



**Mercury-Containing Lamp and Device
Mercury Recovery and
Mercury Reclamation Facility
Permit Application**

**Veolia ES Technical Solutions, L.L.C.
342 Marpan Lane
Tallahassee, FL 32305
EPA ID#: FL0000207449**

March 2016

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Mercury-Containing Lamp and Device Mercury Recovery and Mercury Reclamation Facility Permit Application

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APPLICATION FOR A MERCURY-CONTAINING LAMP OR DEVICE
MERCURY RECOVERY OR MERCURY RECLAMATION FACILITY PERMIT

Part I

TO BE COMPLETED BY ALL APPLICANTS

Please Type or Print

A. General Information

1. Type of facility:

Mercury Recovery ☒

Mercury Reclamation ☒

Lamps ☒
Devices ☒

Lamps ☒
Devices ☒
Other mercury wastes ☒
Commodity grade mercury ☒

2. Type of application: ☐ new construction ☒ operation ☒ modification ☐
transfer

3. Revision Number: _____

4. Date current operation began (or is expected to begin): June 8, 1995

5. Facility name: Veolia ES Technical Solutions, L.L.C

6. EPA/DEP ID. No.: FL0000207449

7. Facility location or street address: 342 Marpan Lane, Tallahassee, FL

8. Facility mailing address:

| | | | |
|------------------------|--------------------|-----------|--------------|
| <u>342 Marpan Lane</u> | <u>Tallahassee</u> | <u>FL</u> | <u>32305</u> |
| Street or PO. Box | City | State | Zip |

9. Contact person: Matthew Melott Telephone: (850) 877-8299

Title: Operations Manager

Mailing Address:

| | | | |
|------------------------|--------------------|-----------|--------------|
| <u>342 Marpan Lane</u> | <u>Tallahassee</u> | <u>FL</u> | <u>32305</u> |
| Street or PO. Box | City | State | Zip |

10. Operator's name: Veolia ES Technical Solutions, Telephone: (850) 877-8299

11. Operator's address:

Name: Veolia ES Technical Solutions, L.L.C.

Address:

| | | | |
|------------------------|--------------------|-----------|--------------|
| <u>342 Marpan Lane</u> | <u>Tallahassee</u> | <u>FL</u> | <u>32305</u> |
| Street or PO. Box | City | State | Zip |

12. Facility owner's name: Veolia ES Technical Solut Telephone: (630) 218-1500

13. Facility owner's address:

| | | | |
|-----------------------------------|----------------|-----------|--------------|
| <u>4760 World Houston Parkway</u> | <u>Houston</u> | <u>TX</u> | <u>77032</u> |
| Street or PO. Box | City | State | Zip |

14. Legal structure: ☒ Corporation ☐ Non-profit Corporation ☐ Partnership ☐ Individual
☐ Local Government ☐ State Government ☐ Federal Government ☐ Other (specify)

15. If an individual, partnership, or business is operating under an assumed name, specify the county and state where the name is registered.

County: _____ State: _____

16. If the legal structure is a corporation, indicate the state of incorporation.

State of incorporation: Delaware

17. If the legal structure is an individual or partnership, list the owners' names and mailing addresses.

Name: _____

Address:

| | | | |
|-------------------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
| Street or PO. Box | City | State | Zip |

Name: _____

Address:

| | | | |
|-------------------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
| Street or PO. Box | City | State | Zip |

Name: _____

Address:

| | | | |
|-------------------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
| Street or PO. Box | City | State | Zip |

Name: _____

Address: _____

| | | | |
|-------------------|------|-------|-----|
| Street or PO. Box | City | State | Zip |
|-------------------|------|-------|-----|

18. Site ownership status: ☐ owned ☐ to be purchased ☐ to be leased _____ years

☒ presently leased; the expiration date of the lease is: 2019

If leased, indicate:

Land owner's name: H.M. Williams Properties

Land owner's address:

Name: H.M. Williams Properties

Address: _____

| | | | |
|-------------------|-------------|-------|-------|
| P.O. Box 268 | Tallahassee | FL | 32316 |
| Street or PO. Box | City | State | Zip |

19. Name of professional engineer: Cory A. Houchin

Registration no.: 58064

Address: _____

Name: Cory A. Houchin, Environmental Services Group

Address: _____

| | | | |
|-------------------|-------|-------|-------|
| P.O. Box 7495 | Tampa | FL | 33673 |
| Street or PO. Box | City | State | Zip |

Associated with: Env. Sciences Group, Inc.

