

**Uranium Enrichment  
Toxic Substances Control Act  
Compliance Agreement  
Quarterly Progress Report for the  
Paducah Gaseous Diffusion Plant, Paducah, Kentucky  
April 1 through June 30, 2016**



This document is approved for public release per review by:

  
FPDP Classification Support

8-28-17  
Date

**Uranium Enrichment  
Toxic Substances Control Act  
Compliance Agreement  
Quarterly Progress Report for the  
Paducah Gaseous Diffusion Plant, Paducah, Kentucky  
April 1 through June 30, 2016**

Date Issued—August 2016

Errata Issued—June 2017

Prepared for the  
U.S. DEPARTMENT OF ENERGY  
Office of Environmental Management

FLUOR FEDERAL SERVICES, INC.,  
Paducah Deactivation Project  
managing the  
Deactivation Project at the  
Paducah Gaseous Diffusion Plant  
under Task Order DE-DT0007774

# CONTENTS

TABLES .....	iii
FIGURE .....	iii
ACRONYMS .....	iv
1. INTRODUCTION.....	1
2. INTERIM MEASURES .....	1
2.1 AIR SAMPLING.....	1
2.1.1 Requirements.....	1
2.1.2 Work Completion Date.....	1
2.1.3 Activity for this Quarter .....	2
3. COMPLIANCE MEASURES.....	3
3.1 PROCESS LUBRICATION OIL REMOVAL.....	3
3.2 SPILL CLEANUP .....	3
3.2.1 Requirements.....	3
3.2.2 Work Completion Date.....	3
3.2.3 Activity for this Quarter .....	3
3.3 ELECTRICAL CABLES AND ASSOCIATED EQUIPMENT .....	5
3.3.1 Requirements.....	5
3.3.2 Work Completion Date.....	5
3.3.3 Activity for this Quarter .....	5
3.4 DISPOSAL .....	5
3.4.1 Requirements.....	5
3.4.2 Work Completion Date.....	5
3.4.3 Activity for this Quarter .....	6

## TABLES

1. Second Quarter CY 2016 TSCA CA Air Sampling Results .....	2
2. PCB Waste Shipped Off-Site Disposal Activities: Waste Shipped Off-Site and Certificates of Disposal Received April 1 through June 30, 2016 .....	7

## FIGURE

1. Quarterly Summary of PCB Gasket Spills .....	4
---	---

## ACRONYMS

BEJ	best engineering judgment
CA	Compliance Agreement
<i>CFR</i>	<i>Code of Federal Regulations</i>
CY	calendar year
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
NESHAP	National Emission Standard for Hazardous Air Pollutants
PGDP	Paducah Gaseous Diffusion Plant
RCRA	Resource Conservation and Recovery Act
TSCA	Toxic Substances Control Act
UE	uranium enrichment

# 1. INTRODUCTION

The Uranium Enrichment (UE) Toxic Substances Control Act (TSCA) Compliance Agreement (CA) signed by the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA) on February 20, 1992, and modified in 1997, requires quarterly reports that summarize progress toward completing polychlorinated biphenyl (PCB)-related compliance measures. These measures include troubleshooting, air sampling, process lubrication oil removal, spill cleanup, and disposal. As of March 30, 1994, the troubleshooting interim measure was completed. Ongoing inspections of ventilation duct and troubleshooting systems are performed to identify leaks or spills requiring additional troubleshooting or trough maintenance. The quarterly reports will be maintained at the DOE Site Office and available to EPA, upon request, 45 days following the end of the quarter. The quarterly reports are required to be included in DOE's Annual Compliance Agreement Report. The following summaries satisfy the UE TSCA CA quarterly reporting requirements for April 1 through June 30, 2016.

