U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Radiation - Garwin, Inc (former) - Removal Polrep
Final Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region VII

Subject: **POLREP #6**
Final Report
Radiation - Garwin, Inc (former)
B706
Wichita, KS
Latitude: 37.6686470 Longitude: -97.3511660

To:

From: James A. Johnson, (lead OSC); Randy Schademann, OSC; Meagan Schutte, OSC; & Tom Mahler, OSC.

Date: 4/23/2013

Reporting Period: 02/27 - 4/12/2013

1. Introduction

1.1 Background

Site Number:	B706	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	6/8/2012
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	00
Mobilization Date:	8/2/2012	**Start Date:**	8/2/2012
Demob Date:	8/23/2012	**Completion Date:**	4/23/2013
CERCLIS ID:	KSN000706246	**RCRIS ID:**	
ERNS No.:		**State Notification:**	04/03/2013
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category

This is a Time-critical, fund-lead removal action. Significant levels of radium-226 appear to be present at the former Garwin, Inc., site in excess of surficial soil cleanup levels. A residence is located at the site.

1.1.2 Site Description.

The property located at 918 West Dooley, is attached to and partly occupied by Haivala Concrete Tools to the west, to the north it is attached to Tech-Aire Instruments, Inc. The building covers most of the property. The remaining area is covered by a concrete driveway and sidewalk, with an asphalt alley to the east. Adjoining properties include commercial businesses adjacent to the property to the north east and west, along Dooley. Continuous with the former Garwin building located to the west along Dooley is Haivala Concrete Tools located at 1330 South Walnut.

1.1.2.1 Location

The Garwin, Inc./West Dooley site is located at 918 West Dooley, Wichita, Kansas 67213. The site has GPS coordinates of 37.66856 latitude and -97.35092 longitude. The site is located along West Dooley east of the intersection of Walnut and Dooley in the southwest Y4 of Section 29, Township 27 South, and Range 1 East. The site property is currently owned by Griggs Industries LLC.

1.1.2.2 Description of Threat

Radium-226 contaminated soils and building materials at the Site. The objective of this removal action is to protect public health or welfare or the environment by responding to the release of hazardous substances and pollutants or contaminants into the environment as presented by soils contaminated with Radium-226 at the Site. Contaminated soils that exceed 5.70 pico Curies per gram (pCi/g) plus background will be excavated and properly disposed of.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Garwin, Inc., began operations at the 918 West Dooley building in 1952. Garwin, Inc., became Garwin-Carruth, Inc., in 1963 and obtained Kansas Radioactive Materials License (KRML) #25- RB0-01; in December 1965. The license was obtained so the facility could repair aircraft instrument dials containing radium-226 paint. Weston Instruments, Inc., purchased Garwin Carruth, Inc., in 1966 and transferred the KRML to show Weston Instruments, Inc., as the licensee in 1967. An internal survey conducted in 1967 identified internal radioactive contamination within the building.

For the Site, the EPA has established a time-critical removal action level for radium-226 of 5 pCi/g above

background in soil. Based on the analytical results for the background samples collected in June and December of 2011, the estimated average background concentration for radium-226 at the Garwin site is 0.7 pCi/g. Therefore, the estimated time-critical site-specific removal action level for radium-226 is 5.7 pCi/g. The key problems are: Location #1 – inside, outside and under the residence located at 918 West Dooley (kitchen and living room areas); Location #2 – under the asphalt alleyway that runs north-to-south between Dooley and Walker Street; and Location #3 – the two concrete flower boxes located in the front of the primary residence at 918 West Dooley Street.

Based upon the survey conducted at the site for the IA, and historical analytical data from the UFA, a release of radium-226 above site-specific action levels is present at the Garwin, Inc./West Dooley site. This site appears to qualify for a removal action under CERCLA. KDHE was unable to identify a definite potential responsible party to address the radium-226 release at the site.

The site had been referred to the EPA for completion of a removal assessment and time-critical removal action consistent with the NCP. To date (Polrep #5), these areas have been excavated, remediated and confirmed to meet the criteria for cleanup as outlined in the Action Memorandum. Radon monitoring sample results also confirmed radon levels at the site to be below the standard of 4 pCi/L (3.7 pCi/L).

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

Soil contaminated with radium-226 above the 5.70 pCi/g action level will be removed and transported to Energy Solutions' disposal facility in Clive, Utah. After removing the estimated 150 tons of soil from the affected area, the excavated soils will be replaced with clean soils. Clean soils are soils that have been analyzed for radium, with results indicating that the concentration is at or below the background and that all other hazardous substances, pollutants or contaminants are below residential soil screening levels as determined by the EPA, or as referenced in the Region 9 Preliminary Remediation Goal tables found at http://www.epa.gov/region9/superfund/prg/, or as outlined in the KDHE RSK Manual, Version 5, 2010.

