UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 W. JACKSON BOULEVARD
CHICAGO, IL 60604

FOCUSED COMPLIANCE INSPECTION (FCI) REPORT

MEMORANDUM TO FILE

INSTALLATION NAME:	Radio Materials Corporation
U.S. EPA ID No.:	IND 005 477 021
LOCATION ADDRESS:	1095 East Summit Street Attica, Indiana 47918
NAICS CODE:	334416 (Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing)
DATE OF INSPECTION:	August 21, 2015
EPA INSPECTOR:	Michael Valentino

PREPARED BY: Michael Valentino 5-10-16

Michael Valentino
Environmental Engineer

Date

REVIEWED BY: 5-12-16

Michael Cunningham, Chief
Compliance Section 1

Date

Purpose:

The purpose of the inspection was to perform an announced focused compliance inspection ("FCI") of the Radio Materials Corporation ("RMC") facility located on Summit Street in Attica, Indiana ("the facility"), to determine RMC's compliance with the Resource Conservation and Recovery Act, specifically the Standards Applicable to Generators of Hazardous Waste, Standards for Land Disposal Restrictions, and Management of Used Oil set forth at 329 Indiana Administrative Code Part 325 and Title 40 of Code of Federal Regulations (40 CFR) Parts 262 to 265, 268 and 279, respectively.

The primary focus of the inspection, which occurred on August 21, 2015, was to confirm the storage of solid and hazardous waste on-site and to compare, to the extent possible, the current chemicals and materials at the facility with a chemical inventory conducted by Conestoga-Rovers & Associates in May 2007[1]. The FCI was also intended to include a review of manifests accompanying off-site shipments of solid and hazardous wastes.

A second and separate inspection was conducted later that day to assess the status of interim corrective measures to address on-site and off-site soil and groundwater contamination.[2] The two inspections – the corrective action interim measures evaluation inspection and the focused compliance inspection – were conducted separately because of their different objectives and to allow representatives from the Fountain Warren County Health Department and Attica Fire Department their concerns with respect to safety and chemical inventory to be addressed separately. Of the participants below only this report's author and Steven Wanner of GHD were involved in the corrective action interim measures evaluation inspection.

Advance notice of the inspection was provided via e-mail by Michael Valentino of EPA to Joseph Riley, Jr., President, RMC on August 4, 2015. Coordination of the FCI was made by Inspector Valentino to accommodate the availability of other stakeholders, such as the Fountain Warren County Health Department, the Attica Fire Department and the Indiana Department of Environmental Management.

This report is prepared at the request of EPA's Corrective Action Project Manager for the Radio Materials Corporation Site ("RMC Site"), Dr. Bhooma Sundar.

---

[1] *See* Attachment 1 to this report.

[2] *See* Corrective Action Interim Measures Evaluation Inspection Report – Radio Materials Corporation (December 2015). Kraft Foods Group, Inc. (Kraft) completed a RCRA Facility Investigation and implemented interim corrective measures to address soil and groundwater impacts from several solid waste management units and areas of concern and residential vapor intrusion in homes within a subdivision hydraulically down-gradient to the Site. Interim measures have included soil excavation, in-situ chemical oxidation and air sparging/soil vapor extraction. The interim measures report summarized the status of interim corrective measures that had been undertaken by Kraft at the facility to address soil, groundwater and soil gas contamination from historical facility operations. Its findings are unrelated to the focus of this report, namely the remaining chemical inventory on-site.

Participants:

Joseph Riley, Jr., President (765-762-6175; jnrileyjr@sbcglobal.net) represented RMC. Michael Valentino of the RCRA Branch, Land and Chemicals Division, represented EPA Region 5 (312-886-4582; valentino.michael@epa.gov). Also present were Steven Wanner, Principal, GHD (formerly of Conestoga-Rovers and Associates), (317-291-7007; steven.wanner@ghd.com), Greg Robison, Environmental Health Specialist, Fountain Warren County Health Department, (765-762-3035 ext. 4; healthrobison@gmail.com), Erich Haley, Environmentalist, Fountain Warren County Health Department, (765-762-3035 ext. 2; ehaleyhealth@gmail.com), and Ed O'Farrell, Fire Chief, Attica Fire Department (765-585-0971). Dwayne Caldwell, Environmental Manager 2, Hazardous Waste Compliance Section, Office of Land Quality, (317-727-4269; DCaldwel@idem.IN.gov) represented the Indiana Department of Environmental Management.

Corrective Action Activities at the Facility:

In 1947 Joseph Riley, Sr. purchased the facility. In 1948 Mr. Riley, Sr. began the manufacture of television tubes and ceramic capacitors in the main RMC plant. In 1957 P.R. Mallory Company, Inc. purchased the facility, and owned the company and facility until 1978 at which time the Riley family repurchased the facility and continued to manufacture ceramic capacitors. There have been no manufacturing operations at the facility since 2000.

On March 1, 1999, EPA Region 5 issued an Administrative Order on Consent under Section 3008(h) of RCRA, Docket No. R8H-5-99-005, ("Consent Order"). The Consent Order requires RMC to complete specific corrective actions at the facility, including stabilization of contaminated groundwater migration from the facility, control of exposure pathways that could potentially impact human health, and the implementation of final corrective measures.

The Consent Order identifies a number of solid waste management units (SWMUs) and areas of concern (AOCs) which were discovered as part of a Preliminary Assessment and Visual Site Inspection (PA/VSI) conducted in August 1992. Subsequent to the PA/VSI, several other units have been identified, including three additional SWMUs and three AOCs.

Manufacturing by RMC ceased in 2000. In 2002, Kraft Foods Group, Inc. ("Kraft") began to provide financial assistance to complete certain investigatory and remedial activities at the facility on behalf of RMC. Kraft's involvement with RMC is due to a series of corporate mergers, acquisitions and sales.

Since 2002, Kraft, through its consultant Conestoga-Rovers & Associates and, later, GHD, has conducted environmental investigations and has implemented several interim corrective measures at the RMC facility to address on-site and off-site groundwater and soil contamination as well as residential soil vapor intrusion.[3]

[3] *See* Corrective Action Interim Measures Evaluation Inspection Report – Radio Materials Corporation (December 2015).

Facility Description:

The RMC facility is located in a residential-agricultural area in the City of Attica, Fountain County, Indiana. The facility occupies approximately 19.5 acres and is bordered on the northwest, north, and northeast by undeveloped land, to the south and southeast by residences, and to the south by Ravine Park.

The main plant is located on a relatively level ground at an elevation of 670 feet above sea level in an area that slopes gently toward the Wabash River. The facility is situated in the Wabash River Basin but lies outside the 100-year flood boundary of the Wabash River. The nearest surface water body is Riley Lake, a manmade pond used as a source of water for firefighting activities and recreation, which is located about 300 feet northwest of the main RMC plant.

Other surface water bodies in the area include an unnamed intermittent stream located 1000 feet south of the facility in Ravine Park and an unnamed intermittent stream located 3600 feet northeast of the facility. A freshwater wetland area of the Wabash River floodplain is located about one-half mile northwest of the facility. The Wabash River is approximately two-thirds of a mile northwest of the facility.

The RMC facility consists of a main plant of four interconnected buildings on the south side of Summit Street and six buildings and a former drum storage area on the north side of Summit Street. When operational, the main plant consisted of production areas, administrative offices, laboratories and storage areas for raw materials and finished products. The buildings on the north side of Summit were used for storage, warehousing, and maintenance. None of the buildings north of Summit Street are occupied or routinely inspected. The entire RMC Site lacks a perimeter fence.

RMC began operating at its Attica facility in 1948. Processes included the manufacture of television tubes and ceramic components such as capacitors and resonators for the electronics industry. Barium titanate based ceramic powders were mixed with small amounts of other compounds and milled. The milled mixture was dried by spray drying, oven drying or with a filter press to form a dielectric material. Some of this material was calcined, ground and packaged to customer specifications for the manufacture of their own electrical components. The remaining dielectric material was stored at the RMC plant for the production of disc capacitors.