## 2. INTERIM MEASURES

### 2.1 AIR SAMPLING

#### 2.1.1 Requirements

Attachment I, Section 1 (D), of the UE TSCA CA states the following:

**Air Sampling** – Consistent with DOE's monitoring at the facilities, PCB air sampling will be continued in process buildings with motor exhaust systems. At least 5 samples will be taken per process building per year. For each of these buildings, samples will be taken quarterly every calendar year, at least 30 days apart, with an additional set of samples taken sometime during the year. For each periodic (annual) air monitoring activity in a building, there are two kinds of sampling sites: best engineering judgment (BEJ) selected sites and randomly selected sites. The same BEJ sites may be selected for more than one monitoring period. The randomly selected sites shall be different from the BEJ sites and shall be newly selected for each periodic monitoring activity according to the attached guidance provided in the appended "Selection of Random Sampling Sites." It would be a rare coincidence for the same randomly selected location in the same building to be sampled in more than one periodic monitoring activity. DOE shall report quarterly to the EPA any PCB concentrations greater than 0.5 micrograms per cubic meter measured from any air-monitoring sampler at any location. Upon receipt of any such measurement data, EPA will contact DOE to address further monitoring requirements and any other required actions. Should EPA conclude that air sampling results produced pursuant to this Agreement so warrant, EPA and DOE shall meet and shall agree upon additional protective measures to be taken by DOE.

#### 2.1.2 Work Completion Date

United States Enrichment Corporation stopped enriching uranium in May 2013 and returned leased facilities to DOE on October 21, 2014. DOE continues deactivation activities in the facility and has continued air monitoring in accordance with the requirement above. The CA stated that work must be complete one year after facility shutdown, and notification will be provided to EPA upon work

completion. DOE currently is in discussions with EPA concerning future implementation of the agreement.

### 2.1.3 Activity for this Quarter

The UE TSCA CA requires that PCB air sampling be conducted in process buildings with motor exhaust duct ventilation systems. These buildings include the C-331, C-333, C-335, and C-337 process buildings at the Paducah facility. At least five samples are required to be taken per building per year; at least one of the five samples will be taken at a BEJ selected site, with the remainder of the sites to be selected randomly. For each of the buildings, the samples must be taken quarterly every calendar year (CY), at least 30 days apart. DOE is required to report quarterly to EPA any PCB concentrations greater than 0.5 µg/m<sup>3</sup> measured from any air-monitoring sampler at any location.

Air samples for the second quarter were collected April 6, 2016. The results of all the samples collected for the second quarter of CY 2016 are shown in Table 1. The quarterly sample sets were obtained more than 30 days apart, as required. The sampling was conducted as described in National Institute for Occupational Safety and Health 5503. The volumes and flow rates, as noted, were necessary to achieve the detection limit required by the UE TSCA CA. All samples met the required detection limit and sample results did not exceed the UE TSCA CA reporting level of 0.5 µg/m<sup>3</sup>.

**Table 1. Second Quarter CY 2016 TSCA CA Air Sampling Results**

Sample Numbers	Sample Date	Building	Floor	Sample Coordinates	Method of Selection	Results* (µg/m <sup>3</sup> )	Pump Flow Rate (liters/minute)	Air Volume Sampled (liters)
PCB16-AIR-032-01	4/6/2016	C-331	Cell	SW of X-32	Random	PCBs not detected above laboratory reporting limits	1.01	545
PCB16-AIR-032-02	4/6/2016	C-333	Ground	E of P-9	Random	PCBs not detected above laboratory reporting limits	1.01	524
PCB16-AIR-03-03	4/6/2016	C-333	Ground	At B-10	BEJ	PCBs not detected above laboratory reporting limits	1.07	554
PCB16-AIR-03-04	4/6/2016	C-335	Ground	W of K-18	Random	PCBs not detected above laboratory reporting limits	1.02	543
PCB16-AIR-03-05	4/6/2016	C-337	Cell	NW of Jb-14	Random	PCBs not detected above laboratory reporting limits	1.04	534

\*Limit of detection 0.01 µg/m<sup>3</sup>

## 3. COMPLIANCE MEASURES

### 3.1 PROCESS LUBRICATION OIL REMOVAL

Section 3.1 does not apply to Paducah Gaseous Diffusion Plant (PGDP). There are no PCB process lubrication oil systems at PGDP.

