

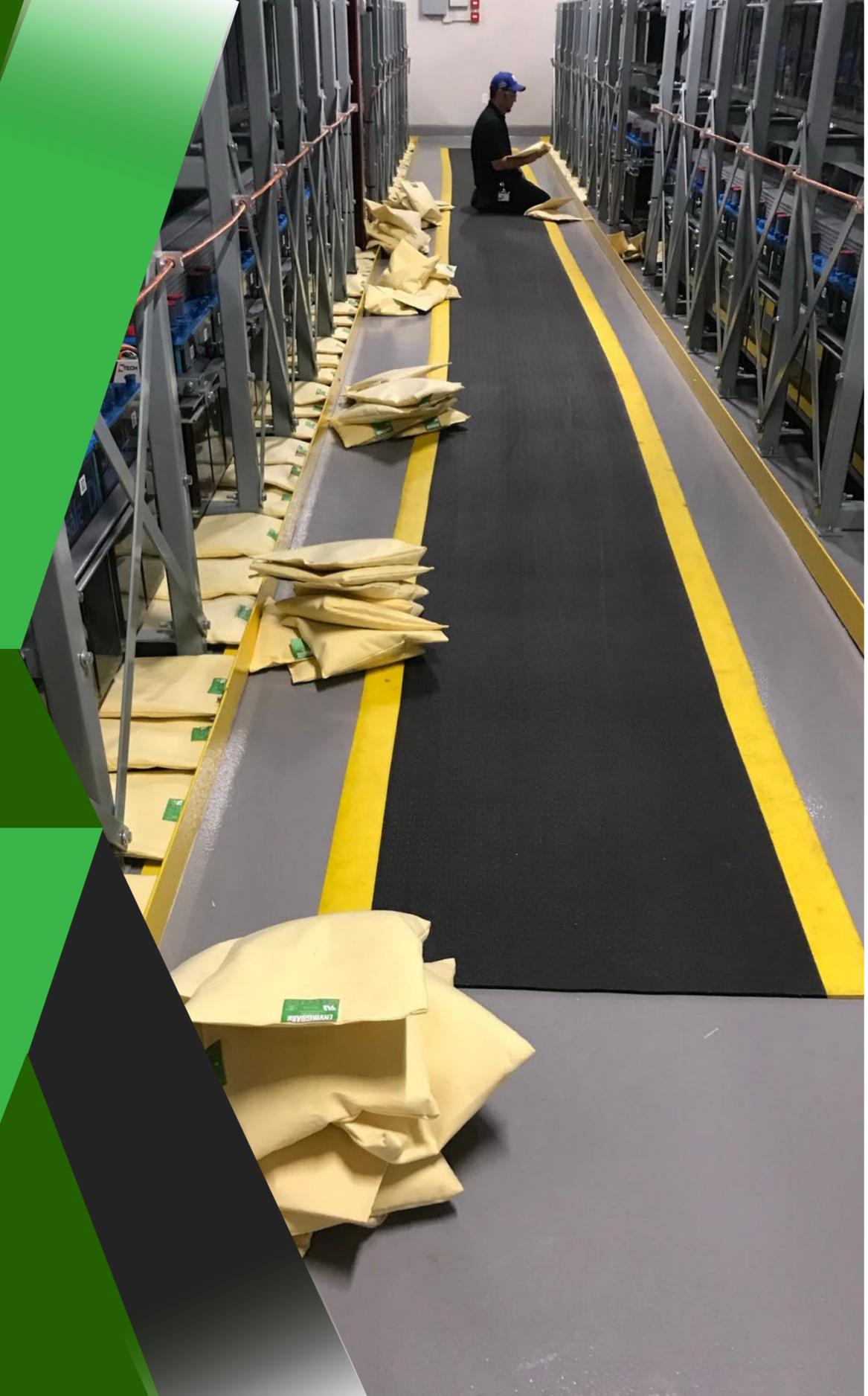
Environmental Services



END - OF - LIFE &

RECOMMISSIONING PROGRAM

MAINTAIN SYSTEM CERTIFICATION  
& SITE COMPLIANCE



# Enviroguard Overview

## Trusted Compliance Partner for 30+ Years

- Global Leader in Compliance & Safety Solutions
- Serving Stationary Battery & Energy Storage Markets

## Certifications & Approvals:

- ISO 9001:2008 Registered
- UL Listed & FR Patent Pending
- FM Approved Products
- Woman-Owned Business

## Nationwide Network in conjunction with our Channel Partners:

- Distribution & Installation Service Providers in every major market



# Compliance Gap Analysis: Identifying Risks

- **Local Jurisdiction Requirements** : These are rules and regulations specific to a particular city or county. They can cover a wide range of topics, such as zoning, building codes, and business licenses.
- **City Ordinances**: These are laws passed by the city council or other local governing body. They are typically more specific than state or federal laws.
- **County Ordinances**: These are laws passed by the county board or other county governing body. They may cover topics such as zoning, land use, and public health.
- **State Codes**: These are laws passed by the state legislature. They cover a wide range of topics, such as criminal law, civil law, and environmental law.
- **Federal Statutes**: These are laws passed by the U.S. Congress. They are the highest level of law in the United States.

