

COVERAGE

OREX Business Update
Advanced Protective Clothing Technology
November 2013

LETTER FROM THE OREX TEAM

A serious matter

There's a lot of rhetoric and misinformation in the world of product marketing.

When it comes to product performance, actions speak louder than words. Time and time again OREX products have proven themselves as the number one most effective choice for protecting workers from contamination. Unfortunately, manipulating information is a misleading technique often used to sell inferior products and services. The OREX™ team doesn't subscribe to these tactics. We don't believe they're necessary when our product is the most advanced of its kind in the nuclear industry.

Industry leaders around the world rely on us to help them with radiological protective clothing selection and contamination control—and we take it seriously. As radiation protection professionals who bring real-world experience from various levels of the nuclear industry, we have tremendous passion for doing our job well. Part of that job is being knowledgeable about our product. In our minds, marketing is simple. We tell the truth and we talk facts. It's unnecessary to be anything but honest—anything less can be costly to our customers.

There's a historical practice within our industry of issuing radioactively contaminated garments to workers, who are then sent into the field to perform work with the impression these laundered garments will protect them. Additionally, these

same garments, when observed under a microscope, or otherwise tested, contain over 2000 small holes per square inch of fabric across the entire surface of the garment. Holes large enough to allow radioactive contamination to pass through easily. Lastly, these laundered, reusable

OREX...the only garments tested and actually certified to protect workers from contamination.

garments are worn over and over and over by many workers, a practice that doesn't bode well for those individuals more conscious of personal hygiene considerations in today's world.

We're shocked that with current technology and choices, these practices, so antiquated that they date back to the dawn of the nuclear industry, still occur today. What's the real cost of doing business the old-fashioned way? Nostalgia for the past may have its place, but that place is not in today's nuclear industry.

The OREX team set out a few years ago to break those old paradigms and eliminate the many shortcomings in those old approaches. And that is exactly what we are doing today



and the OREX users certainly do "get it." While others cling to outdated technology, we're committed to providing truly *protective* garments to your workforce.

That's the way to achieve long-term success for our business and yours. The cleanest and most well-protected workforces across the country wear OREX. After all, it really isn't about the sell; it's about worker safety and doing what is right. You can always trust us to make that our first priority.

Time to come clean!

What you can't see can contaminate you, so we at OREX feel it's time for our competition to come clean about their launderable garments. Erroneous comments in a competitor's recent newsletter have prompted us to speak out with important information you need to know about personal protection.

From the moment workers dress out for work until the end of shift, their skin is likely exposed to residual radioactive contaminants lodged in the launderable "protective" garments being issued to them. It is a long known fact that the launderable garments that are issued to protect workers from contamination are controlled as radioactive material and pose a real risk of skin contamination. With each wear-and-wash cycle, the level of residual contamination increases until the garment exceeds its contamination limits and must be disposed of. But in its lifespan, each individual launderable garment is worn, and sweated in, by numerous different workers, only to be thrown into a washer and processed with other contaminated garments before being cycled back for more wear, more sweat...and more contamination. There is a better way, a safer way, to get your job done.

Doesn't every worker deserve a clean, protective garment? No other industry allows a worker to put on a coverall that has been worn over and over in a contaminated environment. The majority of nuclear plants throughout the United States have adopted the use of OREX single-use protective clothing because every single OREX coverall is 100% clean and 100% contaminant-free when you put it on. This has had a significant impact on our competition.

Recently our competitor made several claims we need to address. Below are listed, *in italics*, statements made by our competitor. Following each statement is our response, including statistics, facts and test results proving why OREX is the safer choice for you and your team.