Manufacturing operations released chlorinated volatile organic compounds (cVOCs) such as trichloroethene (TCE) and tetrachloroethene (PCE) to soils at the facility. Some of these contaminants reached groundwater and moved off the RMC property to the north and northwest.

Manufacturing at the facility ceased in 2000. Some office space is still used in the main plant building. The main plant also is used for the storage of raw materials, products and solid and hazardous wastes, as are Buildings 5, 6 and 8. Building 7 was also used for similar materials

storage but, according to Mr. Riley's statements during the FCI, waste was removed from Building 7.[4]

In its initial Part A permit application dated November 14, 1980, RMC identified itself as managing the following hazardous wastes at the facility: (1) hazardous wastes exhibiting the characteristic of EP toxicity[5] (D005) identified at 40 CFR 261.20-261.24, to be stored in containers; (2) hazardous wastes from non-specific sources including F001 and F003 identified at 40 CFR 261.31, to be stored in containers and treated in a centrifuge unit; (3) hazardous wastes from specific sources including K046 identified at 40 CFR 261.32; and (4) discarded commercial chemical products, manufacturing chemical intermediates, off-specification commercial chemical products, or manufacturing intermediates including U112, U122, and U188[6] identified at 40 CFR 261.33(e) and (f).[7]

RMC revised its Part A permit application several times to add hazardous wastes D001 and D002 (June 4, 1981), to increase drum storage capacity (June 26, 1986), and to add a new container storage area (June 27, 1988).[8]

Historical waste generation at the facility included the following:[9]

HAZARDOUS WASTE STREAM	EPA WASTE CODE CHARACTERISTIC (C) OR LISTED (L)
Trichloroethylene	F001 (L)
Tetrachloroethylene	F001 (L)
Acetone/alcohol	F003 (L)
Phenolic resin	D001 (C)
Solder dross (lead)	D008 (C)
Non-halogenated solvent	F005 (L)
Ethyl acetate	F003 (L)
Methyl ethyl ketone	F005 (L)
Waste ink (silver)	D011 (C)
Ceramic scrap (barium)	D005 (C)

[4] Despite Mr. Riley's claims that all chemicals were removed from Building 7, it is unlikely this is the case given the materials described in the May 2007 chemical inventory by Conestoga-Rovers & Associates compared with the summary of off-site shipments. *See* ¶1, pg. 8 and fn. 13, pg. 8, below.

[5] Since replaced by the Toxicity Characteristic Leaching Procedure (TCLP). D005 is the TCLP waste code for hazardous waste exceeding the TCLP regulatory threshold (5.0 mg/L) for barium. *See* 40 CFR § 261.24, Table 1.

[6] U112, U122 and U188 are waste codes for discarded commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products acetic acid ethyl ester, formaldehyde and phenol, respectively. *See* 40 CFR § 261.33(a)-(d), and (f).

[7] Resource Conservation and Recovery Act (RCRA) Section 3008(h) Administrative Order on Consent dated March 1, 1999, Docket No. R8H-5-99-005, pg. 12, Section V, ¶E.

[8] Ibid, pg. 12, Section V, ¶F.

[9] Ibid, Table 2, page A-4, attachments to the Consent Order.

Typical waste generation amounts and disposal or treatment methods during the time RMC was operational are found in the following table:[10]

WASTE STREAM DESCRIPTION	GENERATION AMOUNT	DISPOSAL/TREATMENT METHOD
Ceramic waste	6 drums/year	Recycled
Fired ceramic discs	86 lbs/month	Municipal landfill
Aluminum oxide refractory scrap	100 lbs/month	Recycled/stored/landfilled
Waste epoxy and phenolic resin	75 lbs/month	Stored on-site
Aqueous flux in alcohol	23 gal/month	Manifested off-site
Ink-jet inks and solvents	<1 gal/month	Manifested off-site
Cleaning and rinse water	1700 gal/month	City sewer
Tetrachloroethylene, trichloroethylene, acetone/alcohol, and ethyl acetate	23 gal/month (average)	Manifested off-site
Oil/water waste	8-10 drums/year	Oil recovery tank truck
Waste silver Waste copper wire Solder dross Product rejects	10 trace ounces/month 161 lbs/month 20 lbs/month 108 lbs/month	Smelted and refined for recovery of metal content or stored on-site when metal markets are low
Empty raw material bags that contained barium carbonate and titanium dioxide	100 bags/month	Municipal landfill
TYPICAL MONTHLY HAZARDOUS WASTE GENERATION RATE	Approx. 47 gal/month or 178 kg/month[11]	

Based on typical waste streams and generation rates while the facility was operational, RMC was a small quantity generator of hazardous waste since it generated between 100 and 1000 kilograms of hazardous waste per month.[12]

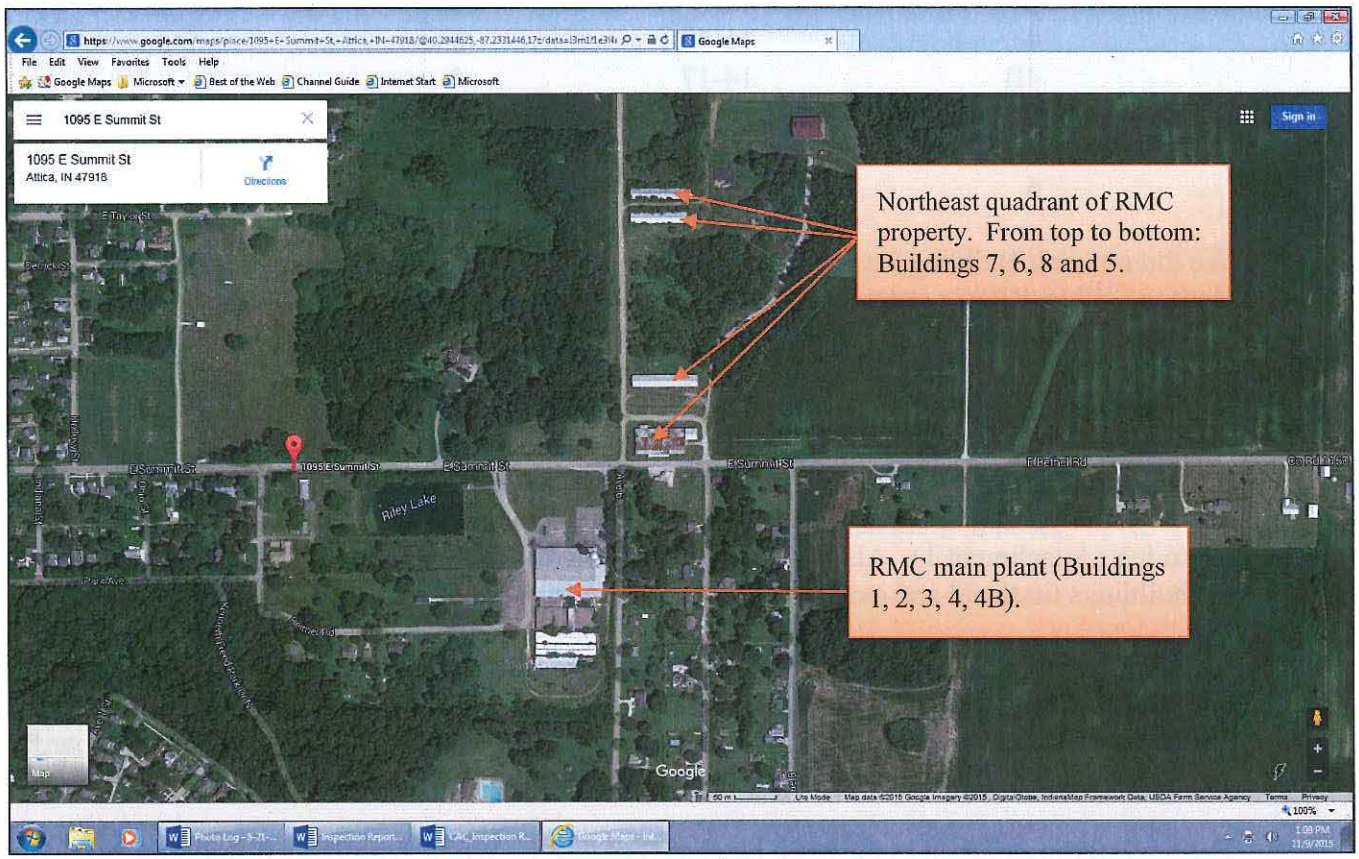
Waste streams, including hazardous waste, were removed off-site in 2007, 2008, and 2013 (see discussion below).