The soils at the site will be backfilled with soil topped with either concrete or rock. The excavated material will be transported and disposed of at a licensed facility in accordance with all applicable local, state and federal requirements. At this time, no post removal site control will be necessary.

2.1.2 Response Actions to Date

August 1 - 2, 2012 - The city of Wichita's Street Department, Sewer Department, Sidewalk Assessment and other city officials came by and performed a Site recon that afternoon and had no issues with the planned removal action. The EPA conducted interior/exterior gamma surveys to delineate areas to mark prior to removal. A fund-lead, time-critical removal action was initiated. Activities during this time period include mobilization of the Emergency and Rapid Response Services contractor (Environmental Restoration, LLC.), the Superfund Technical Assessment and Response Team (START) contractor (TetraTech), and EPA personnel.

August 3 - 5. 2012 - Mary Peterson, EPA / PPSS Chief and KDHE (Corena Carpenter) visited the all sites in the Wichita area (Std Products, Std Precision, Garwin), to get a progress update. No work conducted at Garwin, as ER was busy at the other sites that day. Excavation of contaminated areas (alleyway) outside the residence begins. The plan is to remove the alleyway contaminated soils in sections as to not collapse the residential wall structure on the east side of the house. EPA and START will use a "MARSSIM" style approach and clear sections by sample analysis. "BERT" is set up at the Standard Products site and is being used as a field lab to run "clearance" samples prior to them being shipped for laboratory analysis. Contaminated soils are being stockpiled at the Radiation - Standard Products Site (650 E Gilbert, Wichita, Kansas) and will ultimately be loaded onto rail cars for delivery to an Energy Solutions facility in Clive, Utah.

August 6 - 11, 2012: ER staff excavated a clay sewer pipe line that was not located by Kansas One-Call. Readings in the alley ranged from 23 - 70 Kcpm (>5 pCi/g). The current clay tile pipe will be patched, repaired and the removal will continue. Sunday was a limited work day. ER staff continued to work in the alley. Most of the day was spent trying to patch the leak from the excavated clay sewer pipe. The City of Wichita Sewer Division was notified that the line was not properly located and that we were having trouble repairing the line. The rail cars were on-site and ready for loading at the Standard Products Site. Garwin site shut down for a couple of hours due to rain and lightening in the Wichita area. The busted clay tile pipe was totally excavated and replaced with PVC pipe. The leak was finally repaired and the removal continued. The first rail car shipment from Garwin was loaded. The rail cars are flatbeds with four intermodals per car. Energy Solutions has a representative on-site for proper manifesting and to coordinate with the rail companies. Removal activities began inside the residence. The flooring was taken up, cabinets and shelving removed. Areas were surveyed and marked for cutting the concrete in the key problem areas: kitchen, dining room, living room and a hallway. Work also began on the the two concrete flower boxes located in the front of the primary residence at 918 West Dooley Street. Removal actions continue inside the residence in the kitchen/sink area. Removal activities (excavation and extraction) are still taking place outside the residence in the alleyway and two flower boxes. Continue the removal activities inside and outside the residence in the kitchen/sink area. Removal activities (excavation and extraction) are still taking place outside the residence in the alleyway and two flower boxes. ER unearthed a clay sewer pipe, near the kitchen area, next to the east wall of the residence. No flow was found and it was hooked into the sewer line, but was a dead-end clean type line. This line was found to be "hot" by gamma survey. The Ludlum Model 14C meter was used and readings ranged from 1 - 3 mR/hr and greater than 400 Kcpm. Chuck Hooper, the EPA Health Physicist was consulted. Electronic pocket dosimeters were issued, air monitoring was set up in the dig zone and a higher level of oversight was initiated in order to allow ER to continue removal activities. There was a concern over the stability and structural integrity of the residence wall on the east side of the house, inside and outside. The concrete flooring inside the kitchen was removed and the excavation area was approximately 3.5 ft deep x 3.75 ft wide x 4 ft long and the total excavation area was about six feet. ER uncovered two support beams and the cinder block residential walls appeared to show signs of stress and cracking. START and ER consulted with a structural engineer (PEC - Wichita, Kansas)

to find out how we can brace the walls/floor in order to continue removal activities. ERRS crews also discovered a small concrete sump pump vault (roughly 2'x2'x2') was uncovered when the kitchen floor/sink area concrete was removed. Material inside the sump pump containment was elevated as determined by field screening and was removed.