1a *The Institute of Nuclear Power Operations (INPO) recently released PCE results from our nation's nuclear power plants. Nine out of the ten top-performing plants used launderables.*

PCEs are at an all-time low across the U.S. nuclear industry, and workers at the majority of U.S. nuclear plants wear OREX. Not one plant using OREX Ultra has reported a single personnel contamination event (PCE) related to clothing pass-through. Recent INPO data rated OREX users as 4 of the top 5 reactor units and 8 of the top 10 reactor units in terms of PCE performance. Within the U.S. nuclear industry, OREX single-use garments are the only protective clothing that are tested and certified by an independent, world-renown testing agency to a standard for protection against radioactive particulate.

Plants still using launderable protective clothing require workers to wear extra outer disposable garments during

work in contaminated areas to even come close to the protection provided by the OREX Ultra coverall.

1b *Turkey Point and St. Lucie nuclear plants used single-use garments for a period of time, then switched to launderables. Since switching personal contamination events and heat stress incidents have dropped.*

Turkey Point was one of the first plants to use OREX Ultra during a refueling outage. While using OREX in 2008, Turkey Point had the best results in the entire country with a total of 11 PCEs and only .08/1000 RWP hours. None of the 11 incidents were a result of personal protective garment performance, and there were no documented heat stress incidents attributed to OREX. That was and still is their best performance to date.

2 *Heat stress is a much more serious health hazard to workers in the field than minor PCEs. ProTech performs three times better than its leading competitor for water vapor transmission and insulative performance, both factors in heat stress.*

Radioactive contamination of a worker's skin is not a trivial worker safety consideration, and neither is heat stress. Both are serious and legitimate concerns that are recognized by the industry and workers across the country. At OREX, our goal is to provide protection that optimizes worker safety and maintains a proper balance between comfort and protection. While providing superior protection from radioactive contamination, OREX Ultra coveralls boast excellent breathability, surpassing the

DID YOU KNOW?

Every single OREX coverall is 100% clean and 100% contaminant-free when you put it on.

No other industry allows a worker to put on a coverall that has been worn over and over in a contaminated environment.

Numerous wear-and-wash cycles result in the buildup of residual radioactive contamination in each launderable garment and as a result, each "ready-for-issue" garment is controlled as radioactive material.

Every plant that made the change to OREX experienced overnight reductions in PCEs of not less than 40% and as much as 70%.

competition's untreated and treated launderable garments (see the staggering proof below). Higher MVRTs mean greater comfort and lower likelihood for heat stress.

3 *Personnel Contamination Events (PCEs) typically result from personal protective equipment failure. Single-use garments present a greater hazard than particle penetration or residual contamination. Launderables are 600% stronger than the leading single-use garment. Single-use garments by definition are not made to last.*

Launderable garments are designed to be washed over and over so they can be used over and over by many

Moisture Vapor Transmission Rate ASTM E96-95

Precision Testing Laboratories, Inc. Nashville, TN September 2013

Protech With fluoro-chemical	7,174
Protech Untreated	7,465
OREX Ultra	8,740

different workers. As a result, they are many times more expensive than a single-use garment. A laundry leasing company cannot make money unless their products are worn numerous times by many workers. The more it gets worn, the more profit the vendor makes. And if one gets damaged, ripped or torn, the customer pays a hefty price for repair or replacement of that one coverall.

Due to profitability concerns, durability is a high priority for providers of launderable garments. However, numerous wear-and-wash cycles result in the buildup of residual radioactive contamination in each launderable garment and as a result, each “ready-for-issue” garment is controlled as **radioactive material**.

Instead of concentrating on how many times garments can be used over and over, we focus on 100% protection for one wearer – YOU! When you put on an OREX coverall, you are the first and only wearer. It’s not a garment that’s just pulled from the “ready-for-issue” used garment pile. An OREX Ultra coverall is fresh and clean to each and every worker, and unlike used launderable garments, guaranteed to be free from radioactive contamination when a worker puts it on. Workers don’t have to wonder how many times the garment has been worn by others and washed with hundreds of other garments contaminated with radioactive particulates and who knows what.