# What has changed?

Safety requirements are becoming more important as more batteries and new technologies are being installed.

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## **Safety Considerations:**

- EHS requirements
- Personnel Training
- Risk Assessment
- Emergency Response Plans
- Site Inspections & Maintenance
- Compliance & Regulations
- Insurance requirements
- ARC Flash
- Maintaining System Certification

## **Potential Hazards**

- Thermal Runaway
- Fire & Explosion
- Electrical Hazards
- Gas Release
- System Failure

# Changes in Technology

## Safety Products Technology Improvements

### Spill Pillow Fabric (Nabpills)

- Now more flame retardant
- Much stronger tinsel strength and extended warranty
- Accepted by major insurers

### Neutralizing Compound (Neutrasorb)

- pH reactive to only change colors when in contact with electrolyte
- Dustless technology to keep compound dust from going airborne

### Seismic Battery Racks

- Racks rated to SDS levels for latest building code
- IEEE and NEBS seismic ratings

### Hydrogen Sensors

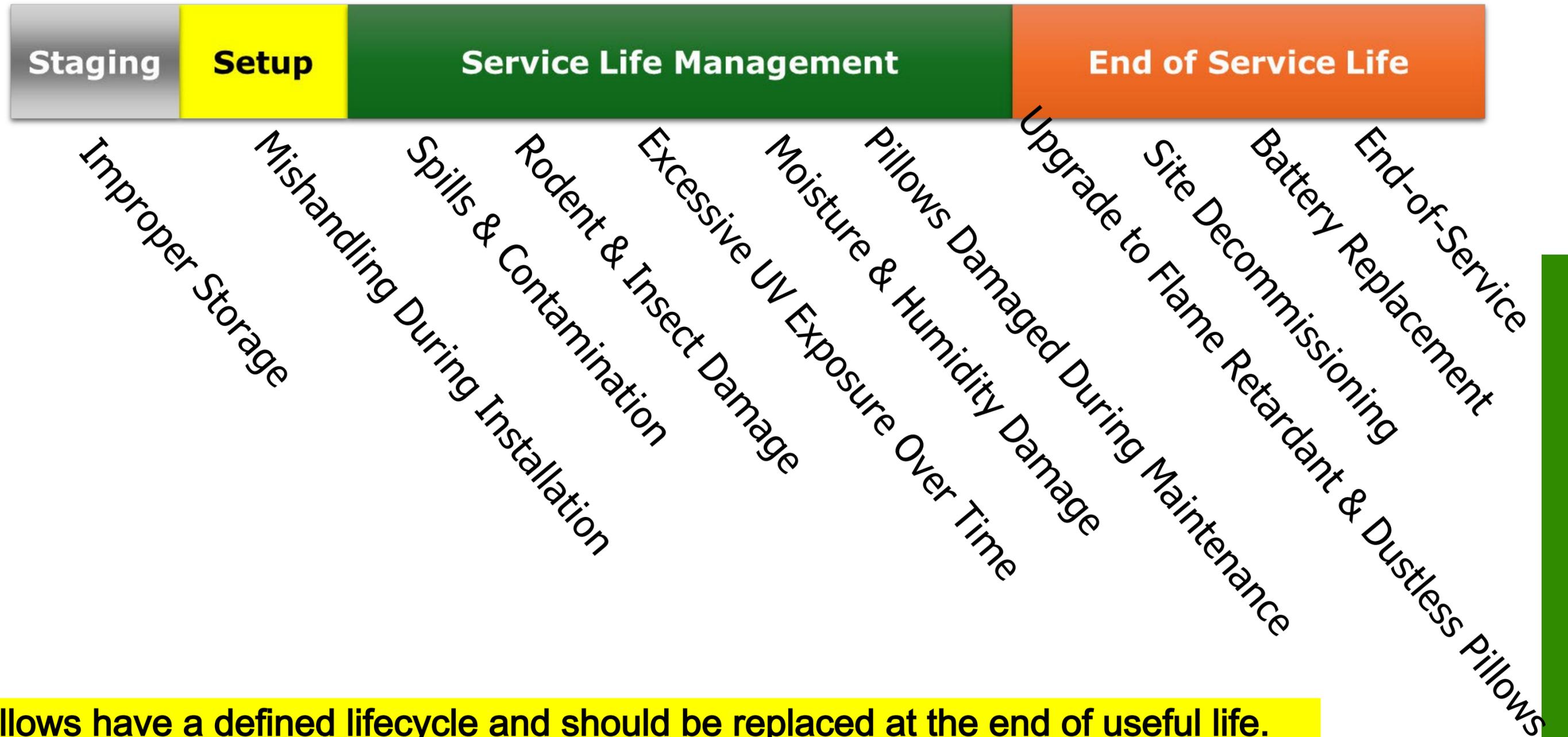
- Now lasts over 15 years exceeding the service life of batteries
- Self-calibrating technology eliminates maintenance
- Solid-state technology only allows hydrogen to enter the sensor lattice