August 12 - 14, 2012: ERRS crew not on site Sunday, worked continued on Monday. James Johnson was not on-site the past two days as he was on medical leave for those two days. The site removal activities were coordinated by OSC's Schademann and Schuette.

August 15 - 19, 2012: ERRS brought in Dan Billings of Heartland Environmental to address the radon mitigation system. The consultant reviewed the residence to determine if an active/passive system was needed to lower the levels of radon in the home after close-out of the removal. Work continued in the kitchen area. ERRS begun to hand dig in this area as there were stability issues in this area; however, ERRS wanted to excavate as much soil as possible to ensure that readings were down (excavation areas: 1 kitchen: approx 10 x 5 x 2.5; 2 living room: 8.5 x 2 x 1; 3 dining room: 3 x 1 x 4; 4. Hallway: 3.3 x 1.6 x 0.6).

Completed excavation of areas 1 – 4 inside the residence. Areas will be prepped with soil and will be backfilled with concrete to be used to stabilize the foundation as well as shielding to get the dose rate exposure numbers down to about background (20 – 30 microR/hr & 15 – 30 Kcpm/hr). The concrete and soil to be provided had been previously sampled by START to establish that parameters meet the Kansas RSK standards. The excavated areas are being guided by a 3x3 sodium iodide (NaI) probe being operated by START. Samples are being collected by START, using the Multi-Agency Radiation Survey and Site Investigation manual (MARSSIM) as guidance. Samples are being analyzed on-site by the EPA (with a 3x3 NaI probe) to help establish that the action level is being achieved. The last load of contaminated material was delivered to the Standard Products site to be loaded onto rail cars for delivery to an Energy Solutions facility in Clive, Utah. The residence was cleaned and prepped for the addition of concrete to the excavated areas. Areas 1 – 4 and a portion of the alley next to the kitchen/sink wall were backfilled with concrete and the rest of the day was spent prepping the alley for delivery of asphalt the next day, cleaning up the site and working at the other two radiation sites. Doses were trending downward from a high of 438 microR/hr to about 30 microR/hr on average. ERRS continued working in the alley, set the gate, cleaned and secured the site for the day.

August 8 - 23, 2012: ERRS continued working on all three radiation sites. Rail cars, each with four intermodals that contained approximately 36 tons of contaminated material each (144.24 tons per rail car), were loaded during this time period. Material was brought to the site from Radiation-Standard Precision and Radiation-Garwin sites and loaded onto the rail cars. Excavated material from all sites was weighed with the on-site scales for a record of tonnage attributable to each site. The soil was stockpiled atop area 1, which was excavated as the stockpiled soil was loaded. For the Radiation-Garwin site, aprroximately 120 - 125 tons was loaded onto the rail cars. Site restoration activities also occurred during this time frame. Excavated areas were backfilled with soil, asphalt or concrete as needed. The areas inside the residence (see the Images section of this website) was also filled with concrete. Work included grading, dust suppression, graveling and leveling of the sites. The Mettler weight scale was dismantled and taken up and the final touches of site restoration were completed at Standard Precision. ERRS was later dispatched that afternoon to look at a site for OSC Nold in north Wichita. The EPA negotiated the Property Restoration Agreement on August 20, 2012, with Mrs. Griggs to cover sodding, installation of cabinets, miscellaneous cleanup items, etc.

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August 21, 2012: ERRS continued working at two of the radiation sites (Garwin & Products). Work included grading, dust suppression, graveling and leveling of the sites. Garwin's alley was prepped and ready for asphalting on August 22, 2012. The EPA conducted decontamination swipes and surveys of the equipment and also conducted a walk-through survey of Garwin. Survey results included:

Ludlum Model 19 microR Meter (s/n 161824 – 13 Nov 2012): Background outside was: 8 – 13 uR/hr and inside the residence was 12 – 15 uR/hr. 1 kitchen: 18 – 50 uR/hr; 2 living room: 20 – 48 uR/hr; 3 dining room: 20 – 35 uR/hr; Hallway: 20 – 30 uR/hr; Flower boxes: 10 – 14 uR/hr: and the alley: 10 – 50 uR/hr.

Ludlum Model 12241-2 Scaler / Ratemeter with a 2" x 2" probe (s/n 1198313 – 12 June 2013): Background outside was: 8.5 – 14.8 Kcpm and inside the residence was 18.2 – 26.6 Kcpm. 1 kitchen: 16.3 – 50.4 Kcpm; 2 living room: 18.2 – 36.7 Kcpm; 3 dining room: 19.7 – 33.5 Kcpm; Hallway: 14.2 – 27.6 Kcpm; Flower boxes: 10.1 – 19 Kcpm: and the alley: 12 – 44 Kcpm.