### 3.2 SPILL CLEANUP

#### 3.2.1 Requirements

Attachment I, Section 2 (C), of the UE TSCA CA states the following:

**Spill Cleanup** – PCBs and PCB contaminated oil that may leak onto building floors shall be cleaned up in accordance with the EPA Spill Cleanup Policy. For spills > 500 parts per million (ppm) PCBs, this shall consist of cleanup to 10 µg PCB/100 cm<sup>2</sup> with 95% confidence, based on the statistical sampling approach set forth in Attachment III, which shall be used within the spill area to verify cleanup to appropriate levels or, alternatively, to 100 µg PCB/100 cm<sup>2</sup> with 95% confidence, based on the statistical sampling approach set forth in Attachment III, which shall be used within the spill area to verify cleanup to appropriate levels followed by application of an appropriate sealant, such as a 2-layered epoxy type paint. All spill cleanups will be initiated within 24 hours of discovery, excluding historic spills which are defined as PCB stains resulting from spills which have occurred prior to the effective date of this Agreement. Historic spills may be left in place until demolition of the facility, provided public access to the facility is restricted to prevent unauthorized entry. In the event that a new spill should occur on a historic spill site, and the appropriate standard specified above cannot be met after best efforts to meet the standard are made, DOE may request that EPA consider the efforts DOE has made and classify the spill area as a historic spill for purposes of the cleanup under this Agreement.