4 *PCEs are virtually never attributable to particle penetration through an intact garment. Contamination migration through an intact garment has never been an issue, nor has residual contamination. ProTech also has Fluoro water repellent applied during each wash cycle, resulting in a fabric that has a 99.9% water spray repellency rating.*

Contamination migration through laundered garments and residual contamination in garments has been a longstanding and significant issue for many years. “Ready-for-issue,” launderable garments are controlled as “radioactive material” because they do, in fact, contain residual contamination (and particles).

Particle Pass-Through Test

Using graphite powder with a nominal particle diameter ranging between 0.7um to 90um. The mean particle size is 23um.

Protech Plus
Treated with fluoro water repellent



Protech Plus
Untreated



OREX Ultra



Go to www.orex.com for your particulate penetration test kit and see for yourself!

Residual contamination is a primary reason most U.S. nuclear plants now use OREX protective clothing.

Ten years ago, as U.S. nuclear plants began wholesale transitions away from launderable garments to OREX single-use protective clothing, every plant that made the change to OREX experienced overnight reductions in PCEs of not less than 40% and as much as 70%. Those reductions represent the prior PCEs attributed to residual contamination in ready-for-issue launderables.

Our competitor does indeed apply “fluoro water repellent” to the Protech garments in an attempt to reduce the migration of radioactive particles through the numerous “pores” found in their fabric. While this attempt to fix an obvious flaw in their garments does provide some amount of water repellency, it does nothing to reduce the potential for radioactive particles to migrate through the still numerous and relatively large “pores” in the garments.

5 *With UniTech, you know where your services are provided. UniTech Services Group operates nine licensed facilities, and employs over 500 workers in the United States. UniTech’s staff has many years of experience in the nuclear field. We conduct yearly audits of each of our facilities and invite our customers to conduct their own inspections of our facilities. Our company is also ISO 9001 Quality Assurance Certified. By contrast, the provider of single-use protective garments outsources manufacturing to a plant in China.*

All OREX products are manufactured in several state-of-the-art, ISO-certified manufacturing facilities that we actually own in China. Our American colleagues manage these facilities full time, our quality control programs are American standard and second to none, and our audits are performed by independent auditors from the protective clothing certifying agency.

Our competitor’s garment manufacturing is outsourced to offshore contractors using fabric made in China and shipped to Mexico for assembly.

The leading laundry provider in the USA is simply a small specialty division of a large corporation that specializes in conventional laundry and uniform rental services for non-nuclear businesses.

6 *ProTech developers went through 50 different fabric compositions to create its final, superior product. ProTech features passive venting, natural cooling, static minimization, freedom of movement, and wickable fiber.*

The leading launderable fabric is a common textile, not designed for the nuclear industry and not developed at all for protection against radioactive contamination. The leading launderable fabric with the touted “carbon grid” is actually manufactured primarily for and used extensively in the electronics manufacturing industry to reduce static buildup during sensitive electronics assembly and manufacturing. This fabric was chosen by the laundry vendor for its durable laundering features, not for its protective capabilities.

