

Deepgreen West Virginia, Inc.

3455 East Broad Street, Columbus, Ohio 43213

Office 614.231.3646 Fax 314.231.3645

November 7, 2011

VIA USPS

ATTN: Document Control Desk, Director
Office of Federal and State Materials and Environmental Management Programs
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

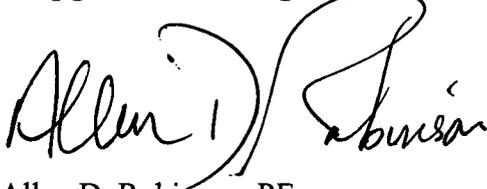
Re: Event Notice Number 47255

Gentlemen:

Enclosed herein please find the After Action Report for the above-referenced event. Please advise if additional information is required. Thank you.

Sincerely

Deepgreen West Virginia, Inc.



Allen D. Robinson, PE
Director of Operations
614.314.4671
guard057@sbcglobal.net

Encl.

cc: Deepgreen West Virginia, Inc.
Greenfields Coal Company, Inc.

IE72

After Action Report
Report of Theft or Loss of Licensed Materials

10 CFR 20.2201

10 CFR 30.5

Pageton Preparation Facilities/Belcher Branch Impoundment

Pageton, McDowell County, West Virginia

Prepared By:

Deepgreen West Virginia, Inc

3455 East Broad Street

Columbus, Ohio 43213

November 3, 2011

Deepgreen West Virginia, Inc.

3455 East Broad Street, Columbus, Ohio 43213

Office 614.231.3646 Fax 314.231.3645

November 3, 2011

U. S. Nuclear Regulatory Commission
Region I
Nuclear Material Section B
475 Allendale Road
King of Prussia, Pa 19406-1415

Re: Report of Theft or Loss of Licensed Materials After Action Report
NRC 10 CFR 20.2201 "Subpart M - - Reports"
NRC 10 CFR 30.5 "Reporting Requirements"
NRC 10 CFR 21.5 "Devices for Producing Light or an Ionized Atmosphere"

Gentlemen:

Pursuant to the above-referenced regulations, we are submitting this **After Action Report** relative to the loss and/or theft of licensed material from the Pageton Preparation Facilities/Belcher Branch Impoundment, Pageton, McDowell County, West Virginia.

BACKGROUND:

The Pageton Facility recovers, cleans, and ships previously mined coal fines, referred to in the industry as Fine Coal Refuse (FCR), under West Virginia Department of Environmental Protection (WV-DEP) Permit No. O-164-83 and U. S. Mine Safety and Health Administration (MSHA) ID. No. 46-08619.

In mid-2001, Deepgreen West Virginia, Inc. was purchased by Deepgreen Minerals Pty, LTD a foreign company based in Perth, Australia. In September, 2001, the three gauges referenced in this report were purchased from Berthold Technologies USA, LLC. Berthold shipped said gauges to the site to the attention of the Superintendent then engaged on the site and trained him in the operation, maintenance, and recording requirements of these gauges. Deepgreen imported an existing FCR Coal Preparation Facility from its operations in Australia, re-assembled and constructed the facility on the Pageton site, installed the gauges, and operated the site as a dredging operation, pumping 25%-30% solids slurry to the Facility for cleaning and processing.

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In 2003, Deepgreen West Virginia, Inc was purchased by Atlantic Leasing and Development, LLC who in-turn operated the site sporadically. Interviews with Atlantic personnel indicated that they were not briefed of the presence of the three nuclear density gauges in the Facility and their operators were; subsequently, unaware they existed. The failure to advise Atlantic of the presence of these gauges was a violation 10 CFR 31.5(b)(2)(c)(4), specifically “failure to maintain records” and failure to adequately train and transfer responsibility to the new ownership group. To the best of our knowledge, the Responsible Party under the Australian ownership kept no records and performed no maintenance as required.

The current ownership group of Deepgreen West Virginia, Inc. purchased the company in July 2008, transferred the permits and bonds, and operated the facility from January 2009 until November 2009, processing FCR from on site deposits. Atlantic personnel failed to advise current ownership of the presence and status of the licensed devices.