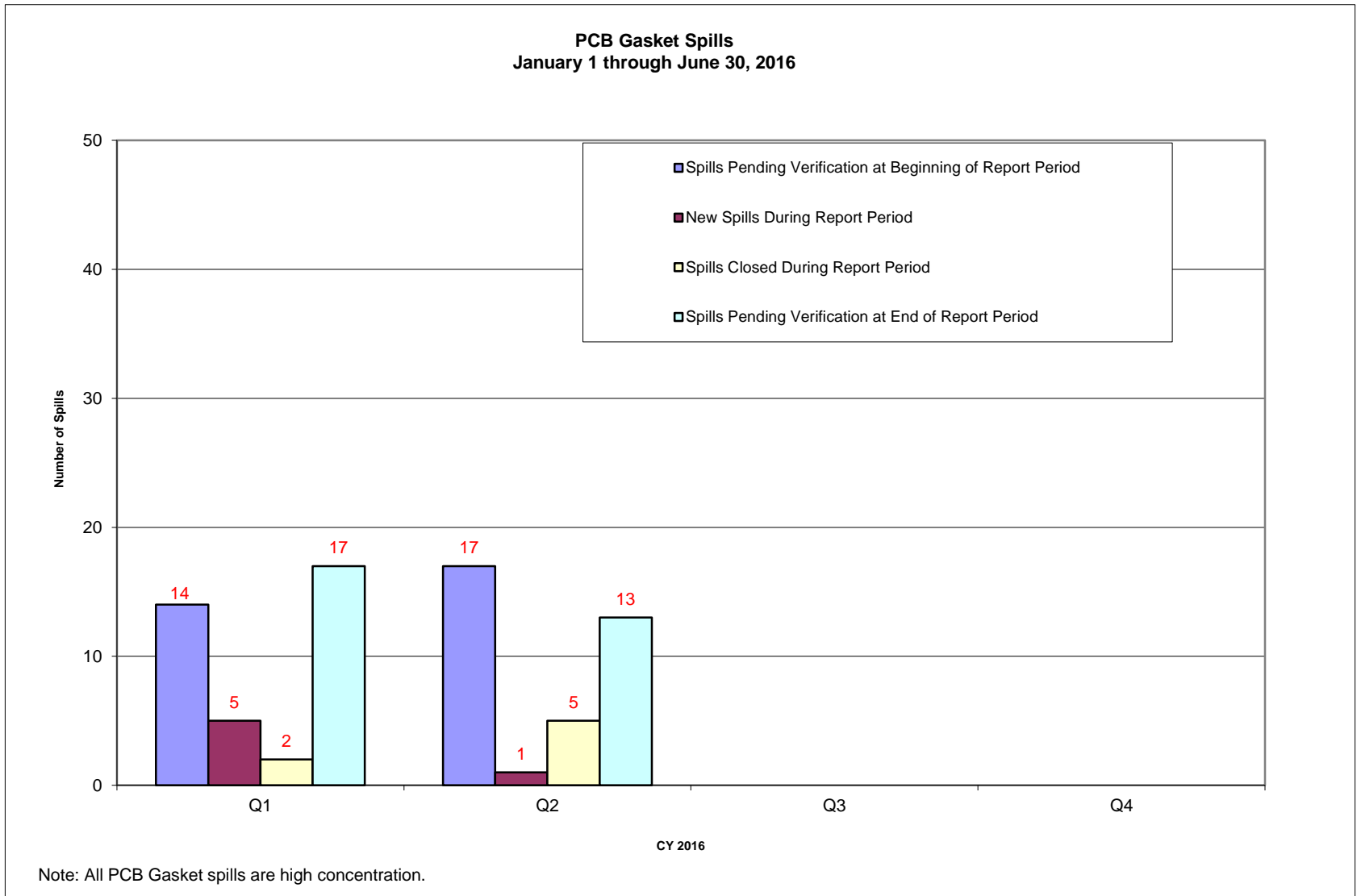
#### 3.2.2 Work Completion Date

None listed.

#### 3.2.3 Activity for this Quarter

Seventeen gasket spill sites were pending post-cleanup verification at the beginning of this reporting period. One new gasket spill to the building floor was identified during the reporting period. Five gasket spill sites were closed during the reporting period by verifying sampling data. Thirteen gasket spill sites were pending post-cleanup verification at the end of this reporting period. PCB spill cleanup progress for CY 2016 is illustrated in Figure 1.





**Figure 1. Quarterly Summary of PCB Gasket Spills**

All PCB gasket spills identified were high concentration PCB spills (i.e., from a source of 500 ppm or greater in PCB concentration). Cleanup of each identified spill site was initiated within 24 hours, in accordance with the UE TSCA CA. Clearly visible signs have been posted at each spill site advising personnel to avoid the area in order to minimize the spread of contamination and the potential for human exposure. Fluor Federal Services, Inc., Paducah Deactivation Project maintains the cleanup documentation, and the records are available for inspection.

### **3.3 ELECTRICAL CABLES AND ASSOCIATED EQUIPMENT**

#### **3.3.1 Requirements**

Attachment I, Section 2 (F), of the UE TSCA CA states the following:

**Electrical Cables and Associated Equipment** – PCB contaminated electrical cables and associated equipment shall be removed from the facilities upon decommissioning, unless they require maintenance, servicing or replacement during plant operations, or gasket removal. If maintained or serviced, the cables, cable trays, and associated equipment shall be removed or cleaned up to 10 µg PCB/100 cm<sup>2</sup> or 100 µg PCB/100 cm<sup>2</sup> with 95% confidence followed by application of appropriate sealant.

#### **3.3.2 Work Completion Date**

Work must be complete upon demolition.

#### **3.3.3 Activity for this Quarter**

No Request for Disposal forms for cables, cable trays, and associated equipment were received, and no maintenance activities were performed during the second quarter of CY 2016.

### **3.4 DISPOSAL**

#### **3.4.1 Requirements**

Attachment I, Section 2 (G) of the UE TSCA CA states the following:

**Disposal** – All waste PCBs, PCB Items and ventilation ducts (and associated flanges), electrical cables and associated equipment contaminated with PCBs which were not decontaminated pursuant to Sections 2(C), 2(E), and 2(F) of this Attachment, shall be disposed of in accordance with 40 *CFR* § 761.60. All waste PCBs and PCB Items contaminated with hazardous waste and/or asbestos shall be disposed of in accordance with TSCA, NESHAP [National Emission Standard for Hazardous Air Pollutants] and RCRA [Resource Conservation and Recovery Act] requirements, and/or alternate disposal methods approved by EPA.

#### **3.4.2 Work Completion Date**

- Nonradioactive PCBs and PCB Items—within one year after the date the materials were placed into storage for disposal in accordance with Section 2(D) of the attachment of the UE TSCA CA.

- Co-contaminated, radioactive PCBs, and PCB items stored for disposal—within 10 years of work initiation date for materials already in storage; 2016, or within 10 years of storage, whichever date is earlier, for materials placed into storage after the effective date of the UE TSCA CA.
- Ventilation gaskets, ductwork and flanges, electrical cable, associated equipment, and historic spill material—2016 or within 10 years of work initiation date, whichever date is earlier.

### **3.4.3 Activity for this Quarter**

During the second quarter CY 2016, 11,774 kg of PCB waste was shipped for disposal. Three Certificates of Disposal were received for three disposed of items totaling 12,130 kg. The PCB waste disposal summary for this reporting period is shown in Table 2. Waste generated as a result of site cleanup and operations is included in this report, including Comprehensive Environmental Response, Compensation, and Liability Act waste, which is provided for information only and is intended to show progress toward removal of PCBs at Paducah.