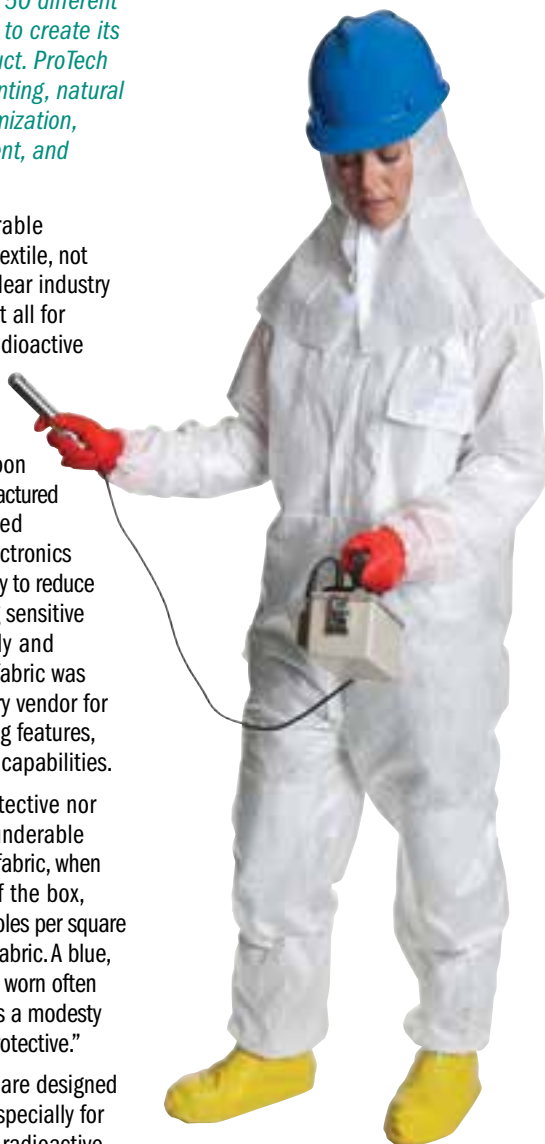
There is nothing protective nor innovative about launderable garments. And it is a fabric, when new and fresh out of the box, contains over 2000 holes per square inch in the weave of fabric. A blue, cotton hospital scrub worn often by industry workers as a modesty garment is just as “protective.”

OREX Ultra coveralls are designed and manufactured especially for your protection from radioactive

contamination. Our proprietary fabric wicks moisture from your skin for your comfort while maintaining an effective barrier between you and your work environment.

And, because OREX products are organic, they are easily disposable and environmentally friendly; the carbon footprint is significantly smaller than our competitor’s launderable fabric. OREX garments also lend themselves to being easily packaged and shipped in bulk. Over 16,000 complete sets of new, clean, never used, OREX protective clothing can be delivered in a single 40-ft. shipping container.

Consider the facts we have shared with you and ask for OREX next time you dress for work!



New Boundary Curtain and Sheeting Products

At the top of every RP professional's wish list would be products which provide protection against the spread of radioactive contamination yet are lightweight, easy to install and do not create radioactive waste themselves.

While these attributes are true of all OREX products, our two newest products, Contaminated Area Boundary Curtain (CS1720) and Fire Retardant Tacky Sheeting (CS1735-FR), provide tools for controlling the spread of radioactive contamination that are unparalleled in the industry. Many maintenance and refueling activities have the potential to release

radioactive contamination into the immediate work area. In the past, RP personnel have encountered challenges while attempting to contain and collect this contamination. Historically, products which are heavy, expensive, and hard to install such as poly sheeting and oil cloth have been used with varying degrees of success. The use of these products has also had the undesired side effect of creating a large volume of costly radioactive waste.

The OREX Contaminated Area Boundary Curtain (CS1720) is uniquely designed with a continuous loop at the top edge that

CS1720 (left) and CS1735-FR (right)



facilitates support by any current CA boundary system. It also has a double flap at the bottom edge that allows the curtain to be affixed to the floor inside and outside the contaminated area. Installed height 36-37". The weight of the 300-foot-long roll is only 34 pounds, far

less than that of any other sheeting product currently used in the industry.

The OREX Fire Retardant Tacky Sheeting (CS1735-FR) is designed to replace the oil cloth floor covering used throughout the nuclear industry. The inherent fire-retardant properties of this product make it capable of replacing other fire blanket materials used in conjunction with welding and torching activities. With an inter-tangled fiber structure similar to the filter media this product provides a matrix that traps contaminants, thereby preventing the spread of these particles.

THE QUESTION OF PROTECTION OREX is the only garment in the U.S. certified to actually "protect" workers from radioactive contamination. Woven, reusable, laundered garments contain thousands of holes per square inch, allowing particles to penetrate.

orex.com
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Go to www.orex.com for your particulate penetration test kit and see for yourself!

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