In January 2010, Deepgreen entered into negotiations to sell and/or lease the FCR Preparation Facility to Greenfields Coal Company based in Beckley, West Virginia. Site operations had ceased effective early November 2009 due to high water levels in the impoundment and equipment failures. Greenfields initiated a renovation program and prepared and submitted designs to WV-DEP and MSHA for review and approval. Demolition, repairs and upgrades to the existing facility began in March 2010 and progressed through September/October 2010. During that period, the WV-DEP issued a stop work order that prohibits indefinitely further removal of FCR deposits from the site in response to the unsuitable condition of the decant overflow release structure and concerns over the hydrostatic loading on the embankment. Repairs were made to the decant system and water levels have been reduced to a controllable level.

In October 2010, the WV-DEP approved Revision No. 10 to the permit that allowed the importation of FCR from an offsite location for processing at the Pageton Facility.

NARRATIVE: The following comments, clarifications, and action plans are submitted pursuant to 10 CFR 20.2201(b) and 10 CFR 30.5(c)(2), *Written Reports*:

1. **Description of Licensed Materials:** The licensed material involves Cs-137. It was contained within three (3) separate nuclear density gauges purchased by Deepgreen West Virginia, Inc., from Berthold Technologies USA, LLC and shipped to the site September 27, 2001. They were delivered to the site and received and signed for by the then Site

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Superintendent, who was also given the mandatory training by the manufacturer that is required by regulations. Specific information on these gauges include:

Manufacturer: Berthold Technologies USA, LLC
99 Midway Lane
Oak Ridge Tennessee 37830
Voice 865.483.1488
Fax 865.425.4309

DESCRIPTIONS

<u>Activity</u> <u>(mCi)/GL/SL/Isotope</u>	<u>Shield Model/Serial</u> <u>OR Actual Number</u>	<u>Source Model/</u> <u>Serial Number</u>	<u>Location on</u> <u>Site</u>	<u>Date Shipped</u> <u>To Site</u>
30 Cs-137	LB 7440D 3693	CDC.P4 HE 683	Source Pipe	09/27/2001
30 Cs-137	LB 7440D 3683	CDC.P4 HE 682	Dredge	09/27/2001
30 Cs-137	LB 7440D 3625	CDC.P4 HE 681	Jamison Cells	09/27/2001

- 2. Description of Event:** The three gauges indicated above were installed as noted and placed in operation on, or about, September 27, 2001. Between the initial installation date and July 2008 when Atlantic sold their interest in Deepgreen to the current ownership group, the Jamison Cells were taken off-line and abandoned in place in the Preparation Facility. Also during this time, the gauge on the intake pipe was taken out of service and possibly removed and disposed of. The gauge in the dredge was left in place but not used to measure density during the final operational period of January 2009 thru November 2009. *The removal and dismantling of these units was not discovered until approximately 1100 EDT, Thursday, September 8, 2011. The incident was reported to the NRC Operations Center at 1703 EDT, Friday September 9, 2011.*

During the period March 2010 thru September 2010, the Jamison Cells were dismantled and disposed of. The unit with Shield Number 3625 that was originally mounted on the supply pipe to the Jamison Cells was dismantled and set outside the Preparation Facility south wall, in an area where no work was being performed, sometime in May, 2010. While in this area, it was covered with sheet metal removed from the Preparation Facility and left undisturbed until discovered on September 8, 2011.

On September 9, 2011, the unit with Shield Number 3683 was removed from the dredge, while still mounted to the adjoining discharge pipe, and set on a pallet approximately 50 feet south of the Preparation Facility in an area where no work was being performed.

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The unit with Shield Number 3693 was initially mounted to the source pipe conveying coal slurry from the dredge and impoundment into the Preparation Facility. The source pipe is still in place; however, the unit is missing and cannot be located on the site. There are no records of the unit being removed and disposed of prior to September 8, 2011.

