Greater Radiological Dimensions, Inc.
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Greater Radiological Dimensions Inc. 1527 Ridge Road , Lewiston, NY 14092	
LOCATION: NIACET CORPORATION – 400 47th St. Niagara Falls NY 14304	

WORK PLAN

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Description: **NIACET REMEDIATION WORK PLAN** **Date:** July 3 , 2014

Prepared for: URS CORPORATION 5 West Genesee St, Suite 400, Buffalo, NY 14202

Project Location: NIACET CORPORATION 400 47th St. Niagara Falls NY 14304

1.0 Purpose:

Greater Radiological Dimensions Inc. (GRD) will provide radiological oversight for the excavation, minimization, segregation and shipment of waste for disposal at an appropriate radiologically impacted waste disposal facility. The purpose of this Work Plan is to describe the means and method that GRD will implement in order to provide radiological support/oversight for the remediation and release of contaminated excavation areas at Niacet's property.

2.0 Background:

The Union Carbide Corporation (UCC) previously owned and operated a chemical manufacturing facility at 400 47th Street in Niagara Falls, NY constructed in 1925-26. The Property was sold to Niacet Corporation (Niacet) in 1978, operated as the Niacet Chemical Company.

The plant originally produced acetaldehyde, paraldehyde, aldol, and crotonaldehyde. Production of acetic acid by the oxidation of acetaldehyde was begun in 1928. Mercury salts were utilized as a catalyst in the acetate production process. In 1998, a new aboveground storage tank farm was constructed in the area southeast of Building #4/A. Niacet personnel stated that visible elemental mercury was observed at the bedrock surface at the bottom of the new AST pad excavation. UCC subsequently entered into a Voluntary Cleanup Agreement with the New York State Department of Environmental Conservation (NYSDEC) in 2001 to remediate the mercury contamination.

2.1 Radiological Background

Due to previous remediation activities in the area of building 102, which involved the removal of elevated radioactive material , a subsequent site wide gamma walk over of the property, as well as the history of elevated activity found on the surrounding properties ,the mercury (Hg) remediation activities have been monitored by radiation safety personnel.

While performing remediation activities between March 3, 2014 and March 7, 2014 elevated radiological material was encountered in two distinct areas. Area 1 is approx. 15' x 65' x 18" in depth. It is located along the Southside of the subsurface foundation; just east of building 10, refer to survey NiacetHg2014-015 (Attachment A). This material was surveyed using a Ludlum model 2221 paired with a 44-10 sodium iodide detector and exhibited readings of approx. 70,000 cpm, a sample was removed and exhibited a readings of 39,000 cpm and had elevated XRF readings for mercury. Dose Readings taken on this material indicated 45 microREM per hour on contact, and 15-20 microREM 3 feet away. Area 2 is approx. 120' x 10' x 18" in depth, underneath plant service road starting just west of building 6 heading north for approx. 120'refer to survey # NiacetHg2014-014 (Attachment B). The material contained in area 2 was surveyed with same equipment, exhibited readings of 55,000 cpm , this ,material contained a visible mercury sample was removed of this material and secured for lab analysis, the sample read approx. 18,000 cpm URS has contracted Greater Radiological Dimensions, Inc. (GRD, Inc.) to provide radiation health and safety consulting, radiation monitoring, and job-site field surveys for a mercury remediation that is described in a URS Request for Proposal (RFP) dated June 18 2014.

3.0 Excavation of Contaminated Material:

During the removal and replacement, it will be necessary to remove the contaminated overburden and soil. Prior to each days excavation a Rad Tech will perform a gamma walkover of the surface area, utilizing a Ludlum Model #2221 Detector paired with a #44-10 sodium iodide probe. Utilizing the results of the gamma walkover; along with visually screening and using professional judgment; the technician will determine when and how often to scan buckets during excavation. If no visible signs of elevated activity are present, the technician will scan 2 Bucket loads per truck at a minimum.

If elevated activity is found to be approaching the NYSDEC established threshold of separation, the technician will then scan each bucket until levels at or below background. The threshold is typically determined to be at or near 1.5 to 2 times background; this threshold has previously been used on multiple vicinity properties per the NYSDEC. GRD would like to propose a threshold of 10,000 CPM for this project. Any material above the threshold will be loaded into a plastic-lined dump truck and transported to the contaminated lay-down area. A contaminated material lay-down area will be established and appropriately posted. This area will have a plastic under-lay and will be covered with poly sheeting at all times. For more specific means, methods and requirements refer GRD's Radiation Safety Plan.

General area air monitoring will not be utilized during the excavation activity and load out due to the level of activity of material present on site , the expected duration of the excavation is less than one week and lastly the availability of historical general air monitoring data of vicinity properties where material of similar activity was excavated showed no elevated readings.

If material of a higher activity or volume should be encountered, GRD will re-evaluate the need for General Area Air Monitoring. Should it be determined that General Area Air Monitoring is required , the following procedure will be followed:

Three (3) F&J low-volume air monitors will be placed waist high within 20 feet of the excavation at upwind, down wind and cross wind of excavation / load out area. The monitors will run during all excavation / load out activities and the filter cartridges will be collected daily. The 47mm filters will be counted immediately for any excessive levels, then held for 5 days for radon decay, then recounted with a Ludlum model #2929 alpha / beta filter counter or equivalent. The results of air monitoring data will be reported using the guidance in NRC Regulatory Guide 8.25 (attached). All Air Sample data will be compared with the derivative air concentrations (DAC) that are the most conservative for the contaminants expected to be present. Radioactive contaminants in Appendix B of New York's State Sanitary code # "10 NYCRR part 16-ionizing radiation" will be used to assess the exposure potentials, as appropriate. All instruments will be calibrated in accordance with regulatory guidance and subjected to daily quality checks to ensure proper operating condition and functionality. The data will be recorded, documented on GRD survey forms and reviewed by senior radiological staff.

4.0 Oversight/Rad Support of Load Out, Shipping and Disposal of Contaminated Material:

With the approval from the NYSDEC and the acceptance of sample results from the appropriate facility and the facility's state regulatory agency, the contaminated material will be loaded into the appropriate shipping containers for disposal at a designated facility. GRD will provide a certified waste shipper if needed who will ensure that all of the necessary permits and state regulatory requirements are fulfilled. The trucks will be lined with poly and covered (tarped). A dose rate survey of the trailer and cab will be performed, with a Bicron µR meter, in order to determine the dose rate in (µr/hr). The tires will be scanned, if levels are more then two times the background, the tires will be decontaminated in the zone, utilizing water prior to being released from the excavation site.

Once the load out of contaminated material has been completed, all of the appropriate equipment will be scanned and released. A gamma walkover survey of the contaminated lay-down area will be performed upon completion of shipping material. The area will be released upon completion of the walkover if all counts are below the 10,000 CPM threshold