### Shrouds & Shields

- Flame retardant technology
- Holes and notches to allow for post readings
- Notches for battery monitoring system leads

**More technology improvements exist for various battery types.**

# Pillow Lifecycle & Replacement



**Pillows have a defined lifecycle and should be replaced at the end of useful life.**

# Active vs. Passive Neutralization

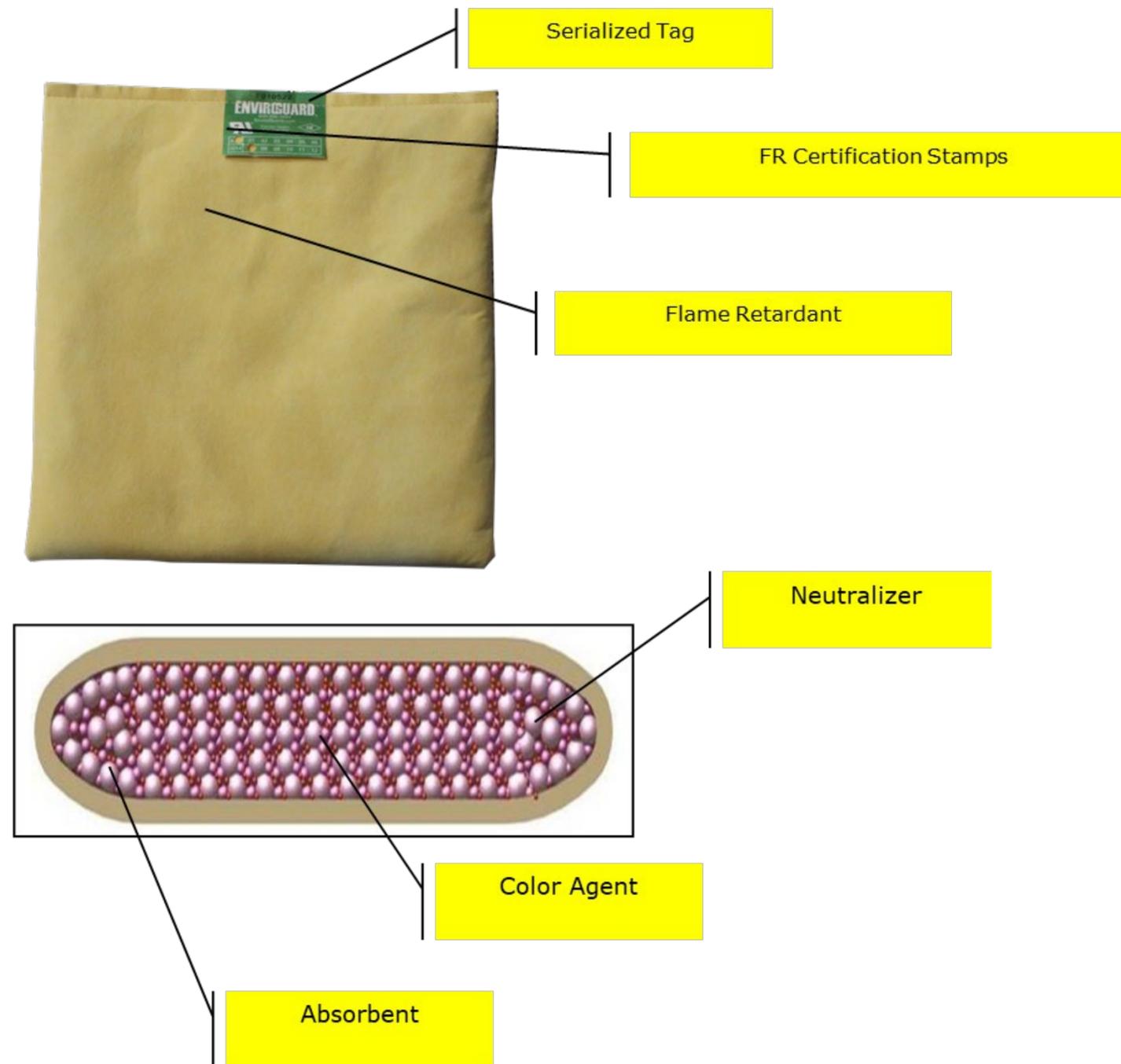


**Reactive Neutralization**  
Manually Applied  
(MUST be Trained to Use)



**Passive Neutralization**  
ALWAYS Ready  
(Neutralizes upon Contact)

# Neutralization, Absorption Pillows, SOC



- Passive Neutralization
- Strong Fabric UV resistant
- Serialized Tag
- Flame retardant (FR)
- Non-toxic Outgassing
- For Lead Acid & Ni-Cad (-K)

Note: Pillows and SOCs are both designed to absorb electrolyte, but the type of neutralizer to select depends on the battery type - lead acid, Ni-Cad (KOH)

UL VXMB2 = UL Recognized

UL 2436 = Lead Acid Spill Control

FM 4955 = FM Approvals

# Spill Containment Pillow Replacement

## Level 1: Routine Replacement

- Timeline: Typically, 15-20 years, depending on site conditions.
- Condition: Pillows are still in good condition and can be easily replaced by hand with latest technology pillows

## Level 2: Moderate Degradation

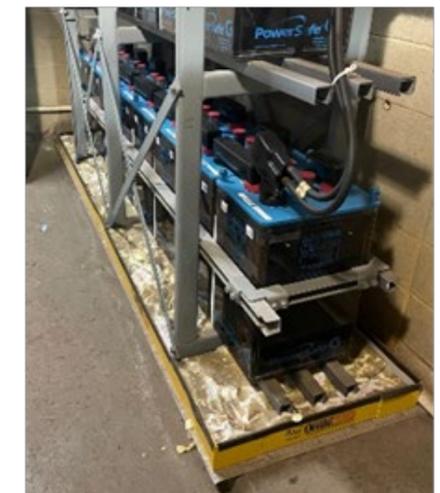
- Timeline: Beyond 20 years (possibly earlier if exposed to UV)
- Condition: Some pillows may exhibit cracking

## Level 3: Significant Degradation

- Timeline: Advanced stage of degradation

Condition: Pillows are cracked and broken, requiring specialized HEPA vacuum cleaning for safe and dust-free removal by an approved contractor

**Maintain UL system certification with new and approved dust-free pillows.  
Always test pillows for contaminants in the containment areas prior to removal.**