[10] Ibid, Table 1, page A-3.

[11] Assume density of water, at 8.34 lbs/gal, and convert from pounds to kilograms (2.2 lbs per kg). When solder dross is added, the generation rate is increased to 187 kg/month (*i.e.*, 20 lbs/month divided by 2.2 lbs/kg = 9.1 kg).

[12] A small quantity generator generates greater than 100 kilograms but less than 1000 kilograms of hazardous waste in a calendar month. *See* 40 CFR § 262.34(d).

Aerial Photo:



Facility Inspection:

I arrived at the facility at approximately 9:45 am EDT. Due to heavy traffic and construction, I had to change my route from Chicago to Attica, and arrived 1 hour 15 minutes late. Messrs. Riley, Wanner, Robison, Haley, O'Farrell and Caldwell were gathered in the parking lot west of the main RMC plant. Because of my late arrival and the limited time some of the participants could invest in the facility walk-through, we immediately embarked on the facility walk-through after my arrival.

During the course of the walk-through, between 10:09 am EDT and 11:54 am EDT, I took forty-three (43) photographs on a Nikon Coolpix P4 digital camera, with 8.1 megapixel resolution. These photographs are found in Attachment 2 to this report. They are true and representative of the conditions I observed at the facility on the date of the FCI.

The tour began at the main RMC Plant and then continued at three buildings in the northeast quadrant of the RMC property.

The 43 photos were divided according to the following:

Building No.	Photo Nos.	Number of Photos Taken
2	1-10	10
4	11-13	3
4B	14-17	4
5	18-29	12
8	30-35	6
6	36-43	8

We did not visit Building 7 as Mr. Riley said materials from that building were removed by Heritage.[13] Mr. Riley's statement was the sole basis for this author's decision to forego a walk-through of Building 7.

Whereas the May 2007 inventory by Conestoga-Rovers & Associates contractors took four days and went room-to-room, building-to-building to systematically catalogue types of materials and containers on-site[14], the tour during the FCI was of a cursory nature to assess current conditions and to gather photographic and other information to compare to the May 2007 inventory and photo log (Attachment 1). Also, Messrs. Robison and Haley and Chief O'Farrell wanted to see the buildings firsthand and evaluate them with respect to public health risks and fire hazard.

According to statements by Mr. Riley, the bulk of the material remaining in Buildings 4 (*e.g.*, kiln room), 4B (*e.g.*, powder storage warehouse), 6 and 8 are either product (*e.g.*, ceramic discs in kiln room) or raw material (*e.g.*, fiberboard drums in powder storage warehouse, fiberboard drums and bags in Building 6), and that much of the hazardous waste was removed in 2007.

The walk-through began in the main plant at Building 1. We then proceeded Building 2, Building 4 and Building 4B. After completing the main plant tour, which included a look at soil vapor extraction equipment as part of the corrective action interim measures at the RMC facility,[15] we proceeded across Summit Street to the northeast quadrant of the RMC property. There we began the tour of Buildings 5, 8 and 6, in that order.

In Building 4 I observed various containers, which according to statements by Mr. Riley, held gasoline, motor oil, acids, ethylene glycol and, according to Mr. Riley, solvents. Mr. Riley indicated that more materials staged in this area would be shipped off-site in the future. These included 2-gallon and 3-gallon gas cans, amber jars varying in size from one liter to one gallon,

[13] In totaling the May 2007 inventory by Conestoga-Rovers & Associates (Attachment 1) there were 822 containers in Building 7, totaling an estimated 154,364 pounds. Even if all the waste shipped off-site since 2007 came from Building 7, it would still represent only a small percentage of the total amount of material in this building (approx. 25%). (*See* pp. 24-25, below.) In retrospect, the August 21, 2015 facility walk-through should have included a tour of Building 7 as there likely would have been containers remaining in the building at the time of the FCI. Any future inspections of the RMC Site in the future should include a walk-through of Building 7 and photographic evidence of chemical inventory and building condition. Also, RMC should take an inventory of chemicals remaining in Building 7 for comparison to the CRA list found in Attachment 1. *See* Follow-Up at pg. 30, below.

[14] Even this level of effort left hundreds of containers, consisting of many thousands of pounds of chemicals, unidentified.

[15] *See* Corrective Action Interim Measures Evaluation Report – Radio Materials Corporation (December 2015).

three containers of gasoline and one 55-gallon drum of motor oil. I also observed about one dozen 5-gallon metal and plastic pails. These containers were either resting on the concrete floor, in cardboard boxes, on a rolling skid (the 55-gallon drum of motor oil) or on a rolling cart. Some of the original labels were on the containers, the amber jars in particular, which identified the container contents. At least one of the boxes which held amber jars contained a typed list of chemicals, presumably of the containers within the box.

Because of the number of rooms and buildings that we were going to walk through I did not take the time to individually photograph every container and every label. (Photos 1-3, Attachment 2.) The floor appeared to be in good condition, free of cracks and gaps. There was no evidence of spillage, such as stains, on the floor and no noticeable solvent odor was present.

In Building 2, we toured a lab that had a variety of liquid and solid reagents and chemicals in containers of various sizes. Many of these containers were labeled although some where not marked. (Photos 4-6, Attachment 2.) The lab inventory on the day of the FCI can be compared to Conestoga-Rovers & Associates Site Photographs (May 8-11, 2007) Building 2, Photos 16-17. (Attachment 1.)

In Building 4, I observed dozens of boxes stacked on pallets and fiberboard drums of approximately 30-gallon capacity. (Photo 11, Attachment 2.) Mr. Riley said these were dry ceramic materials. Also in Building 4, in the kiln room, I observed hundreds of one-gallon plastic containers on metal shelves. (Photo 12, Attachment 2.) Mr. Riley said these held ceramic discs. He said he was continuing to look for a prospective purchaser of these discs.

Also in the kiln room, I observed several dozen cardboard drums, each approximately 30-gallons in capacity, stacked one- or two-high. (Photo 13, Attachment 2.) According to Mr. Riley, these drums contained titanium dioxide.

In Building 4B, I observed hundreds of fiberboard drums, varying in capacity from 30 to 55 gallons, stacked one- and two-high on the floor or two-high on metals shelves. The room was cluttered along north, east and south walls, with approximately 10 feet of opening in the center of the room. (Photos 14-17, Attachment 2.) Mr. Riley said these contained raw or prepared materials, and that he was also looking for a potential purchaser of these materials. The inventory in Building 4B on the day of the FCI can be compared to Conestoga-Rovers & Associates Site Photographs (May 8-11, 2007) Building 4B, Photos 1-5. (Attachment 1.)

In Building 5, I observed a large open area that was cluttered with furniture, equipment and scrap. (Photos 18, 19 and 21, Attachment 2.)

In Building 5, I also observed a lab with desks and benches and upon them various jars and containers, most of which were found to be empty or partially filled. (Photos 22-26, Attachment 2.) The inventory in this lab on the day of the FCI can be compared to Conestoga-Rovers & Associates Site Photographs (May 8-11, 2007) Building 5B, Photos 12, 14 and 16. (Attachment 1.)

Also, in Building 5, I observed one 55-gallon drums of used oil (Photo 27, Attachment 2) and three 55-gallon fiberboard drums containing asbestos wrap, according to Mr. Riley (Photo 28, Attachment 2).

We proceeded to Building 8 where I observed miscellaneous clutter, several drums of what was, according to Mr. Riley, used oil and several unmarked drums (Photos 30, 31, 33-35, Attachment 2) and an area where motor oil had been spilled onto the building's floor (Photo 32, Attachment 2).