- 3. Exact Location of the Event:** The event occurred at the Pageton Preparation Facility/Belcher Branch Impoundment, SR 161, Pageton, McDowell County, West Virginia. The site is located in the Anawalt Quadrangle. Specific location is 37 degrees 21 minutes 11 seconds North Latitude and 81 degrees 28 minutes 01 second West Longitude. The Preparation Facility is on the upper north end of the impoundment area.
- 4. Date and Time of the Event:** The dismantled unit 3625 was discovered approximately 1100 EDT, September 8, 2011. Unit 3683 was identified by one of the employees on site, removed from the dredge, and set aside approximately 0800 EDT, September 9, 2011. Unit 3693 was discovered missing approximately 1300 EDT, September 9, 2011.
- 5. Exposures of Individuals to Radiation:** Unit 3625 was dismantled and set aside during demolition of the Jamison Cells in May, 2010. Two employees performed this task and had an exposure period of approximately 15-30 minutes during which they handled and relocated the actual unit. They had approximately another 30-45 minutes during which they were working on removing the pipe to which the unit had been mounted. Survey measurements, taken after the fact, by an inspector from the West Virginia Radiological Health Program on September 9, 2011 indicated that the shutters were in the open position and dose rates were 40 mrem/hr at the shutter locations and 0.4 mrem/hr at the mounting location when the unit was installed on the pipe. It is assumed that these same conditions were applicable during the demolition period. Total exposure for these two individuals would have been approximately 10.2-20.3 mrems.

Unit 3683 was removed, while still intact on the discharge pipe, from the dredge by a single employee who transported the unit in the bed of his pickup truck from the dredge location to the aforementioned pallet near the Preparation Facility. This individual never dismantled the unit itself or removed it from its location on the discharge pipe. It took him approximately 45-60 minutes to remove the section of pipe from the dredge, 5 minutes to transport from the dredge to the pallet, and another 10 minutes to carry it from the truck to the pallet. Total exposure for this individual is 0.4-0.5 mrems.

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Unit 3693 has not been located. There is no record of removal of the source pipe it had been installed on and that pipe is still in place. There is also no record of the removal and disposition of this unit; therefore determining number of individuals exposed and length of any exposure is not possible at this time. The salvage contractor who removed the debris from the site has been identified and located in Mabscott, West Virginia. They have been asked to review their business records for the period early April to late June 2010 to determine if this unit may have been removed by them at that time.

- 6. Disposition of Licensed Materials Involved:** On October 11-12, 2011, a field technician from Berthold Technologies USA, LLC was in the vicinity and onsite to assess the situation and prepare the units for shipment. They were scheduled for pick up by Con Way Freight on October 24, 2011 for transport to a licensed disposal site. Berthold Technologies is tracking the shipping and delivery to the site. Once delivery has been confirmed and the material accepted, they will forward the transfer letter confirming disposition.

We continue to search for the missing unit and assuming it is located, Berthold Technologies will also be involved in the disposition of the final unit.

- 7. Corrective/After Actions Planned:** The following actions will be implemented effective immediately with the indicated suspense dates:

- a) **Health Screen Personnel:** Have advised the employer with exposed employees to coordinate a radiological health evaluation through the Welch Community Hospital, City of Welch, McDowell County, West Virginia. Welch Community Hospital currently provides drug testing services and pre-employment screening for the company operating onsite.

POC: Greenfields Coal Company, LLC

Suspense: Screenings initiated not later than December 2, 2011

Follow-up: Deepgreen to follow up weekly with Greenfields personnel.

- b) **Locate Missing Unit:** Have identified the most probable salvage company that may have removed the unit from the site during demolition. Contact their main business office by telephone and via USPS to request a review of their transaction records during the period 1 April thru 1 July 2010.

POC: Deepgreen West Virginia, Inc.

Assist By: Greenfields Coal Company, LLC

U. S. Nuclear Regulatory Commission
November 3, 2011

Suspense: Completed by December 2, 2011

Follow-up: Deepgreen to follow up weekly with salvage contractor.

- c) **Ensure Against Recurrence:** All licensed materials have been removed from site and operation has been modified using a spiral separation system that does not require slurry density measurement. Will implement a "Toxic, Hazardous, and Licensed Materials Control Sheet" specifically developed for the Pageton Preparation Facility/Belcher Branch Impoundment that will identify and log all such materials being brought onto the site and/or currently in use on the site. Form will be kept on file on site and signed off by the Site Superintendent having operational responsibility for the site.

POC: Greenfields Coal Company, LLC (or operator of record)

Suspense: Implement immediately but not later than December 2, 2011.

Follow-up: Deepgreen to follow up weekly to confirm procedure has been implemented.

This constitutes our findings, corrective actions and after action plans. Please forward any questions to the undersigned.

