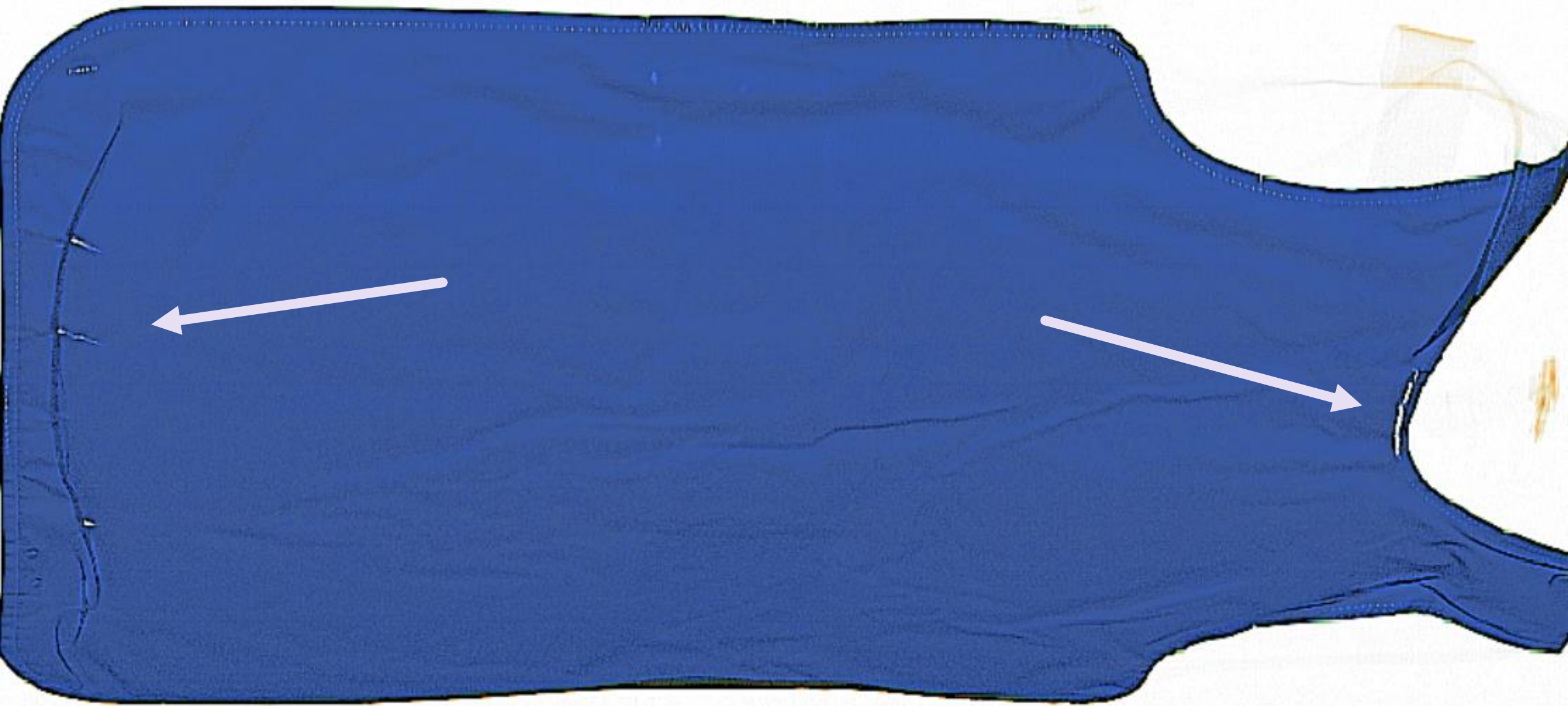
Annual X-Ray Inspections (Integrity Checks)

X-Ray Garment Scanning Services



X-Ray Scans: Critical Staff Safety

- ❖ Many current practices today --- “Visual Inspection” or “Feel Test”
- ❖ X-ray inspections (radiographic) are not required in some states!
- ❖ They are deemed optional in other states...
- ❖ Radiographic X-ray inspection vs. visual/feel test
- ❖ Demo ‘Feel Test’ w/Gloves on...
- ❖ Arizona – Raising the level of safety...required for every garment, every year, every hospital
- ❖ Radiographic Scans - Recommendation from the Garment Manufacturing Companies