20. Facility located on Indian land: ☐ yes ☒ no

21. Existing or pending environmental permits: (attach a separate sheet if necessary)

| TYPE OF PERMIT | AGENCY | PERMIT NUMBER | DATE ISSUED | EXPIRATION DATE |
|----------------|--------|---------------|-------------|-----------------|
| Mercury Recov | FL DEP | 0071455-HO-0 | 2/3/2012 | 9/26/2016 |
| Air Permit | FL DEP | 0730094-008-1 | 8/2/2012 | 8/2/2017 |
| NPDES | FL DEP | FLR05F873 | 5/1/2014 | 5/3/2019 |

B. Site Information

1. Facility location : County: Leon County Nearest Community: Tallahassee
Latitude: 30.364417 Longitude: -84.266575
Section: 30 Township: 1 South Range: 1 East
UTM # NA / /

2. Area of facility site (acres): 3.2

3. Attach a topographic map of the facility area and a scale drawing and photographs of the facility showing the location of all past, present, and future material receiving, storage and processing areas. Also show the incoming and outgoing material traffic pattern including estimated volume and controls.

4. Is the site located in a 100-year flood plain? ☐ yes ☒ no
If yes, describe how facility will be constructed to prevent flooding (labeled as Attachment ____).

C. Land Use Information

1. Present zoning of the site. Mixed Use - M1

2. If a zoning change is needed, what should the new zoning be?

N/A

3. Present land use of site

Industrial

D. Operating Information

1. Is hazardous waste generated on site? ☒ yes [] no

List the types and anticipated annual amounts of generation (attach a separate sheet if necessary).

Mercury Phosphor Powder 25000 - 125000 lb.

Spent Carbon 0 - 3000 lb.

HEPA Filters/ Filter Bags/ PPE/ Used Conveyor Belts 0 - 10000 lb.

HID Arc Tubes 20000 -

2. Attach a brief description of the facility operation, nature of the business, and activities.

See Attachment D-2

3. Specify below each process used for storing or recycling of lamps or devices (including daily design capacities for recycling operations) at the facility, and annual quantities, to be stored or processed at the facility. (Attach a separate sheet if necessary)

| PROCESS | DAILY DESIGN CAPACITY | UNIT OF MEASURE | ANNUAL QUANTITY |
|---------|-----------------------|-----------------|-----------------|
|---------|-----------------------|-----------------|-----------------|

See Attachment D-3

4. Indicate the type of material and total amount of maximum desired storage to be permitted by the facility. This is the maximum amount of raw or unprocessed material, such as lamps or devices, and the total types and amounts of processed material, such as glass or phosphor material, which shall exist at the facility at any time. This shall be the maximum allowed storage by the facility. (attach a separate sheet if necessary)

See Attachment D-4

5. Attach a description of how the facility shall be constructed and operated and the specifics of the technology which shall be utilized to process or recycle lamps and devices. Include any engineering plans, calculations and other related information describing the process to include the design, installation and operation of any air pollution control equipment. All engineering plans and reports shall be signed and sealed by a professional engineer registered in the State of Florida. Describe the specific types of materials the facility shall accept for introduction into its process. (e.g. fluorescent lamps, electrical thermostats etc.)