Respectfully,

Deepgreen West Virginia, Inc.



Allen D. Robinson, PE

Director of Operations

Cell: 614.314.4671

Fax: 614.242.4000, Ex-20

E-Mail: guard057@sbcglobal.net

CC: Deepgreen West Virginia, Inc.
Greenfields Coal Company, LLC

Attachments

Attachment 1
Field Technician Report

Prepared By:

Deepgreen West Virginia, Inc
3455 East Broad Street
Columbus, Ohio 43213
November 3, 2011



Deepgreen

Monday, October 24, 2011 12:31 PM

From: "King, Charles" <Charles.King@Berthold.com>
To: "guard057@sbcglobal.net" <guard057@sbcglobal.net>
Cc: "Jeffers, Mike" <Mike.Jeffers@Berthold.com>
1 File (89KB)



Deepgree...

Allen,

The sources are going to be picked up today by Con Way. When they arrive at the disposal site and are accepted we will receive a letter of transfer that we can then forward to you. I have attached a copy of the service report for my visit. If there is anything else I can do let me know.

Thanks,

Charles King
Service Engineer
Berthold Technologies
99 Midway Lane
Oak Ridge, TN 37830
865-483-1488
www.berthold-us.com



Berthold Technologies USA, LLC
99 Midway Lane
Oak Ridge, TN 37830-0895 USA
Phone: 865-483-1488
Fax: 865-425-4309
www.berthold-us.com

BERTHOLD TECHNOLOGIES SERVICE REPORT

Date of Service: 10-11-11
Company Name: Deepgreen
Customer Location (Address): SR 161, Pageton, WV
Customer Contact: Cecil Patterson
Customer Phone #: 304-320-5073
Berthold Engineer: Charles King
S.O. # I-301151
P.O. # 20
Ref. #

Description of work: Prepare two sources for shipment.

Model of Berthold Gauge (LB): 7440

GL or SL:

X

Berthold Technicians Activities: Day 1 Traveled to Princeton, WV. Day 2 Traveled to Pageton, WV. I met with Cecil who showed me where the sources were stored that needed to be disposed of. I explained what I would be doing and how the area would need to be marked off for no entrance while I removed the sources and placed them in the transport shield. He then placed the barrier around the area and helped me remove the shields from the lockbox and take them loose from the pipe and brackets they were still mounted on. I was unable to close the sources as the shutter was stuck on both units. We kept them pointed in a safe direction while removing them from the pipes to minimize exposure. He then left the area so I could remove the sources from the shields. After placing the sources in the transport shield and labeling the drum they helped me place the drum in the lockbox. We then searched the area for the third source that was not found but was unable to find it. We looked in the area where equipment had been stored and in the area surrounding the tipple. We then went to the dredge and searched it. I then traveled home.

Install new or existing gauge: No
Inspect mounting of system: NA

Perform Calibration (attach setup sheet): NA
Leak Test: Yes
Survey Form Attached: NA

NA

Remove Gauge from Service:

Visual inspection:
Leak Test:
Verify Security:
Double Restraint rule:
Source SN#:
Isotope:
Activity:
Shield Type:
Shield SN#:
Work performed:
Shutter Function Properly:

X

Prep for Shipping: Yes

Bill of lading: No
Leak Test: Yes
Labeling: Yes
Source SN#: HE682 and HE681
Isotope: Cs-137
Activity: 30 mCi and 30 mCi
Shield Type: LB 7440
Shield SN#: NA
Work performed: Removed the sources from the shields and placed them in a transport shield for shipment.
Shutter Function Properly: NA

NA

Shield Repair:
Reason for repair and findings:

Leak Test Performed:
Survey Performed:



Berthold Technologies USA, LLC
99 Midway Lane
Oak Ridge, TN 37830-0895 USA
Phone: 865-483-1488
Fax: 865-425-4309
www.berthold-us.com

Source SN#:
Isotope:
Activity:
Shield Type:
Shield SN#:
Work performed:
Shutter Function Properly:

NA

Device Issue

Issue first reported or found _____ By who _____

Anyone Hurt _____

Anyone Exposed _____

Estimated Exposure Time _____ Employee
Name(s) _____

Source SN#:
Isotope:
Activity:
Shield Type:
Shield SN#:
Work performed:
Shutter Function Properly:

Work Remaining: When the leak test arrive the bill of lading will then need to be made and arrangements for pick up of the sources will be made.