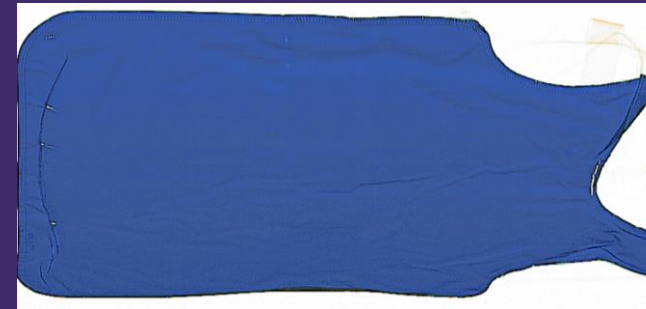
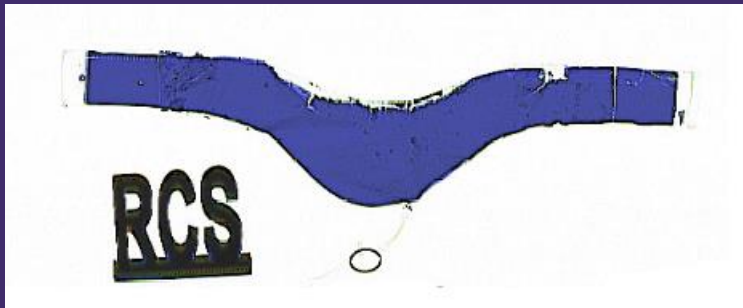
Case Study: *Doing What's Right*

🌸 Doing the right thing...*even if it is not required*

🌸 Case Study – Rochester, New York (2020)

🌸 “We don’t need X-ray scans, we do visual/feel tests every year.”

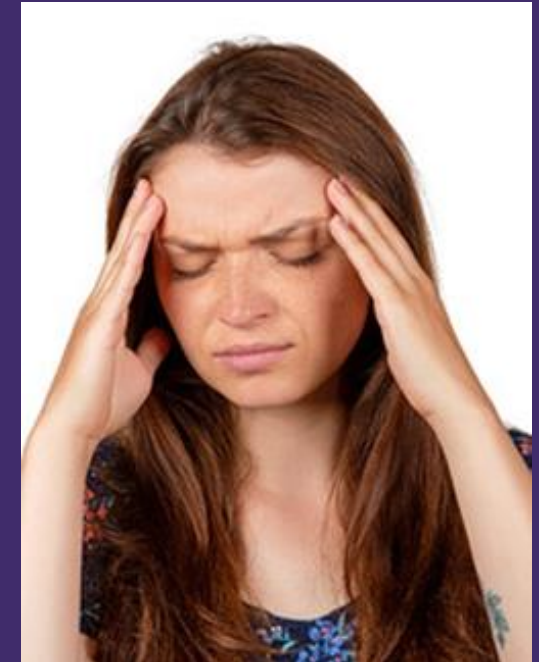
🌸 RCS randomly spot checked 25 garments to X-ray scan...



🌸 One Month Post Service – Radiation Safety Officer (15 years) no longer there

🌸 New York or Arizona – *Where would you feel safer to work?*

- * **PAYING OVERTIME PAY?** – Working nights, weekends, and holidays to get access to the garments?
- * **TECH EXPOSURE?** - Unnecessary tech exposure via fluoro time? Wear and tear on the tube?
- * **LOST REVENUES?** – Shutting down a room to fluoro garments for days at a time?
- * **QUICK AND EASY** – RCS does the scans for you, uploads all data and x-ray images into RADCOMPLY™ for you.



Proper Garment Disposal & Recycling

EPA Approved - Recycling & Disposal Services




Compliance & New Garments

Verifying/Logging – New Purchases



Radiological Care Services
Loaner Garments
3/4 Apron
Large Purple
radcareservices.com 38547



Inventory Management – Compliance Solutions

“Best Practices” – Survey/Audit



RADCOMPLY™

OUR COMPLIANCE DRIVEN SOFTWARE PLATFORM

Dashboard

Itemized Inventory

Total Garment Inventory	1224
3/4 Apron	73
Half Apron	6
Belt	18
Full Apron	22
Hat	1
Gonad Protector	11
Shoulder Protector	4
Skirt	334
Thyroid Collar	432
Vest	323

Each Garment type is clickable and will take you to each specific inventory.



Search garments based on color, garment type, active/inactive inventory, etc.