Construction and Operation Plans are labeled as Attachment D-5

6. Attach a description of the facility's Contingency Plan for responding to and dealing with spills or releases of hazardous material to the environment during facility operation or any other emergency conditions. Include the name and 24-hour response telephone number of the facility emergency response coordinator, who is to be contacted in the event of an emergency. Plans should at a minimum conform to the requirements of 40 CFR 264, Subpart D. Attach a description of procedures, structures, or equipment used at the facility to:

- (1) Mitigate effects of equipment failure
- (2) Prevent hazards in unloading operations (e.g., ramps, special forklifts);
- (3) Prevent undue exposure of personnel to hazardous material (e.g., protective clothing);
- (4) Prevent releases to soil, water or the atmosphere; and

Attach a description of the preparedness and prevention procedures including required equipment, testing and maintenance of equipment, access to communications or alarm system, required aisle space, and arrangements with local authorities. Procedures should at a minimum conform to the requirements of 40 CFR 264, Subpart C.

Contingency Plan is labeled as Attachment D-6

7. Attach a copy of the facility's Worker Health and Safety Plan including training. This plan shall be of sufficient detail to describe how workers will be informed of the hazards present in the workplace and how to protect them from exposure or injury from these conditions. The plan should contain elements to instruct employees in identification of hazards, releases, emergency response conditions and methods to prevent releases of hazardous material.

Worker Health and Safety Plan including training is labeled as Attachment D-7

8. Attach a copy of the facility's Quality Control Plan to be approved in accordance with Chapter 62-160, F.A.C. This plan should include detailed description of how the facility shall monitor the conformance to the facility's operational plan, training plan, its methods of determining compliance with permit conditions or Chapter 62-737, F.A.C., (e.g., material sampling and analysis) and the performance of its processing equipment or pollution control equipment (if applicable). The plan shall also contain the measures to monitor conformance with the facility's closure plan.

Quality Control plan to be labeled as Attachment D-8

9. Attach a copy of the facility's Closure Plan. This plan shall be of adequate detail as to describe how the facility shall properly remove all quantities of raw or unprocessed material and processed materials or wastes in the event of either voluntary or involuntary closure or cessation of operations. The plan must also include programs for clean up or decontamination of process equipment and process areas if applicable and any analytical testing which must be performed to determine the adequate removal of hazardous materials. The plan must also include the estimated costs involved in carrying out each aspect of the closure of the facility.

Attach the following information to meet the closure performance standard which requires removing all hazardous wastes and hazardous constituents and controlling, minimizing, or eliminating, to the extent necessary to protect human health and the environment, closure related releases of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the soil, ground water, surface waters or to the atmosphere. The closure plan must include the following information:

- a. A description of how the applicant will close the facility.
- b. An estimate of the maximum inventory of unprocessed and processed materials and wastes on site at any one time over the active life of the facility and a detailed description of the methods to be used during closure. The methods may include methods for removing, transporting, treating, storing, recycling or disposing of all processed and unprocessed materials and all hazardous wastes. Identify the type(s) of the off site recycling or hazardous waste management units the applicant will use, if applicable;
- c. A detailed description of the steps needed to remove or decontaminate all hazardous waste residues and contaminated containment system components, equipment, structures, and soils during closure. The steps include procedures for cleaning equipment and removing contaminated materials, methods for sampling and testing contaminated operational areas of the facility, and criteria for determining the extent of decontamination required to satisfy the closure plan standard;
- d. A schedule for closure of each facility. The schedule must include, at a minimum, the total time required to close each facility and the time required for intervening closure activities which will allow tracking of the progress of final closure ; and

e. A detailed description of the costs of closure. Attach the most recent closure cost estimates for the facility and a copy of the financial mechanism used to establish financial assurance for closure of the facility. The financial information must be submitted using forms specified in 62-737.80-0(4), F.A.C.