# Pillow Recycling Program

## Process :

The steps outlined below are recommended to ensure EPA compliance and provide a convenient method for disposal and recycling of EnviroGuard neutralization and absorption pillows at end-of-life, battery and pillow replacement, decommissioning and/or electrolyte contamination. The actual method of handling will depend on the quantity of pillows and whether they are contaminated.

## Non-contaminated Pillows

- Quantities less than 500 pillows- will be disposed of or recycled depending on geographic location. DOT approved containers or super-sacks will be provided for transportation to an EPA approved site.
- Quantities between 501 or more pillows will be disposed of or recycled depending on geographic location. DOT approved containers or super-sacks will be provided for transportation to an EPA approved site and/ or equipment operated by our partners for on-site disposal

Contaminated Pillows will require a Wastestream Information Profile (WIP) to be completed. EnviroGuard has contracted with Veolia to provide hazardous material handling for contaminated pillows.

- EnviroGuard will provide information on the associated costs, handling instructions, packaging and transportation will be provided upon receipt of WIP.
- A Certificate of Disposal will be provided as proof of meeting the EPA requirements.

# When to Replace Pillows & SOC's

Least Expensive to Replace → Most Expensive to Replace

Level 1

**Good**



**Stepped On**



**Insects**



Level 2

**Torn**



**Punctured**



Level 3

**Worn Case**



# Project Management Support

## Dust-Free Removal Services:

- Efficiently schedule and manage removal of spent neutralization pillows with an approved contractor.
- Optimize resource allocation to minimize downtime.

## Compliance Testing Services:

- Coordinate testing of spent pillows to ensure compliance with environmental regulations.
- Expedite the testing process for quicker project completion.