We concluded the facility walk-through in Building 6. Here I observed hundreds of fiberboard drums and bags of materials, which Mr. Riley said was raw materials. (Photos 36-38, Attachment 2.) I also observed miscellaneous other containers, piping and scrap items. (Photos 38-41 and 43, Attachment 2.)

After completing the tour of Building 6, Mr. Wanner accompanied me on a tour of the soil and groundwater control equipment that was installed under the Consent Order. Messrs. Robinson, Haley and Caldwell and Chief O'Farrell left the facility.

Summary of Waste Shipments:

Based upon review of manifests provided to EPA by Mr. Riley on the day of the FCI, the following tables summarize off-site shipments of hazardous and non-hazardous waste streams from the facility since 2007.

2007 Manifest Summary

MANIFEST NO.	WASTE DESCRIPTION AND QUANTITY	EPA WASTE CODES	RECEIVING TREATMENT STORAGE OR DISPOSAL FACILITY	DATE SIGNED BY RMC	DATE SIGNED BY TSD FACILITY
000117216WAS	Waste flammable liquids, N.O.S. (petroleum distillates) 5 fabric or plastic containers (5000 lbs)	D001	Von Roll America, Inc. East Liverpool, OH 43920 OHD980613541	7-10-07	7-31-07
000117222WAS	Waste titanium tetrachloride, poison, inhalation hazard 1 fabric or plastic container (10 lbs) Waste bromine, poison, inhalation hazard 1 fabric or plastic container (6 lbs)	D002, D003 D002	Von Roll America, Inc. East Liverpool, OH 43920 OHD980613541	7-11-07	8-1-07

	Waste ammonium sulfide solution 1 fabric or plastic container (10 lbs)	D001, D002			
	Waste antimony perchloride 1 fabric or plastic container (5 lbs)	D002, D003			
	Waste corrosive liquids, acidic, inorganic, N.O.S., (sulfuric acid) 3 plastic drums (550 lbs)	D002			
	Waste corrosive liquids, basic, inorganic, N.O.S., (sodium hydroxide) 2 plastic drums (375 lbs)	D002			
	Waste flammable liquids, N.O.S., (petroleum distillates, alcohol) 1 fabric or plastic drum (175 lbs)	D001			
	Waste flammable solid, organic, N.O.S., (carbon, nickel powder) 1 fabric or plastic drum (175 lbs)	D001			
	Waste carbon disulfide 1 fabric or plastic container (9 lbs)	P022			
	Waste hydrofluoric acid 1 plastic container (15 lbs)	U134			
	Waste aluminum carbide 1 fabric or plastic container (9 lbs)	D001, D003			
	Waste toxic liquid, inorganic, N.O.S., (arsenic pentoxide)	P011, P018			

	1 fabric or plastic container (8 lbs)				
	Waste cyanide solution, N.O.S., (potassium cyanide mixture)	D003, P098			
	1 fabric or plastic container (10 lbs)				
	Waste corrosive liquids, acidic, inorganic, N.O.S., (sulfuric acid, chromic acid)	D002, D007			
	1 plastic drum (80 lbs)				
	Waste cyanide, inorganic, solid, N.O.S., (sodium cyanide)	P029, P030, P098, P106			
	1 fabric or plastic container (80 lbs)				
	Waste corrosive liquids, flammable, N.O.S., (glacial acetic acid)	D001, D002			
	1 plastic drum (50 lbs)				
	Waste toxic liquids, organic, N.O.S., (nitrobenzene phenol)	U169, U188, U211, U226			
	1 fabric or plastic container (25 lbs)				
	Waste aerosols	D001			
	1 fabric or plastic container (10 lbs)				
	Toxic liquids, organic, N.O.S., (ammonium fluoride)	None			
	3 fabric or plastic drums (575 lbs)				
	Toxic liquids, organic, N.O.S., (ammonium fluoride)	None			
	1 fabric or plastic tote (600 lbs)				

000117236WAS	Waste oxidizing liquid, corrosive, N.O.S., (chromium trioxide, lead dioxide) 2 fabric or plastic drums (250 lbs) Waste toxic solids, inorganic, N.O.S., (barium chloride, lead dioxide) 2 fabric or plastic drums (370 lbs) Waste flammable liquids, N.O.S., (petroleum distillates) 3 fabric or plastic drums (270 lbs) Waste toxic liquids, oxidizing, N.O.S., (sodium dichromate) 1 fabric or plastic container (10 lbs) Waste corrosive liquids, basic, inorganic, N.O.S., (ammonium hydroxide) 1 fabric or plastic container (8 lbs) Waste corrosive liquids, acidic, inorganic, N.O.S., (fluoric acid) 1 plastic drum (95 lbs) Waste cyanide solutions, N.O.S., (silver cyanide, potassium cyanide) 2 fabric or plastic containers (80 lbs)	D001, D007, D008 D005, D006, D007, D008 D001 D001, D007 D002 D002 D003, D011	Von Roll America, Inc. East Liverpool, OH 43920 OHD980613541	7-16-07	8-12-07
000117237WAS	Waste mercury 1 fabric or plastic container (7 lbs) Waste flammable liquids, N.O.S., (manganese naphthenate)	D009 D001	Heritage Environmental Services, LLC Indianapolis, IN 46231 IND093219012	7-16-07	7-31-07

	1 drum (40 lbs) Waste formaldehyde solutions, flammable 1 drum (55 gal, 23 lbs) Waste hydrogen compressed 1 drum (120 lbs) Waste dichlorodifluoromethane 1 fabric or plastic container (15 lbs) Non-DOT/non-RCRA regulated (Rhoplex) 6 drums (375 lbs) Non-DOT/non-RCRA regulated (Lithoform) 3 fabric or plastic drums (120 lbs) Non-DOT/non-RCRA regulated (epoxy powder) 4 fabric or plastic drums (320 lbs) Non-DOT/non-RCRA regulated (Dowtherm) 2 drums (110 gal) Non-DOT/non-RCRA regulated (oil) 2 drums (110 gal) Hydrogen chloride, anhydrous, poison, inhalation hazard 1 metal container (100 lbs)	D001, D003 D001 U075 None None None None None			
000117239WAS	Waste hydrogen sulfide, poison, inhalation hazard 1 fabric or plastic container	D001, D003, U135	SET Environmental, Inc. Houston, TX 77087 TXD055135388	7-16-07	8-1-07

	(8 lbs) Waste compressed gas, flammable, N.O.S. (phosphine 100 ppm, hydrogen) 1 cylinder (100 lbs)	D001, P096			
000007488WAS	Non-DOT universal waste, mercury contaminated waste (4-ft. bulbs) 5 fiberboard drums (250 lbs) Non-DOT universal waste, mercury contaminated waste (8-ft. bulbs) 1 fiber drum (60 lbs)	None[16]	Lighting Resources Greenwood, IN 46143 IN0000351387	7-16-07	--
000117263WAS	Waste flammable liquids, N.O.S., (petroleum distillates resin) 1 fabric or plastic drum (70 lbs) Waste corrosive liquids, N.O.S., (copper fluoroborate) 3 fabric or plastic drums (350 lbs) Waste toxic liquids, N.O.S., (sodium dimethyldithiocarbamate) 1 fabric or plastic container (400 lbs)	D001 D002 U382[17]	Von Roll America, Inc. East Liverpool, OH 43920 OHD980613541	7-26-07	8-26-07
000117264WAS	Waste dichloropropene (1,3-dichloropropene) 1 drum (30 gal, 340 lbs) RQ, Asbestos 1 fiber drum (15 lbs) Non-DOT/non-RCRA regulated (Triton X) 1 drum (55 gal)	D001, U084 None None	Heritage Environmental Services, LLC Indianapolis, IN 46231 IND093219012	7-26-07	8-8-07

[16] If these were mercury-contaminated spent fluorescent bulbs they should carry hazardous waste code D009.
[17] By FR Notice Vol. 62, No. 116, June 17, 1997, carbamodithioic acid, dimethyl-, sodium salt, (U382), syn. sodium dimethyldithiocarbamate, (CAS 128-04-1) was removed from 40 CFR § 261.33(f).