August 22, 2012: ERRS continued working at two of the radiation sites (Garwin and Products). Work included final cleanup and prep for demob activities. Garwin's alley was asphalted and secured. The EPA turned in swipes and decontamination surveys for analysis to START. Restoration Agreement was signed and turned in for disposition.

August 23, 2012: All site activities concluded. Equipment turned in and ERRS crew initially demobed from site. A preliminary site "final" walk-through was conducted as well as site photos taken. Received call from K & O railroad. They would not ship last rail container because the load was not equalized across the rail car. Railroad stated that they would not ship an empty rail car for fears of a “derailment.” This placed the EPA and ERRS in a quandary because we had already de-mobed from the site that morning and no equipment or personnel were left on-site to handle this dilemma. Calls were made to Energy Solutions in order to handle this situation.The EPA, ERRS, and START may have to re-mob to site on August 27, 2012, to either repackage rail car or place clean soil in empty rail car to be able to ship material to Energy Solutions in Clive, Utah.

August 26 - 29, 2012: ERRS re-mobbed to site, under Energy Solutions guidance, and leveled out the rail car with clean soil (it was decided that moving the soil from the other three intermodals into the empty container posed too many issues) and the last rail car was ready for transport on August 29, 2012. The EPA is awaiting the confirmation of receipt and disposal at the Clive, Utah, facility.

September 27, 2012: The Administrative Record (AR#62547) was sent by UPS to the Public Repository (Planview Community Library - Wichita, Kansas) on Wednesday, September 26, 2012, for the Site.

October 4, 2012: The Administrative Record (AR) fact sheet/public notice was posted on www.kansas.com and in the Wichita Eagle.

November 6, 2012: START placed E-Perms (radon measuring equipment) on-site to conduct post removal closure sampling and surveys. Pairs of E-Perms were placed in the kitchen, dining room and master bedroom. After approximately one week (November 13, 2012) of measurements, the reading ranged between 7.1 and 7.4 pCi/L (radon standard is 4 pCi/L). The data suggest that we may need to discuss the possibility of installing a radon mitigation system.

January 2, 2013: Received the Certificates of Disposal from Energy Solutions in Clive, Utah (see the Documents section to view manifest). Approximately 2,124 tons of radium contaminated soil was disposed for the three sites in Wichita. The Garwin site accounted for approximately 125 tons or approximately six percent of the contaminated soil disposed.

January 31, 2013: Based on the sample results in November 2012, it was decided that the EPA would install a radon mitigation/monitoring system at the site. The EPA met with Heartland Environmental (Dan Billings) to determine the type, function, efficiency and cost effectiveness of installing a designed radon mitigation system at the site to meet the goals outlined in the action memorandum.

February 27, 2013: ERRS subcontracted out the installation, monitoring and sampling assessment of a radon mitigation system to Heartland Environmental (Hesston, Kansas) for the Garwin site (see site photos). Results from the installed mitigation system were found to be below the radon standard of 4 pCi/L (3.7 pCi/L).

As of April 3, 2013, the site has been excavated (contaminated soil disposed), remediated (backfilled with clean fill, concrete, asphalt and other materials), and confirmed (soil and air sample analyses) to meet the criteria for cleanup as outlined in the Action Memorandum (soil cleaned > 5.7 pCi/g & air > 4.0 pCi/L).

April 10, 2013: EPA placed E-Perms (radon measuring equipment) on-site to conduct post removal closure sampling, surveys and to confirm the results of the radon mitigation system installed on February 27, 2013, by ERRS. E-Perms were placed in the kitchen and vestibule areas. After approximately two days (April 12, 2013) of sampling, the data for the E-Perm measurements ranged between 1.3 and 1.8 pCi/L (radon standard is 4 pCi/L). The data confirms that the installed radon mitigation system is functioning properly and the remedy for the site has been met. At this time, no further site activities are warranted.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)
The PRP search was completed in November 2011, and no readily identifiable PRP has been identified or found at this time.

2.1.4 Progress Metrics

Waste Stream	***Medium***	***Quantity***	***Manifest #***	***Treatment***	***Disposal***
Radium contaminated materials	soil, concrete, asphalt, flooring, misc materials	Approximately 2,124 tons from all three sites	Multiple	Burial	Energy Solutions, Clive, Utah Facility
Garwin Site - Radium contaminated materials	Soil, concrete, asphalt, flooring	Approximately 120 - 125 tons of the total for the Garwin site	Multiple	Burial	Energy Solutions, Clive, Utah Facility

2.2 Planning Section

2.2.1 Anticipated Activities
No further actions are planned for this site.

2.2.1.1 Planned Response Activities
Radon sampling results on February 27, 2013, and April 12, 2013, confirmed that radon levels at the site are below the radon standard of 4 pCi/L. There currently are no future planned response actions at this time.