## Traditional Service Management:

- Provide comprehensive project management, from planning to execution through our national network of service providers.
- Offer expert consultation and guidance throughout the replacement process.
- Ensure adherence to industry best practices and regulatory standards.
- Complete recommissioning checklist to ensure compliance in all areas of the battery room.



# New and Improved Replacement Pillows



Deluxe – FR Pillow



Standard Pillow



Deluxe – FR SOC



Standard SOC

- High tensile strength blended fibers
- pH reactive spill indicator prevents false positives
- Non-toxic outgassing
- Date code and serial #
- 10-year prorated warranty
- Standard pillow has NFPA Class 1 Fire Rating and UL Recognition
- Deluxe pillow is self-extinguishing and is FM approved

# Pillow SDS - Not Regulated Materials

- Spill containment pillows are not regulated by DOT provided they are not contaminated
- Replacement pillows should be dustfree

SECTION 12: SHIPPING DATA	
D.O.T. PROPER SHIPPING NAME .....	NONE
HAZARDOUS SUBSTANCE 49CFR CERCLA .....	NONE
D.O.T. HAZARD CLASS .....	NOT REGULATED
D.O.T. LABELS REQUIRED .....	NO
D.O.T. PLACARDS REQUIRED .....	NO
POISON CONSTITUENT .....	NO
BILL OF LADING DESCRIPTION .....	BLEND #5
PACKING GROUP .....	NONE
UN/NA CODE .....	NON HAZARDOUS

MATERIAL SAFETY DATA SHEET	
NeutraSorb	
<b>SECTION 1: PRODUCT IDENTIFICATION</b>	
ENVIROGUARD 5534 Olive St Montclair, CA 91763 BUSINESS PHONE: (800) 206-9884 EMERGENCY PHONE: (909) 424-9300 (CHEMTREC)	
PRODUCT NAME OR NUMBER .....	MG 000515
TRADE NAME OR CHEMICAL NAME .....	NEUTRASORB
SYNONYMS .....	N/A
FORMULA .....	PROPRIETARY
CHEMICAL FAMILY .....	N/A
MOLECULAR WEIGHT .....	N/A
NFPA .....	SEE SECTION 8
DATED .....	07/14/2009
HMS RATING .....	SEE SECTION 8
<b>SECTION 2: HAZARDOUS INGREDIENTS/HAZARD DATA</b>	
CHEMICAL NAME (S) CAS NUMBER %WT TLV-ACGIH PEL-OSHA SEC 313 NTP IARC PROP. 65	
NONE	NA NA NO NA NA NO
<b>SECTION 3: REGULATORY DATA</b>	
NTP .....	NATIONAL TOXICOLOGY PROGRAM
IARC .....	INTERNATIONAL AGENCY FOR RESEARCH ON CANCER
PROPOSITION 65 .....	THIS PRODUCT DOES NOT CONTAIN INGREDIENTS ON THE LIST OF PROPOSITION 65.
	STATE OF CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986.
	THE CHEMICAL (S) MARKED WITH A "YES" ON SECTION 313 ARE SUBJECT TO THE REPORTING REQUIREMENTS OF THIS SECTION.
SECTION 313 SARA TITLE III .....	
<b>SECTION 4: PHYSICAL DATA</b>	
BOILING/MELTING POINT @760 MM HG .....	N/A
pH .....	>7.0 @ 1% SOLUTION
PERCENT VOLATILE BY WEIGHT (%) .....	N/A
SPECIFIC GRAVITY OR BULK DENSITY .....	N/A
SOLUBILITY IN WATER .....	NOT SOLUBLE
APPEARANCE .....	PINK GRANULAR POWDER
ODOR .....	NONE
<b>SECTION 5: FIRE AND EXPLOSION HAZARD DATA</b>	
FLASH POINT *F (TEST METHOD) .....	N/A
AUTOIGNITION TEMPERATURE .....	N/A
FLAMMABILITY LIMITS IN AIR (%V) .....	N/A
EXTINGUISHING MEDIA .....	WATER, CARBON DIOXIDE, FOAM, DRY CHEMICAL
SPECIAL FIRE FIGHTING PROCEDURES .....	WEAR SELF CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE EQUIPMENT.
UNUSUAL FIRE & EXPLOSION HAZARDS .....	EXTINGUISH ALL NEARBY SOURCES OF IGNITION.
<b>SECTION 6: HEALTH HAZARD DATA/EFFECTS OF OVEREXPOSURE</b>	
THRESHOLD LIMIT VALUE .....	SEE SECTION 2
SIGN AND SYMPTOMS OF EXPOSURE	
EYES .....	DIRECT CONTACT WITH CONCENTRATED PRODUCT MAY CAUSE MODERATE IRRITATION AND TEARING.
SKIN .....	REPEATED OR PROLONGED CONTACT MAY CAUSE IRRITATION OR DRYING.
INHALATION .....	BREATHING DUST OR MIST MAY IRRITATE THE NOSE AND THROAT.
INGESTION .....	SWALLOWING LARGE QUANTITIES MAY CAUSE NAUSEA, VOMITING, DIARRHEA AND ABDOMINAL PAIN.
CRONIC OVEREXPOSURE .....	NONE KNOWN.
X:\ENVIROGUARD\MSDS Sheets\Archive\NEUTRASORB MSDS.DOC	