	Non-DOT/non-RCRA regulated (non-regulated solids) 5 fabric or plastic drums (375 lbs)	None			
	Non-DOT/non-RCRA regulated (non-regulated solids) 1 fabric or plastic container (350 lbs)	None			
	Non-DOT/non-RCRA regulated (Rhoplex) 1 fabric or plastic drum (55 gal)	None			
	Non-DOT/non-RCRA regulated (phenolic resin) 1 drum (175 lbs)	None			
	Non-DOT/non-RCRA regulated (Polyglycol) 1 drum (55 gal)	None			

HAZARDOUS WASTE PREPARED FOR OFF-SITE SHIPMENT IN 2007	POUNDS[18]	KILOGRAMS
Listed or characteristic waste only	9158 lbs	4163
All shipments (hazardous and non-hazardous)	14,457 lbs	

2008 Manifest Summary

MANIFEST NO.	WASTE DESCRIPTION AND QUANTITY	EPA WASTE CODES	RECEIVING TREATMENT STORAGE OR DISPOSAL FACILITY	DATE SIGNED BY RMC	DATE SIGNED BY TSD FACILITY
003112354JJK	Hazardous waste, solid, N.O.S. (tetrachloroethylene)[19]	D039, F001	Michigan Disposal Waste Treatment Plant	1-7-08	2-15-08

[18] The total poundage of off-site shipments can be roughly compared to the May 2007 waste inventory (Attachment 1 to this FCI report) prepared by Conestoga-Rovers & Associates to estimate amount of materials remaining on-site. This should not, however, preclude a detailed current waste inventory by RMC.

[19] Based on the Generator Approval Notification dated February 4, 2008, for the EQ Facility Wayne Disposal, Inc. (MID048090633), the waste is described as soil contaminated with tetrachloroethylene. On the undated Land

	10 drums (5000 lbs)		Belleville, MI 48111 MID000724831		
000318375FLE	Waste explosive, blasting, Type A 3 drums (150 lbs)	D003	Clean Harbors Colfax LLC Colfax, LA 71417 LAD981055791	2-1-08	2-11-08
000167058WAS	Hazardous waste, liquid, N.O.S., (tetrachloroethylene, trichloroethylene)[20] 1350 gal (11,267 lbs)	D039, D040	Heritage Environmental Services, LLC Indianapolis, IN 46231 IND093219012	4-17-08	4-21-08
1001644-9000	Environmentally hazardous substance, liquid, N.O.S. (tetrachloroethylene, trichloroethylene purge water)[21]	--	Heritage Environmental Services, LLC Indianapolis, IN 46231 IND093219012	6-17-08	6-17-08

Disposal Restriction & Certification Form signed by Joseph F. Riley, Jr., the waste was classified as non-wastewater and carried waste codes D039 and D040, and it was intended for shipment to Michigan Disposal Waste Treatment Plant (MID000724831). The Waste Characterization Report signed by Joseph F. Riley, Jr., and dated January 7, 2008, marked off Michigan Disposal Waste Treatment Plant (MID000724831) for stabilization and treatment. The Waste Characterization Report showed the waste to be solid, to have a flash point between 140-199°F, and to have a TCLP concentration of 3.2 mg/L (which exceeds the regulatory threshold of 0.7 mg/L for tetrachloroethylene).

[20] In box 9B, line 1 of uniform hazardous waste manifest 000167058WAS, the U.S. DOT identification number is NA3082, taken from the U.S. DOT Hazardous Materials Table 40 CFR 172.101 (hyperlink below). NA3082 is described as "hazardous waste liquid, n.o.s. (not otherwise specified)." The April 17, 2008 shipment to Heritage – Indianapolis was assigned TCLP characteristic waste codes D039 and D040 for tetrachloroethylene and trichloroethylene, respectively. In its 2008 Annual Manifest Summary Report to IDEM, on Form OS, page 3 of 4, RMC shows shipment to Heritage – Indianapolis of 31,715 pounds of water contaminated with trichloroethylene and tetrachloroethylene (waste codes D039 and D040). However, in its 2008 summary to IDEM, RMC includes the shipment of 2450 gallons (20,448 pounds) of purge water containing tetrachloroethylene and trichloroethylene, which was shipped under hazmat bill of lading/manifest 1001644-9000, and not under a uniform hazardous waste manifest. (*Rf.* fn. 18, below.)
(*See*: http://environmentalchemistry.com/yogi/hazmat/table/bu/2997%7C3122.html)

[21] In box 9B, line 1 of hazmat bill of lading/manifest 1001644-9000, the U.S. DOT ID number is UN3082, taken from the U.S. DOT Hazardous Materials Table 40 CFR 172.101. UN3082 is described as "environmentally hazardous substances, liquid, n.o.s." The June 17, 2008 shipment to Heritage – Indianapolis was not assigned any waste codes. However, in its 2008 Annual Manifest Summary Report to IDEM, on Form OS, page 3 of 4, RMC shows shipment to Heritage – Indianapolis of 31,750 pounds of water contaminated with trichloroethylene and tetrachloroethylene (waste codes D039 and D040). The total shipped under uniform hazardous waste manifest 000167058WAS and hazmat bill of lading/manifest 1001644-9000 on April 17, 2008 and June 17, 2008, respectively, was 3800 gallons, or 31,715 pounds. This is the amount entered on line 1 under column heading "Quantity Shipped and Unit of Measure" on page 3 of 4 of Form OS. Also, on the same line under column heading "# of Shipments," RMC reports "2" shipments. One shipment was sent under a hazardous waste manifest and included two EPA waste codes for characteristic waste while the other shipment was sent under a bill of lading, included no waste codes and was described as "purge water." The two shipments had different U.S. DOT ID numbers – NA3082 (hazardous waste) and UN3082 (environmentally hazardous substance), respectively. Thus there appears to be a discrepancy between the manifest summary report and the shipping manifests themselves. If indeed, the June 17, 2008 shipment was hazardous waste it should have carried the waste codes (D039, D040) of the April 17, 2008 shipment and it should have been shipped under a uniform hazardous waste manifest with the waste codes shown in column 13. The two shipments appear to have a similar waste profile when comparing box 14 of uniform hazardous waste manifest 000167058WAS (which shows profile number W62_Q473982 and apparent ticket, or job,

	2450 gal (20,448 lbs)				
002655721JJK	Hazardous waste, solids, N.O.S., (trichloroethylene) 9 bags (10,000 lbs)	D040	Calgon Carbon Corporation Catlettsburg, KY 41129 KYD005009923	8-7-08	8-08-08
HAZARDOUS WASTE PREPARED FOR OFF-SITE SHIPMENT IN 2008			POUNDS	KILOGRAMS	
Excluding shipment under bill of lading 1001644-9000			16,417	7462	
Including shipment under bill of lading 1001644-9000[22]			36,865	16,757	

Waste generation in 2008 would place RMC in the large quantity generator category only if the June 17, 2008 shipment of purge water impacted with tetrachloroethylene and trichloroethylene carried waste codes D039 and D040 as did the earlier shipment on April 17, 2008. RMC did not provide waste profiles for these shipments despite being requested by EPA in advance of the FCI, however the shipments occurred seven years prior to the FCI. Clarification was provided during a follow-up phone conversation between the EPA inspector and Mr. Riley.[23]

With no waste profiles or other information available, and with the passage of seven years since the shipments, it is difficult to know with certainty the point of origin of the two waste streams (shipped on April 17, 2008 and June 17, 2008) and if the discrepancy between the annual manifest summary report and shipping documents lies in over calculation of the amount of hazardous waste generated for that year.