2.2.1.2 Next Steps
There currently are no future planned response actions at this time. The EPA's actions should not impede any future remedial plans or other response actions for this Site.

2.2.2 Issues
None at this time.

2.3 Logistics Section
There currently are no future planned response actions at this time.

2.4 Finance Section
No information available at this time.

2.5 Other Command Staff

2.5.1 Safety Officer
All removal work was conducted in accordance with the approved Site Safety Plan and under the guidance of the EPA Region 7 Radiation Safety Officer.

2.5.2 Liaison Officer
Beckie Himes, USEPA - 913.551.7253

2.5.3 Information Officer
Beckie Himes, USEPA - 913.551.7253
James A. Johnson, OSC, 11201 Renner Blvd, Lenexa, KS 66219
913.551.7058 office / 816.516.4954 cell
johnson.james@epa.gov

3. Participating Entities

3.1 Unified Command
1. EPA
2. START
3. ERRS
4. KDHE
5. City of Wichita

3.2 Cooperating Agencies
1. City of Wichita
2. Sedgewick County, Kansas Health Department
3. KDHE
4. ATSDR
5. KS One Call
6. City of Wichita Water Department
7. Weststar Energy

4. Personnel On Site
For the Garwin site removal action: During the majority of the removal activities, there were between 7 - 10 personnel on-site at any one time (EPA was conducting three Site removal actions at one time): three EPA On-Scene Coordinators, seven Emergency and Rapid Response Services (ERRS) contractors, and two Superfund Technical Assessment and Response Team (START) contractors (EPA: R. Schademann, M. Schuette, T. Mahler, & J. Johnson, OSCs; EPA Health Physicist (C. Hooper).

5. Definition of Terms
BAR - Bureau of Air and Radiation
CERCLA - Comprehensive Environmental Response and Liability Act
CFR - Code of Federal Regulations
EPA - U.S. Environmental Protection Agency
ERRS - Emergency and Rapid Response Services
KDHE - Kansas Department of Health and Environment
MARSSIM - Multi-Agency Radiation Survey and Site Investigation Manual
Radium Contaminated Soil - Ra-226 / Ra-228
RA - Removal Action
RCRA - Resource Conservation and Recovery Act
RSE - Removal Site Evaluation
RSK - Risk-based Standards for Kansas
START - Superfund Technical Assistance and Response Team
UFA - Unified Focus Assessment
UMTRCA - Uranium Mill Tailings Radiation Control Act
"Picocurie per gram" (pCi/g) = This refers to the amount of radioactivity in a particular solid substance. Picture a one-ton batch of concrete that contains 1,000 pounds of gravel, 500 pounds of cement, and 500 pounds of water. To describe this particular mix of concrete, one might say it contains "500 pounds per ton" of cement. This means that for every pound of concrete, there will also be a quarter of a pound of cement present. Similarly, if you wished to describe the amount of radioactivity that typically exists in soil throughout the United States, you would say that it contains about "one picocurie per gram" of radium, one picocurie per gram of thorium, and a host of other radioactive elements. This means that for every gram (about 0.002 pounds) of soil,

there will also be one picocurie of radium and one picocurie per gram of thorium present, along with the rest of the radioactive elements commonly found in soil.

6. Additional sources of information

6.1 Internet location of additional information/report

For additonal information, please refer to "Documents" on www.epaoscv.org/garwin

For additional reference material, please refer to www.iem-inc.com/primrite.html

6.2 Reporting Schedule

Polrep #6 covers the February 27 - April 3, 2013, time period and it is considered the final report when published.

7. Situational Reference Materials

For additional information, photographs, maps, sample analysis, etc; please refer to "Documents" on www.epaosc.org/garwin.

For additional information radium-226, please refer to: http://www.epa.gov/radiation/radionuclides/radium.html

February 12, 1998, memorandum from Stephen Luftig, the Director of the Office of Superfund Remediation Technology Innovation (February 12, 1998, Directive number 9200.4-25)Section 275 of the Atomic Energy Act, 42 U.S.C. § 2022, as amended by section 206 of the UMTRCA of 1978, 42 U.S.C. § 7918, and regulations at 40 CFR § 192.12.

Region 9 Regional Screening Level tables found at http://www.epa.gov/region9/superfund/prg/

KDHE RSK Manual, Version 5, 2010.