# Check for Signs

- Battery Room
- High Voltage
- Diamond Placard
- Hazardous Area
- No Smoking
- Battery Type, Hazards, Site Contact



Per Local, State and Federal requirements.  
Local AHJs may have additional signage requirements.

# Eyewash

- **Proximity to hazard:** Located as close as possible to areas where eye injuries are likely to occur.
- **Visibility :** Clearly visible and easily accessible. They should not be blocked by equipment, furniture, or other obstacles.
- **Signage:** Should be clearly marked with signs that indicate their location and purpose.
- **Regular testing:** Tested regularly to ensure that they are working properly. This can be done by flushing the eyewash station for several minutes each month.
- **Cleaning:** Cleaned regularly to remove dirt, debris, and other contaminants.
- **Inspection :** Inspection should include checking the water flow rate, water temperature, and the overall condition of the eyewash station.
- **Training :** All employees who work in areas where there is a risk of eye injury should be trained on how to use an eyewash station. This training should include how to activate the eyewash station, how to properly position the head and eyes, and how long to flush the eyes.



Show 9- & 16-gallon, bottle kit (incidental)

Primary eyewash should be used without the use of a person's hands

# Aisle Matting

- **Chemical resistance:** Battery rooms often have spills of battery acid or other chemicals. The matting should be resistant to these chemicals to prevent damage and ensure its continued effectiveness.
- **Conductivity :** Depending on the type of batteries, rack and cabinet, and the specific safety requirements, the matting may need to be conductive or non-conductive. Conductive matting can help to dissipate static electricity, which can be a hazard in battery rooms. Non-conductive matting can help to prevent electrical shock.
- **Fire resistance:** Battery rooms are often at risk of fire. The matting should be made of fire-resistant materials to help prevent the spread of fire.
- **Additional considerations:**
  - Consider using a mat with a higher coefficient of friction to increase traction.
  - Use mats that are easy to clean and maintain.
  - Consider using mats with a warning message to alert workers to the potential hazards of the area.



# Hydrogen Sensing

- **Placement:** Sensors should be strategically placed to detect hydrogen.
- **Height:** Sensors should be installed at the appropriate height to accurately detect gas accumulation, which typically rises.
- **Calibration :** Regular calibration is crucial to ensure accurate readings. Follow the manufacturer's recommended calibration schedule. Precious metal, solid state sensors are made to self-calibrate without periodic calibration.
- **Documentation :** Maintain detailed records of calibration dates, results, and any corrective actions taken.
- **Thresholds:** Ensure thresholds are set to keep hydrogen below 25% LEL
- **Back-up Power:** Ensure that sensors have the required 2hour backup power per fire code.
- **Regular Testing:** Conduct regular functional tests to verify sensor operation and alarm functionality.
- **Maintenance Records:** Keep detailed maintenance records: cleaning, calibration, and repair history.
- **Training :** How to interpret alarms and corrective action



# Spill Kits - Active Spill Cleanup

Hazwopper Training required to use the spill kit

- Tyvek body coveralls
- Headgear/Face Shield
- Goggles
- Rubber Gloves
- pH Test Kit
- Duct Tape
- Absorbent Wipes
- Hazmat Disposable Bags
- Disposable Dust Mask
- Emergency Response Guidebook
- Neutralizer for Batteries (Neutrasorb)
- Neutralizing & Absorbing Pads & SOCs
- Scoop
- Brush/Broom



# Hazardous Materials Management Plan (HMMP)

- Outlines the procedures and protocols for handling, storing, using, and disposing of hazardous materials within a facility or organization.
- It's designed to ensure safety, environmental protection, and regulatory compliance.
  - Identification and Inventory
  - Storage and Handling
  - Personal Protective Equipment (PPE)
  - Spill Response and Cleanup
  - Waste Management/Recycling
  - Employee Training
  - Regulatory Compliance

State, County, Local AHJ  
Varies based on the local municipality

# Hazardous Mitigation Plan (HMP)

NFPA 855  
IFC Chapter 12

Fire code requirement that outlines strategies and actions to reduce the long-term risks to human life, property, and infrastructure from various hazards.