In addition to the above waste shipments, between February 12, 2008 and September 10, 2008, there were a combined 38 non-hazardous shipments consisting of 26 dump trucks (390 cubic yards), six roll-off boxes (120 cubic yards) and 350 55-gallon drums of well tailings, debris and investigative wastes sent to the Danville (WMI) Landfill (Danville, Indiana), Heritage Environmental Services, LLC in Roachdale, Indiana and Heritage Environmental Services, LLC in Indianapolis, Indiana. These shipments were each accompanied by a hazmat bill of lading.

number T#1841133) and box 13 of hazmat bill of lading/manifest 1001644-9000 (which shows profile number W62_Q473982 and apparent ticket, or job, number T#1867276).

[22] This total would not be counted against on-site inventory (May 2007 by Conestoga-Rovers & Associates) as it consists of VOC-laden groundwater from beneath the area where the vapor degreaser was located.

[23] During a phone conversation between Joseph F. Riley, Jr. and Michael Valentino on Friday, November 6, 2015, at 10:50 am CST, Mr. Riley stated that the one shipment sent under uniform hazardous waste manifest 000167058WAS was raw material from the vapor degreaser in Building 1 (TCE and PCE product) while the shipment under hazmat bill of lading/manifest 1001644-9000 consisted of TCE- and PCE-laden groundwater pumped from beneath the slab under the vapor degreaser.

2009 Manifest Summary

MANIFEST NO.	WASTE DESCRIPTION AND QUANTITY	EPA WASTE CODES	RECEIVING TREATMENT STORAGE OR DISPOSAL FACILITY	DATE SIGNED BY RMC	DATE SIGNED BY TSD FACILITY
024904	Non-RCRA/non-DOT regulated material, empty drums 14 drums (900 lbs est.)	--	EQIS Transfer & Processing Indianapolis, IN 46219 IND161049309	5-20-09	5-21-09

2011 Manifest Summary

MANIFEST NO.	WASTE DESCRIPTION AND QUANTITY	EPA WASTE CODES	RECEIVING TREATMENT STORAGE OR DISPOSAL FACILITY	DATE SIGNED BY RMC	DATE SIGNED BY TSD FACILITY
1401981-15005	Non-DOT/non-RCRA regulated (soil cuttings) 10 cu yd roll-off	--	Danville Landfill (WMI) Danville, IN 46122	8-8-11	--

2013 Manifest Summary

MANIFEST NO.	WASTE DESCRIPTION AND QUANTITY[24]	EPA WASTE CODES	RECEIVING TREATMENT STORAGE OR DISPOSAL FACILITY	DATE SIGNED BY RMC	DATE SIGNED BY TSD FACILITY
000497285WAS	Waste flammable liquids, toxic, N.O.S., (diesel fuel, chlordane), D001 2 55-gal fiberboard drums (150 lbs)	D001	Heritage-WTI, Inc. East Liverpool, OH OHD980613541	5-1-13	5-14-13

[24] Where quantity is expressed in weight (lbs and kg) in instances where the manifests only report volume (e.g., 55-gal drum) the chemical densities and specific gravities were obtained by the author through a search of available physical properties for the chemicals. The author multiplied specific gravity by the density of water (8.34 lbs/gal) and then multiplied by the number of gallons, with the assumption that the drum was filled to capacity. *See* fn. 25-32, below. These calculations may or may not represent the true shipping quantities in terms of weight since the generator reports only volume of container and does not specify percentage of container filled at time of shipment, quality of chemical (*i.e.*, at point of generation did the material contain water or other impurities) or weight. All other parenthetical references to weight in the above manifest summaries were provided on the manifest by the generator.

	Waste flammable liquids, N.O.S., (paint, mineral spirits) D001 6 cu yd boxes (2900 lbs) Waste corrosive liquid, acidic, inorganic, N.O.S., (hydrochloric acid, sulfuric acid) 1 55-gal fiber drum (40 lbs) Waste corrosive liquid, basic, inorganic, N.O.S., (sodium hydroxide, potassium hydroxide) 3 55-gal fiberboard drums (175 lbs) Waste oxidizing liquid, N.O.S., (manganese nitrate) 1 fiber drum (12 lbs) Waste oxidizing solid, N.O.S., (potassium permanganate) 1 fiber drum (5 lbs) Non-DOT, non-RCRA regulated 2 cu yd boxes (900 lbs) Waste aerosols, flammable 1 fiber drum (60 lbs)	D001 D002 D002 D001 D001 None D001			
000497287WAS	Waste methyl ethyl ketone (U159) 1 55-gal drum (369 lbs or 168 kg)[25] Waste isopropanol (D001)	U159 D001	Heritage Environmental Services Indianapolis, IN 46231 IND093219012	5-2-13	5-7-13

[25] Based on density of 0.805 g/mL at 20°C (specific gravity = 0.805) for pure grade methyl ethyl ketone. Assumes a full drum of 55 gallons yielding 369 lbs (= 167.8 kg).

	1 55-gal drum (361 lbs or 164 kg)[26]				
	Waste toluene (U220)	U220, D001			
	1 55-gal drum (398 lbs or 181 kg)[27]				
	Waste flammable liquids, N.O.S., (ethyl acetate), (D001, F003)	D001, F003			
	1 55-gal drum (413 lbs or 188 kg)[28]				
	Waste flammable liquids, N.O.S., (aliphatic alcohol), (D001)	D001			
	1 55-gal fiber drum (363 lbs or 165 kg)[29]				
	Waste barium peroxide, (D001, D005)	D001, D005			
	4 55-gal drums, 6 10-gal drums (1700 lbs)				
	Waste tetrachloroethylene, (U210)	U210			
	1 55-gal drum (743 lbs or 338 kg)[30]				
	Waste caustic alkali liquids, (ethanolamine), (D002)	D002			

[26] Based on density of 0.786 g/mL 20°C (specific gravity = 0.786) for pure grade isopropyl alcohol. Assumes a full drum of 55 gallons yielding 361 lbs (= 163.8 kg).
[27] Based on density of 0.867 g/mL 20°C (specific gravity = 0.867) for pure grade isopropyl alcohol. Assumes a full drum of 55 gallons yielding 398 lbs (= 180.8 kg).
[28] Based on density of 0.901 g/mL 20°C (specific gravity = 0.901) for pure grade ethyl acetate. Assumes a full drum of 55 gallons yielding 413 lbs (= 187.8 kg).
[29] Based on the average density at 20°C of butyl alcohol (0.781 g/mL), ethyl alcohol (0.789 g/mL), isopropanol (0.786 g/mL) and n-butyl alcohol (0.81 g/mL) for an overall specific gravity = 0.792 for a representative average of various aliphatic alcohols. Assumes a full drum of 55 gallons yielding 363 lbs (= 165 kg).
[30] Based on density of 1.62 g/mL at 20°C (specific gravity = 1.62) for pure grade tetrachloroethylene. Assumes a full drum of 55 gallons yielding 743 lbs (= 337.8 kg).

	1 55-gal fiber drum (463 lbs or 211 kg)[31] Waste sodium hydroxide, solid, (D002) 1 10-gal drum (50 lbs)	 D002			
000497288WAS	Waste flammable liquids, N.O.S., (paint, mineral spirits), (D001) 2 fiber or plastic cartons (1300 lbs) Waste flammable liquids, N.O.S., (copper naphthalene), 1 drum (100 lbs) Waste toxic liquids, organic, N.O.S., (silver cyanide, copper cyanide) 1 fiber or plastic carton (35 lbs)	D001 D001 D001, D011	Heritage-WTI, Inc. East Liverpool, OH OHD980613541	5-2-13	5-14-13
000011523WAS	Waste sodium pentachlorophenate), (F027) 1 55-gal drum (917 lbs or 417 kg)[32] Waste sodium pentachlorophenate), (F027) 1 fiber drum (50 lbs)	F027 F027	Veolia ES Technical Solutions Menomonee Falls, WI WID003967148	5-2-13	5-14-13
000011527WAS	Waste acetone (D001, F003) 1 55-gal drum (350 lbs) Waste isopropanol, (D001) 1 55-gal drum (400 lbs) Waste toluene 2 55-gal drums (900 lbs)	D001, F003 D001 D001, U220	Heritage Environmental Services Indianapolis, IN 46231 IND093219012	5-20-13	5-28-13

[31] Based on density of 1.01 g/mL at 20°C (specific gravity = 1.01) for pure grade ethanolamine. Assumes a full drum of 55 gallons yielding 463 lbs (= 210.6 kg).
[32] Based on density of 2.0 g/mL at 22°C (specific gravity = 2.0) for pure grade sodium pentachlorophenate. Assumes a full drum of 55 gallons yielding 917 lbs (= 417 kg).