Customer Report

Search for Garments

Search SEARCH

In Service EXPORT ALL

Integrity Assessment


Service Date

Select	Customer	Department
<input checked="" type="checkbox"/>	St. Joseph Mercy Hospital	OR

Garments (59)								
Garment #	Cust/Dept	Description	Garment Type	Garment Status	Damage Notes	Integrity Assessment	Location	Service Date
▼ 8985	St. Joseph Mercy Hospital OR	Shiny Royal Blue, St Joseph Mercy OR	3/4 Apron	Active	1	Pass	Customer	Dec 21 2020
▼ 9957	St. Joseph Mercy Hospital OR	Blue, St Joseph Mercy OR	3/4 Apron	Active	1	Pass	Customer	Dec 21 2020
▼ 26028	St. Joseph Mercy Hospital OR	Headphones	3/4 Apron	Active	1	Pass	Customer	Dec 22 2020
▼ 8987	St. Joseph Mercy Hospital OR	Pastel Tie Dye, St Joseph Mercy OR	3/4 Apron	Active	0	Pass	Customer	Dec 21 2020
▼ 9910	St. Joseph Mercy Hospital OR	Brown Camo, St Joseph Mercy OR	3/4 Apron	Active	0	Pass	Customer	Dec 22 2020
▼ 9936	St. Joseph Mercy Hospital OR	Blue Gray & Purple Waves, St Joseph Mercy OR	3/4 Apron	Active	0	Pass	Customer	Dec 21 2020
▼ 9940	St. Joseph Mercy Hospital OR	Dark Rose, St Joseph Mercy OR	3/4 Apron	Active	0	Pass	Customer	Dec 21 2020
▼ 9943	St. Joseph Mercy Hospital OR	Burgundy Black Trim, St Joseph Mercy OR	3/4 Apron	Active	0	Pass	Customer	Dec 22 2020
▼ 9944	St. Joseph Mercy Hospital OR	Purple Green & Blue Pattern, St Joseph Mercy OR	3/4 Apron	Active	0	Pass	Customer	Dec 21 2020
▼ 9946	St. Joseph Mercy Hospital OR	White Dots Black Diamond Pattern, St Joseph Mercy OR	3/4 Apron	Active	0	Pass	Customer	Dec 21 2020
▼ 9948	St. Joseph Mercy Hospital OR	Skeletons, St Joseph Mercy OR	3/4 Apron	Active	0	Pass	Customer	Jan 06 2021
▼ 9950	St. Joseph Mercy Hospital OR	Cheetah Pattern, St Joseph Mercy OR	3/4 Apron	Active	0	Pass	Customer	Dec 22 2020
▼ 9954	St. Joseph Mercy Hospital OR	Blue Wave, St Joseph Mercy OR	3/4 Apron	Active	0	Pass	Customer	Dec 22 2020
▼ 9956	St. Joseph Mercy Hospital OR	Blue, St Joseph Mercy OR	3/4 Apron	Active	0	Pass	Customer	Dec 21 2020
▼ 9958	St. Joseph Mercy Hospital OR	Blue, St Joseph Mercy OR	3/4 Apron	Active	0	Pass	Customer	Dec 21 2020

Expanded view of the x-ray image

16 Apr 04



The central image is an x-ray of a blue, long-sleeved garment, possibly a gown or lab coat, laid flat. The garment is dark blue and has a distinct opening at the bottom right, resembling a neck or armhole. The x-ray shows the texture and folds of the fabric.

Garments (44)

Garment #	Cust/Dept
8985	St. Joseph Mercy Hospital / OR
8987	St. Joseph Mercy Hospital / OR
9910	St. Joseph Mercy Hospital / OR

Review

Comments

Comment Date	Comme
09 Jun 06	EXAMP

Add Comment

ADD

Viewed	Location	Service Date
	Customer	Apr 16 2020

Most Recent Image Apr 16 2020

[Click to view all 1 xrays](#)

	Customer	Apr 16 2020
	Customer	Apr 16 2020

Integrity Assessment for Garment 52142

Description Thyroid Collar: Dr. Drougas - Blue / Green
Customer Carilion Cardiovascular Institute Hybrid / VOR
Current Assessment Unreviewed

Assess the garment. Failing a garment will mark it out of service. The reason for the decision can be entered in the Comment field.

Integrity Assessment Pass Fail

Request Disposal

Comment (optional)


CONFIRM ASSESSMENT

CANCEL

▼ Comments

Jul.27.2023 "Severe Damage Reported" was made by Matthew W. @RCS

▼ X-Ray Images

July 27, 2023 (1515 x 528) 



Items	Service Date	Last
1	Aug 01 2023	Ju
1	Aug 01 2023	Ju
1	Aug 01 2023	Ju
1	Aug 01 2023	Ju
1	Aug 01 2023	Ju
1	Aug 01 2023	Ju
1	Aug 01 2023	Customer
1	Aug 01 2023	Customer


X-ray images are automatically archived every year, so that you can monitor the integrity of your lead garments.

Description	Garment Type	Barcode	Customer	RFID	Comment
Red w/ Red Trim	3/4 Apron	22359	Baptist Paducah	3232333539...	