## Hazardous Condition Identification

- Chemical, Electrical, Fire, Seismic, Weight

## Risk Assessment

- Identify conditions that could lead to risk

## Mitigation Strategies

- Actions that prevent the conditions or stop further progression

## Implementation Plan

- Training, maintenance, safety equipment, early warning notifications, actions to alarms, strategies

## Monitoring and Evaluation

- monitor conditions, safety devices, maintenance, replacement cycles, and updated safety practices.



# Training

- Training on Stationary Battery and Energy Storage System
- System Commissioning & Decommissioning
- Local Permitting & Regulatory Requirements
- Operation of EPO/E-Stop
- Hazard Identification and Mitigation
  - Safety Items Inspection
  - Operation of Fire, Hydrogen and Ventilation Systems
  - Spills & cleanup
  - Incidental voltage
  - Stranded energy
  - Notification to AHJ



**ENVIROGUARD**<sup>®</sup>  
University

# Factory Installed Training

Factory Installed Training Level 1, 2 and 3 at a glance:

## New Installation

## Pre-Qualify the ability to Retrofit Installation

### Proper Techniques:

- Liner installation- cutting and thermal bonding
- Sealing the system and maintaining UL Listing for Retrofit installations.

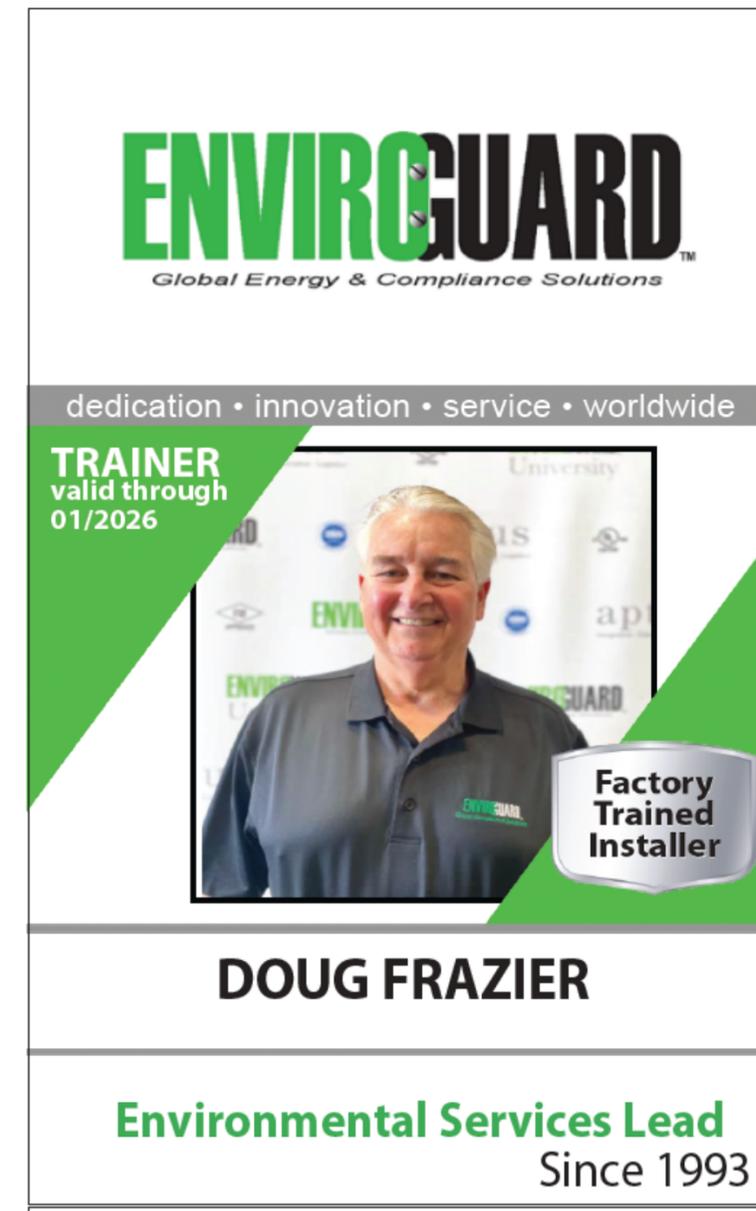
## Factory Installed Trainer (FIT) Badge

- Receive FIT Badge after training completion valid for one year with PDU Credit.