	Waste nitric acid (other than red fuming, with not more than 70% nitric acid), (D001, D002) 2 55-gal drums (1000 lbs)	D001, D002			
1693966-9000	Other regulated substances, liquid, N.O.S., (methyl oxirane polymer) 1 55-gal fiber drum Combustible liquid, N.O.S. (n-methylpyrrolidone) 1 15-gal drum Non-DOT/non-RCRA regulated (grease) 1 15-gal drum, 4 55-gal drums Non-DOT/non-RCRA regulated (linseed oil) 1 55-gal drum Non-DOT/non-RCRA regulated (Maytag oil) 3 55-gal drums Non-DOT/non-RCRA regulated (hydraulic oil) 4 55-gal drums, 1 85-gal overpack drum (220 gallons total) Non-DOT/non-RCRA regulated (butyl carbitol acetate) 1 85-gal overpack drum (55 gallons total) Non-DOT/non-RCRA regulated (polyvinyl alcohol adhesive) 2 55-gal drums (150 lbs total)	--	Heritage Environmental Services Indianapolis, IN 46231 IND093219012	5-2-13	5-7-13
1693966-15119	Non-DOT/non-RCRA regulated 3 55-gal drums	--	Heritage-WTI, Inc. East Liverpool, OH OHD980613541	5-2-13	5-14-13

	(600 lbs total) Non-DOT/non-RCRA regulated 3 55-gal drums (500 lbs total)				
HAZARDOUS WASTE PREPARED FOR OFF-SITE SHIPMENT IN 2013			POUNDS	KILOGRAMS	
Listed or characteristic waste only			12,287	5585	
All shipments (hazardous and non-hazardous)			22,177		

2014 Manifest Summary

MANIFEST NO.	WASTE DESCRIPTION AND QUANTITY	EPA WASTE CODES	RECEIVING TREATMENT STORAGE OR DISPOSAL FACILITY	DATE SIGNED BY RMC	DATE SIGNED BY TSD FACILITY
1835736-9000	Non-DOT/non-RCRA regulated (soil cuttings) 1 55-gal drum, 5 85-gal overpack drums (3000 lbs)	--	Heritage Environmental Services Indianapolis, IN 46231 IND093219012	7-1-14	7-6-14

Total waste shipped off-site, 2007-2013, from on-site inventory:

- Hazardous waste only = 37,862 lbs (17,210 kg)
- Hazardous and non-hazardous = 53,051 lbs[33] (24,114 kg)

Summary of May 2007 Inventory:

The following table is a tally of the May 2007 chemical inventory at the RMC facility by Conestoga Rovers & Associates.[34] (Attachment 1.)

LOCATION	NO. OF CONTAINERS	RANGE OF CONTAINER VOLUME	TOTAL WEIGHT (EST.) (POUNDS)
Building 1	50	500 mL – 3 gallon	581
Building 2 – Chemical lab	176	5 mL – 5 gallon	775
Building 2 – Chemical storage	57	1 gallon – 65 gallon	11,828
Building 2 – Electronic lab	11	10 oz. – 1 gallon	55
Building 2 – Powder room	26	5 lbs – 55 gallon	4290
Building 2 – Press room	60	1 gallon – 55 gallon	5432

[33] Total excludes investigation-derived waste during the RCRA facility investigation and implementation of corrective action interim measures (*e.g.*, soil cuttings, well tailings).
[34] The Conestoga-Rovers & Associates chemical inventory did not include Building 6.

Building 2 – Siliering reschator	16	16 oz. – 55 gallon	1389
Building 3 – Auto Loading	159	Almost entirely 30 gallon	11,853
Building 3 – Machine shop	4	15 lbs – 55 gallon	522
Building 3 – Photo lab	17	250 mL – 1 gallon	63
Building 4 – Kiln room	1297	5 lbs – 1 gallon	8525
Building 4B – Powder storage room	1026	1 pint – 55 gallon	107,391
Building 7	822	1 L – 55 gallon	154,364
Building 8	227	150 mL – 55 gallon	9735
Totals	3948		316,803

A large portion of the May 2007 inventory consists of products or raw materials including dielectric formulation, titanium dioxide and barium titanate. (Attachment 1.)

Findings:

Despite the off-site shipment of more than 53,000 pounds (see above) of hazardous and non-hazardous material from the on-site inventory, there remain hundreds of containers of raw materials that may or may not be saleable at any point in the future, hundreds of containers of finished product that also may have no future use and hundreds more containers of varying types and size which hold hazardous waste or hazardous constituents, including gasoline and solvents, as well as used oil.

Based on the May 2007 Conestoga-Rovers & Associates inventory there still remain in Buildings 4B and 7 hundreds of 15-, 30- and 55-gallon fiberboard drums whose contents are unknown. All told, there remain more than 3000 containers of varying sizes and roughly one-quarter million pounds (roughly 120,000 kg)[35] of chemicals on-site at RMC.

During the inspection it appeared that the many of the drums of varying sizes and boxes which were identified by Mr. Riley as containing raw materials were original containers. For the most part these containers were closed and many appeared to not have been opened (*e.g.*, some of the tape around the drums was undisturbed). While some of the containers were affixed with labels or other markings to identify their contents, many were not marked leaving the contents of these containers known to perhaps only Mr. Riley. These included fiberboard drums of barium titanate and magnesium titanate (Building 4, Photos 9-10), dry ceramic material (Building 4, Photo 11), titanium dioxide (Building 4, Photo 13), raw and prepared materials (Building 4B, Photos 14-17), and unidentified raw material inventory (Building 6, Photos 36-38).

There were hundreds of predominantly fiberboard drums throughout the facility. Most of these drums were not damaged but as seen in the photos attached to this report (Attachments 2 and 4), there were still a significant number of drums that were dented, partially crushed or suffering from apparent water damage. Examples of damaged drums were two dented, but not leaking, fiberboard drums in the Powder Storage Warehouse (Building 4B, Photo 15) and one similarly

[35] 316,803 lbs – 53,051 lbs = 263,752 lbs (119,887 kg).

damaged, but not leaking, fiber drum, also in the Powder Storage Warehouse (Building 4B, Photo 17).

The attached photos from the Warren Fountain County Health Department (Attachment 4) show more widespread presence of damaged drums. (*See* bullet point summary at pp. 27-28, below.)

During the inspection, Mr. Riley informed me that he was trying to find potential buyers of the unused raw materials. He did not elaborate on his efforts or potential markets/buyers. I did not ask him for more specifics at that time. It should be noted that the unused materials of which Mr. Riley spoke had been sitting in drums and bags for a period of at least 15 years as of the date of the inspection. It needs to be determined if these materials have since exceeded their respective useful lives and if there would still remain any potential markets and purchasers/users of said chemicals given that the chemicals have been on-site for at least 15 years as of the date of the FCI, and potentially for much longer, since with the closure of RMC's Chicago, Illinois facility in 1984, surplus and obsolete materials as well as lab chemicals were shipped to the Attica facility.[36]

Attached to this report are material safety data sheets (MSDS) for five of the most prevalent chemicals among those identified by Conestoga-Rovers & Associates in its 2007 inventory. These include: titanium dioxide, barium titanate, barium zirconate, strontium titanate and strontium zirconate.

Of these chemicals none pose a direct fire risk in terms of their ignitability. Barium titanate is incompatable with strong oxidizing agents and strong acids, and irritating gases and vapors are generated upon thermal decomposition. Barium zirconate poses a moderate inhalation hazard. There is a possibility of forming combustable dusts with further processing of strontium titanate. In general, however, these chemicals do not present significant health, fire or reactivity hazards. There are firefighting precautions to be taken as indicated on the MSDS. Barium zirconate presents a moderate toxicological hazard to humans and inhalation should be avoided; the same is true of strontium titanate.