**Table 2. PCB Waste Shipped Off-Site Disposal Activities:  
Waste Shipped Off-Site and Certificates of Disposal Received  
April 1 through June 30, 2016**

PCB Item Count	Description	Weight (kg)	Earliest Date Removed from Service	Date Shipped	Manifest	Shipment No.	Disposal Location	Disposal Method	Disposal Date	CD Rec'd	
										No. of Items Disposed Of	
1	(1) Drum of PCB/RCRA Mixed Solid Lab Sample Returns	8	6/8/2015	11/12/2015	006841763JJK	DSSI-15-121	Perma-Fix DSSI, Kingston, TN	Alternate Thermal Treatment	4/8/2016	4/21/2016 1	
1	(1) Drum of PCB Waste	57	8/12/2015	4/28/2016	006841802JJK <sup>c</sup>	9701-15-0007	EnergySolutions, Clive, UT				
1	(1) Tanker of PCB Transformer Oil	11,303	5/20/2016	5/20/2016	006841805JJK	FLR15-HSPCB-055	Clean Harbors, LaPorte, TX	Incineration	5/23/2016	5/25/2016 1	
2	(1) Drum of PCB/RCRA Mixed, (1) Drum of RCRA/TSCA Waste	18	8/5/2015	6/29/2016	006841810JJK <sup>2</sup>	02616	Perma-Fix, Gainesville, FL				
12	(12) Drums of PCB Waste	276	12/29/2015	6/30/2016	006841811JJK	9701-17-0001	EnergySolutions, Clive, UT				
1	(1) Drum of PCB/LLW	177	1/5/2016	6/30/2016	006841813JJK	9701-21-0014	EnergySolutions, Clive, UT				
1	ST-90 of Mixed/PCB Waste	819	6/3/2015	3/28/2016	006841795JJK <sup>3,4</sup>	9701-02-0013	EnergySolutions, Clive, UT	Landfill	5/26/2016	6/14/2016 1	
52	(10) Drums of PCB/LLW (42) Drums of PCB Waste	1,415	4/9/2015	3/28/2016	006841798JJK <sup>1a,4</sup>	7307-15-0002	EnergySolutions, Clive, UT				
<b>16</b>	<b>Total Shipped</b>	<b>11,774</b>								<b>Total CDs Received</b> <b>Total No. of Items</b>	<b>3</b>
	<b>Total Disposed Of</b>	<b>12,130</b>								<b>Disposed Of</b>	<b>3</b>

CD = Certificate of Disposal  
 LLW = low-level waste  
 PCB = polychlorinated biphenyl  
 RCRA = Resource Conservation and Recovery Act  
 TSDF = treatment, storage, and disposal facility  
 UHWM = Uniform Hazardous Waste Manifest

**Table 2. PCB Waste Shipped Off-Site Disposal Activities:  
Waste Shipped Off-Site and Certificates of Disposal Received  
April 1 through June 30, 2016 (Continued)**

NOTE: Weights and volumes are taken from the Uniform Hazardous Waste Manifest (UHWM).

<sup>1</sup> On April 28, 2016, one drum was removed from Shipment ID: 7307-15-0001, UHWM 006841798JJK, per the treatment, storage, and disposal facility (TSDF), and was manifested under Shipment ID: 9701-15-0007, UHWM 006841802JJK. This drum was captured in the 2016 1st Quarter report under the previous shipment ID and UHWM; however, the changes are captured in this report. Because the PCB Item Count and Weight (kg) for this shipment was captured in the 2016 1st Quarter Report, this information was not included in the Total Shipped Item count and the Weight (kg).

<sup>1a</sup> On May 24, 2016, per the TSDF, Shipment ID: 7307-15-0001, UHWM 006841798JJK was changed to 7307-15-0002. These changes were noted on the UHWM and are captured in this report.

<sup>2</sup> Signed manifests with management codes were not received before the end of 2nd Quarter 2016.

<sup>3</sup> Shipments were captured in previous reports as shipped; however, Certificates of Disposal (CDs) are captured on this report.

<sup>4</sup> Shipments were captured in previous reports as shipped; however signed UHWMs with management codes are captured on this report.