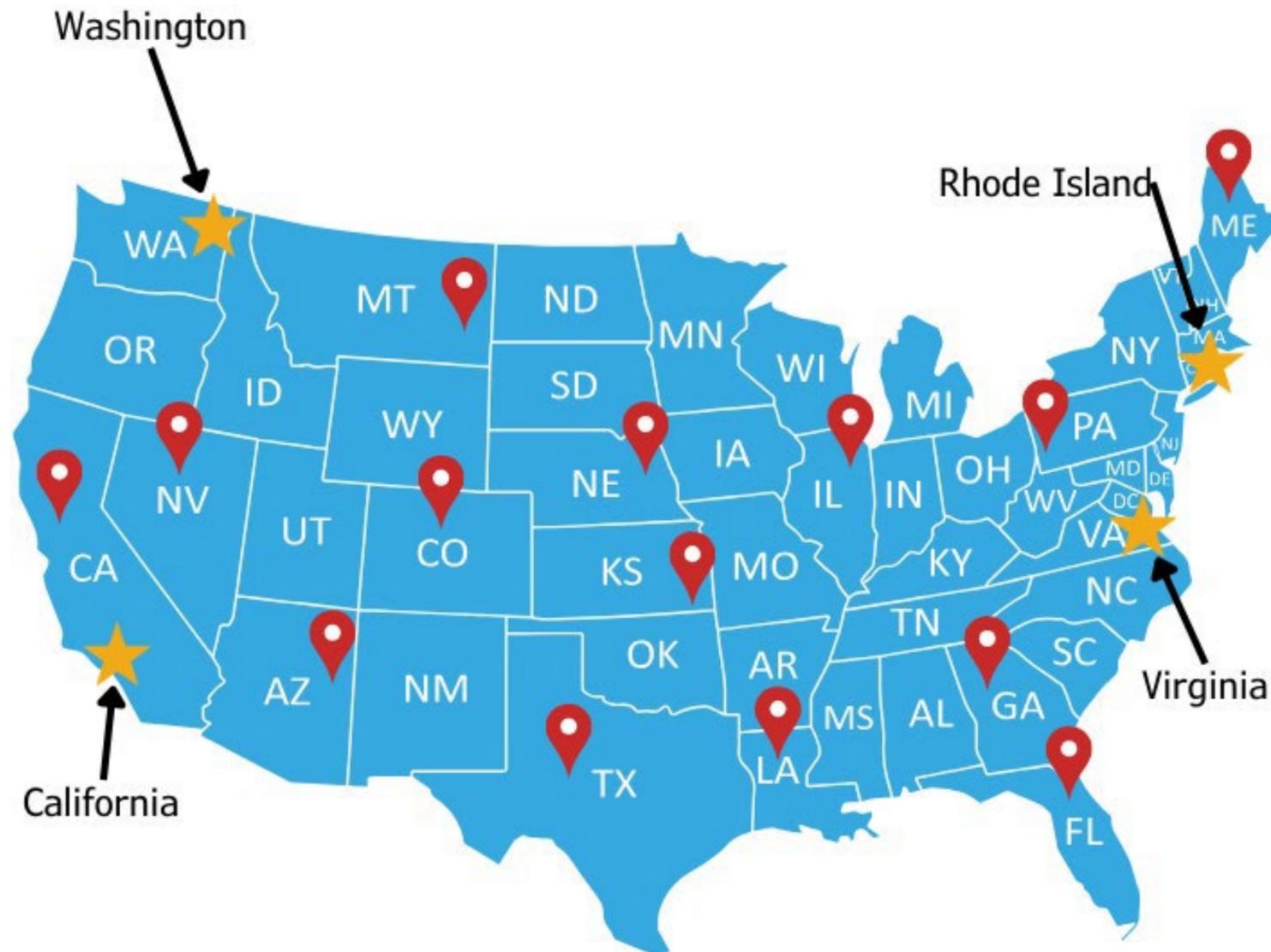
## Training

- Webinar training available as well as onsite with our industry experts

## FIT Badge



# Recommissioning Service Areas



Main Service Centers in Washington, California, Rhode Island and Virginia.

Enviroguard offers Environmental Services throughout the US in conjunction with our Channel Partners.

Go To: [www.enviroguard.com](http://www.enviroguard.com)

Email: [SalesInfo@EnviroGuard.com](mailto:SalesInfo@EnviroGuard.com)

Call: 800-206-9884

# THANK YOU

QUESTIONS?



Online Training: [www.enviroguarduniversity.com](http://www.enviroguarduniversity.com)

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