Most Recent Scan Date: 17 Aug 2021


[^ Show All](#)

Scan Date: 01 Sep 2020



[REMOVE](#)

Scan Date: 17 Aug 2021



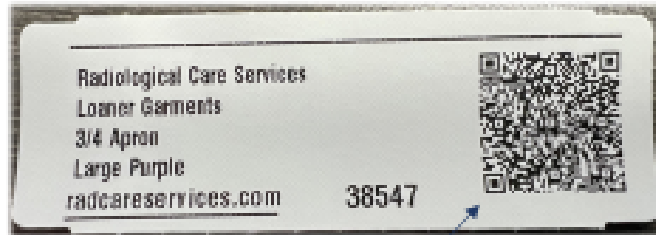
[REMOVE](#)

Add Comment [ADD](#)

« < > »

Compliance-driven QR Codes

Perform Integrity Assessments and make notes by simply scanning the QR code



RADCOMPLY

Example Customer

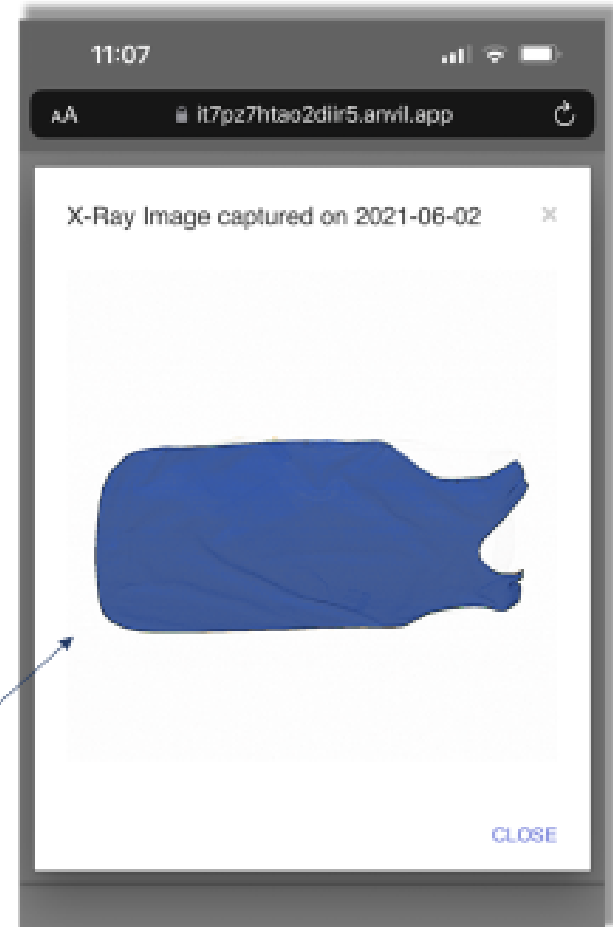
DEPARTMENT **Cath Lab**
DESCRIPTION **new**
TYPE **3/4 Apron**
BARCODE **116**
ACTIVE **No**
CREATED **2020-08-10**
MOST RECENT SERVICE
DATE OUT OF SERVICE **2022-06-30**
REASON **Customer Requested Disposal**
MOST RECENT INTEGRITY ASSESSMENT **2021-06-02**
ASSESSMENT **Failed**
REVIEWED BY **David**
REVIEW DATE **2022-06-30**

COMMENTS

CONTRIBUTOR	DATE	COMMENT
David	2022-06-30	This thing is junk!

X-RAY IMAGES

DATE	REVIEW DATE	X-RAY IMAGE
2021-06-02	2022-06-30	VIEW
2021-06-02	2022-06-30	VIEW
2021-06-01	2022-06-30	VIEW





- ❖ **Other Platforms** - Smart ID, Apron Track ApronCheck, etc. (Require staff to do scans, run reports, upload data, and manage the platform)
- ❖ **RADCOMPLY™** - RCS provides the admin work and uploads everything for the customer (X-ray images, service data, etc.)
- ❖ **Best Practice Recognition** – RCS customers receiving this during audits due to our platform



In Review...

- ❖ **RCS – World’s First, Total X-ray Garment Solutions Platform**
- ❖ **10 Years Experience – World’s Garment Servicing Authority**
- ❖ **Proper cleaning, proper repair, proper x-ray inspection, and compliance documentation**
- ❖ **Compliance Based Platform – Total Network Risk Mitigation**
- ❖ ***No Lost Customers – 2013 to Present***
- ❖ ***500+ Facilities – 43 States – Local, Regional, National References***
- ❖ ***“We’ve always done it this way” – “It is not a requirement to do that” – Dangerous Phrases***

QUESTIONS/DISCUSSION



Angie – Part 2