The large number of drums and other containers of varying size with unknown contents is cause for concern. Without knowing what these materials are EPA cannot evaluate potential human health or environmental risks or evaluate whether some of these materials might be characteristically hazardous waste.

Furthermore, while the MSDS for many of the chemicals on-site do not indicate a fire hazard, if a fire were to break out there would be no way to contain it, the fiberboard drums holding these chemicals would be consumed in the fire and the chemicals would be combusted and carried with prevailing winds to communities downwind.

[36] The March 1999 Consent Order states, "Peak employment at the Attica facility was about 1,000 employees in 1958. By 1998, employment had dropped to 31 employees. The Chicago facility closed in 1984, transferring surplus, obsolete materials, and laboratory chemicals to the Attica facility." *See* Section V (Findings of Fact), at ¶ G.3, pg. 15, Administrative Order on Consent under Section 3008(h) of RCRA, Docket No. R8H-5-99-005.

The MSDS for barium zirconate and strontium titanate provide the following firefighting measures to be employed:

FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves for fire only.
- Prevent, by any means available, spillage from entering drains or water course.
- Use firefighting procedures suitable for surrounding area.
- Do not approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

- Non-combustible.
- Not considered to be a significant fire risk, however containers may burn.
- May emit poisonous fumes.

FIRE INCOMPATIBILITY

- None known.

Fountain Warren County Health Department Photographic Evidence:

During the facility walk-through, Inspectors Robison and Haley took a series of photographs apart from those of the author. Mr. Robison made these photos available to EPA by e-mail.[37] The Fountain Warren County Health Department photos, which total 137, are attached to this report. (Attachment 4.)

Inspectors Robison and Haley documented their inspection observations. (Attachment 5.) Generally speaking, the health department inspectors found deteriorating building conditions, numerous damaged and/or leaking containers, contents spilled onto floors, unmarked containers, unknown chemicals among the current chemical inventory and liquids on the floor.

In reviewing the Fountain Warren County Health Department photos and compiling the photo log (Attachment 4), this author noted the following:

- The presence of chemicals, including some potentially ignitable, remaining on-site (Photos 21-25)
- The presence of unknown chemicals and unknown containers in labs, on shelves and throughout the facility (Photos 19, 26, 28, 29, 95, 106-108, 114, 115, 130, 131)

[37] Via several e-mails from Mr. Robison to Mr. Valentino dated April 11, 2016.

- Fiberboard drums of unknown chemicals strewn about haphazardly (Photo 39)
- The presence of damaged fiberboard drums (Photos 46, 55, 65, 68, 69, 71, 73-75, 94, 99, 100, 119, 120, 130, 131)
- Open bags with contents spilling out (Photos 76-80, 101)
- Rusted metal containers and spillage from glass containers (Photos 96, 97, 100, 104, 105, 113, 117, 121, 122)
- The presence of unknown/unmarked drums (Photos 11-16)
- Rows of tightly-packed drums with no aisle space (Photos 41, 46, 51-53, 58, 59, 63-66, 68-74, 94, 118, 122-124, 128, 129)
- The presence of chemical powder on the floor (Photo 116)

Post-Inspection:

Follow-up with Attica Fire Department

On April 15, 2016 the author spoke by phone with Chief O'Farrell. The record of that conversation is found in an e-mail from the author to Bhooma Sundar, EPA Corrective Action Project Manager, and is attached to this report. (Attachment 6.)

For years the Attica Fire Deparment has been concerned about the nature of the chemicals stored at the site, how to safely fight a fire at one or more of the buildings and what impacts would be to groundwater and nearby surface waters if the fire department had to put a large amount of water on the fire, leading to run-off and groundwater infiltration.

Chemical Shelf Lives

During the facility walk-through Mr. Riley told the author that he is looking for prospective purchasers of the raw material inventory at the site. For the resale of these materials to be a viable option to RMC they must not have outlived their useful lives (shelf lives). A brief search of available literature by the author conducted after the inspection calls into question Mr. Riley's statement that he is looking to sell the RMC inventory, particularly the titanium dioxide, barium titanate and strontium titanate inventories.

Titanium Dioxide

According to the attached Technical Data Sheet, the shelf life for titanium dioxide is "Indefinite when stored as recommended (5 years)." This is far less than the minimum of 15 years that materials have been stored at RMC.

Barium Titanate

According to the attached Technical Data Sheet, barium titanate dielectric "has a shelf life of six months when stored in its original container." This is far less than the minimum of 15 years that materials have been stored at RMC.

Strontium Titanate

The attached MSDS includes the following handling and storage procedures. These should be compared to the practices at RMC, which disregard the majority of these recommendations.

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

RECOMMENDED STORAGE METHODS

- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

RMC Regulatory Status:[38]

The facility has in the past claimed Conditionally Exempt Small Quantity Generator (CESQG) status (*See* 40 CFR. Section 261.5(a)). However, even if the facility did have CESQG status, due to the amount it was generating when the facility was in operation, when the facility exceeded the CESQG on-site hazardous waste accumulation limit of 1000 kg or less in the year 2000 (*See* 40 CFR 261.5(f)(2)), the accumulated hazardous waste became subject to regulation under the special provisions of 40 CFR Part 262 applicable to generators of greater than 100 kg and less than 1000 kg of hazardous waste in a calendar month as well as the requirements of 40 CFR Parts 124, 263 through 268, and 270, and the applicable notification requirements of Section 3010 of RCRA [*See* U.S. EPA's August 2012 "Hazardous Waste Generator Regulations: a user-friendly document," at p. 16].

Further, when the facility accumulated greater than 6000 kg of hazardous waste, the facility became a storage facility subject to the requirements of 40 CFR Parts 264, 265, 267 and 270 [*See* U.S. EPA's August 2012 "Hazardous Waste Generator Regulations: a user-friendly document," at p. 39]. At this point the evidence appears to show that hazardous waste accumulated at the facility over the 1000 kg amount through May 2013, when more than 5500 kg of hazardous waste was manifested and removed from the facility. Additionally, at this point the evidence appears to show that that hazardous waste accumulated at the facility over the 6000 kg amount through August 2008, when 4545 kg of hazardous waste was manifested and removed from the facility. If additional material at the facility is determined to be hazardous waste, there are additional days of violation.

Follow-up:

At the time of the FCI the chemical inventory by Conestoga-Rovers & Associates was more than seven years old. As stated above, there remain approximately 3000 containers on-site. While many are claimed by Mr. Riley to be raw materials or finished products, further waste determination by the generator is needed and in the event of fire, RMC should have on-site MSDS for every chemical stored at the facility.

Also, there are scores of containers that were found to be leaking or in varying states of deterioration. This is not unusual given the number of years these containers have remained on-site. However, further storage of these chemicals in the manner employed by RMC since the facility ceased operations will likely result in worsening of the condition of many containers.

Lastly, while Mr. Riley stated that he is looking for a purchaser of the raw materials and finished product accumulated on-site, given the age of the raw materials and finished product RMC would need to demonstrate that these have not exceeded their respective shelf lives and that viable markets exist today for materials used more than 15 years ago.

[38] This analysis is provided by Catherine Garypie, Associate Regional Counsel, Office of Regional Counsel, EPA Region 5.

List of Attachments:

1. May 2007 Waste Inventory and Photo Log – Conestoga-Rovers & Associates
2. Focused Compliance Inspection Waste Inventory Photo Log – August 21, 2015
3. MSDS and Technical Data Sheets for:
    - Titanium dioxide
    - Barium titanate
    - Barium zirconate
    - Strontium titanate
    - Strontium zirconate
4. Fountain Warren County Health Department Photos – August 21, 2015
5. Fountain Warren County Health Department Walk-Thru Notes – August 21, 2015
6. E-mail, April 15, 2016, Michael Valentino to Bhooma Sundar