Additional Comments/Recommendations:

Berthold Service Engineer Signature: Charles King

Attachment 2
Correspondence

Prepared By:

Deepgreen West Virginia, Inc
3455 East Broad Street
Columbus, Ohio 43213
November 3, 2011

Deepgreen West Virginia, Inc.

3455 East Broad Street, Columbus, Ohio 43213

Office 614.231.3646 Fax 314.231.3645

November 3, 2011

Greenfields Coal Company, LLC
550 North Eisenhower Drive, Suite B
Beckley, West Virginia 25801

Re: Nuclear Event – Pageton Preparation Facilities/Belcher Branch Impoundment
10 CFR 20-2201
10 CFR 30.5

Gentlemen:

On September 8, 2011, a report was filed by Greenfields personnel with the Nuclear Regulatory Commission Region I office regarding the discovery of dismantled and abandoned nuclear density gauges on the Pageton site. The regulations referenced above require that we prepare and submit a written report describing the event, the disposition of the licensed nuclear materials, procedures instituted to prevent a similar occurrence, and an After Action Report. Included in the After Action Report are specific actions that must be taken immediately regarding your activity on the site. These include the following:

1. **Health Screen Personnel:** We have been advised by your staff that two employees were involved in the dismantling and demolition of the Jamison Cells and the associated Nuclear Gauge, shield number 3625. Based on what we can determine, these two individuals may have been exposed to the existing open shutter condition and pipe mounted condition for 45-90 minutes. An additional employee removed Nuclear Gauge, shield number 3683, from its mounted position in the dredge and this individual may have been exposed for 45-90 minutes to low dosage radiation. These three individuals need to be interviewed by a radiological health physiologist at the earliest possible date, but not later than December 2, 2011. We have recommended that Greenfields take the lead on this action as these are your employees. You should contact the Welch Community Hospital and ask for the assistance of a radiological physiologist to interview and acquire blood samples from these individuals. We are required to monitor and report compliance in this matter and have given the U.S. NRC a suspense date of December 2, 2010 to complete this action. Please keep us advised of your progress.

Greenfields Coal Company, LLC

November 3, 2011

Page Two (2)

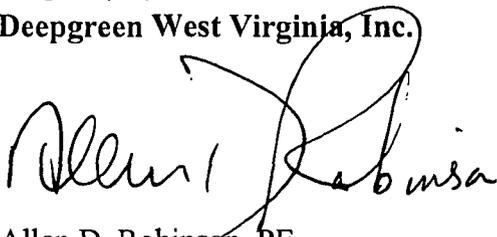
2. **Locate Missing Unit:** Records from the manufacturer indicate that Nuclear Gauge, shield number 3693, was installed on the supply pipe from the dredge to the Preparation Facility. This gauge has turned up missing and there is no information as to when it may have been removed or where it may have been displaced. We have been advised by your personnel that Barker's Junk Co., Inc. was the primary salvage contractor removing debris from the site during demolition. They are located fairly close to your Beckley office on Robert C. Byrd Drive in Mabscott, WV. We will contact them regarding a review of their business records and request your assistance in meeting with them to review said records. We have given the U. S. NRC a suspense date of December 2, 2011 to complete this action.

3. **Ensure Against Recurrence:** We have prepared the attached "Toxic, Hazardous, and Licensed Materials Control Sheet" for use on the Pageton site. This document identifies any said substance being brought onto the site and/or being used on the site. The Site Superintendent is responsible to enforce compliance with this document. We recommend you incorporate it into your daily operations and have given the U. S. NRC a suspense date of December 2, 2011 to have it fully integrated in your operation.

Please initiate the actions described herein effective immediately. We are required to report their completion to the U. S. NRC by December 2, 2011 and your assistance and cooperation is integral to this compliance. Please feel free to contact me should you have any questions.

Respectfully,

Deepgreen West Virginia, Inc.

A handwritten signature in black ink, appearing to read "Allen D. Robinson". The signature is fluid and cursive, with a large loop at the end.

Allen D. Robinson, PE

Director of Operations

Cell 614.314.4671

Fax 614.242.4001

E-Mail: guard057@sbcglobal.net

Attachment

Deepgreen West Virginia, Inc.

3455 East Broad Street, Columbus, Ohio 43213

Office 614.231.3646

Fax 314.231.3645

November 3, 2011

Barker's Junk Co., Inc.
2290 Robert C. Byrd Drive
Mabscott, West Virginia 25871

Re: Salvage Operations from the Pageton Site for Greenfields Coal Co., LLC
April thru July 2010

Gentlemen:

We have been advised by representatives from Greenfields Coal Company, LLC in Beckley that you may have been contracted by them to remove certain debris from the Pageton Preparation Facilities/Belcher Branch Impoundment located in Pageton, McDowell County, West Virginia. This removal would have been in support of their construction activities modifying the existing Preparation Facilities on the site. A nuclear density gauge containing cesium-137 isotope may have been inadvertently included in the debris you removed from the site. Specific information for this item includes the following:

Manufacturer: Berthold Technologies USA, LLC
99 Midway Lane
Oak Ridge, Tennessee 37830

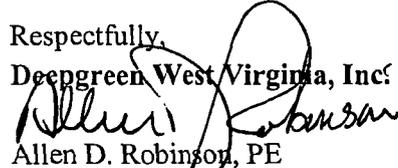
Shield Model: LB 7440D 3693

Source Model: CDC.P4 HE 683

The isotope in this item is a licensed material we are attempting to recover for proper disposal. We are requesting that you review your records for the period April 1, 2010 thru July 1, 2010 to determine if you did indeed remove materials from the Pageton site during the timeframe. We are trying to coordinate this review with personnel from Greenfields Coal who is located in your area. We would appreciate the opportunity to discuss this further with you at your convenience and request your contact us accordingly. I can be reached as indicated below. Thank you for your help in this matter.

Respectfully,

Deepgreen West Virginia, Inc.



Allen D. Robinson, PE

Director of Operations

Cell 614.314.4671

E-Mail: guard057@sbcglobal.net

CC: Greenfields Coal Company, LLC

Attachment 3
Toxic, Hazardous, and Licensed Materials
Control Sheet

Prepared By:

Deepgreen West Virginia, Inc
3455 East Broad Street
Columbus, Ohio 43213
November 3, 2011

Pageton Preparation Facility/Belcher Branch Impoundment Toxic, Hazardous, and Licensed Materials Control Sheet

Site Name/Address _____ Date _____

Chemical/Trade Name _____ Concentration _____ Haz. Class. _____

Physical State (Solid/Liquid/Gas) _____ Quantity: _____

Location/Use on Site _____

Regular Calibration/Certification/Testing Required _____ Frequency _____

Responsible Personnel _____ Last Completed _____

Name of Manufacturer _____ MSDS Attached _____

Address _____

Phone _____ Fax _____ E-Mail _____

Manufacturer's Primary Point of Contact (If Applicable) _____

Remarks _____

Following list provides examples of toxic, hazardous, and licensed materials that require disclosure upon delivery to site:

Flammable: acetone, ethylene oxide, gasoline, ether, acetylene, propane, carbon monoxide, ethane, hydrogen,

Combustible: motor oils, diesel, hydraulic fluids, kerosene

Oxidizers: oxygen, nitrous oxide, chlorine, hydrogen peroxide (>10%), nitric acid, bromine, sulfuric acid, nitrites, ozone, peroxides

Pyrophorics: phosphine, silane, lithium, phosphorous, potassium

Unstable Materials: picric acid, peroxyacetic acid, sodium perchlorate, acetic acid, ethyl nitrate, radioactive isotopes

Water Reactive: calcium carbide, sodium hydroxide, sodium metal, bromine pentafluoride

Corrosive: nitric acid, sulfuric acid, calcium potassium, ammonia, fluorine, iodine

Toxic: nitric oxide, nicotine, mercury, allyl alcohol, barium chloride, oxalic acid

The undersigned acknowledges that they have verified the type, quantity, and concentration of the above-referenced toxic, hazardous, and/or licensed material has been delivered to the site, is properly identified and containerized, has been stored and/or installed in accordance with manufacturer's recommended procedures and applicable, local, state, and federal regulations.

Signature: _____

Printed Name: _____

Title: _____

Company: _____