Closure Plan is labeled as Attachment D-9

Financial Assurance Form is labeled as Attachment D-9-I

10. Attach a copy of the documents used to demonstrate both general and pollution liability insurance coverage of at least \$1,000,000 as required in 62-737.800 F.A.C.. Proof of this coverage must be provided to the Department on an annual basis

Certificate of Insurance is labeled Attachment D-10

11. Attach a list of the destinations and uses of processed material shipped off site for disposal or recycling. This is to include the markets for recycled glass or metal end caps or the recovered mercury from reclamation operations. For mercury recovery facility applications, identify the mercury reclamation facility which accepts your material for recovery of the mercury. If this is an out of state facility, include the facility's certification of compliance to the provisions identified in 62-737.840 (4), F.A.C.

List of Destinations Facilities and Uses labeled as Attachment D-11

12. Attach a copy of the facility's Inspection Plan. This plan shall include the measures the facility shall take to monitor and inspect the performance of process operations and pollution control equipment. Indicate the methods and frequency of these inspections and the types of logs or records which shall be maintained.

Inspection Plan is labeled as Attachment D-12

**APPLICATION FOR A MERCURY-CONTAINING LAMP OR DEVICE
MERCURY RECOVERY OR MERCURY RECLAMATION FACILITY PERMIT**

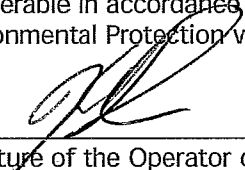
Part II - CERTIFICATION

TO BE COMPLETED BY ALL APPLICANTS

Facility Name: Veolia ES Technical Solutions, L.L.C. EPA ID# FL0000207449

1. Operator

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Further, I agree to comply with the provisions of Chapter 403, Florida Statutes, Chapter 62-737, F.A.C., and all rules and regulations of the Department of Environmental Protection. It is understood that the permit is only transferable in accordance with Chapter 62-737, F.A.C., and, if granted a permit, the Department of Environmental Protection will be notified prior to the sale or legal transfer of the permitted facility.



Signature of the Operator or Authorized Representative*

Kevin D. Shaver, General Manager

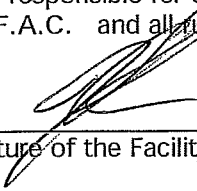
Name and Title (Please type or print)

Date: March 21, 2016 Telephone : (262) 243-8900

*** If authorized representative, attach letter of authorization.**

2. Facility Owner

This is to certify that I understand that this application is submitted for the purpose of obtaining a permit to construct, or operate a mercury-containing lamp or device mercury recovery or mercury reclamation facility . As owner of the facility, I understand fully that the facility operator and I are jointly responsible for compliance with the provisions of Chapter 403, Florida Statutes, Chapter 62-737, F.A.C. and all rules and regulations of the Department of Environmental Protection.



Signature of the Facility Owner or Authorized Representative*

Kevin D. Shaver, General Manager
Name and Title (Please type or print below signature)

Date: March 21, 2016 Telephone: (262) 243-8900

*** If authorized representative, attach a letter of authorization**

3. Land Owner

This is to certify that I, as land owner, understand that this application is submitted for the purpose of obtaining a permit to construct or operate a mercury-containing lamp or device mercury recovery or mercury reclamation facility on the property as described.

H.M. Williams, Marpan Management, Inc., Kim B. Williams, President
Signature of the Land Owner or Authorized Representative*

H.M. Williams, Marpan Management, Inc., Kim B. Williams, President
Name and Title (Please type or print)

Date: 03.25.2016 Telephone: (850) 545-6864

* If authorized representative, attach letter of authorization.

4. Professional Engineer Registered in Florida

[Complete when not exempted by Chapter 62-737, F.A.C.]

This is to certify that the engineering features of this mercury-containing lamp or device mercury recovery or mercury reclamation facility have been designed and examined by me and found to conform to engineering principles applicable to such facilities. In my professional judgment, this facility, when properly constructed, maintained and operated, or closed, will comply with all applicable statutes of the State of Florida and rules of the Department of Environmental Protection.

Cory A. Houchin 3/24/2016
Signature

Cory A. Houchin
Name (please type)

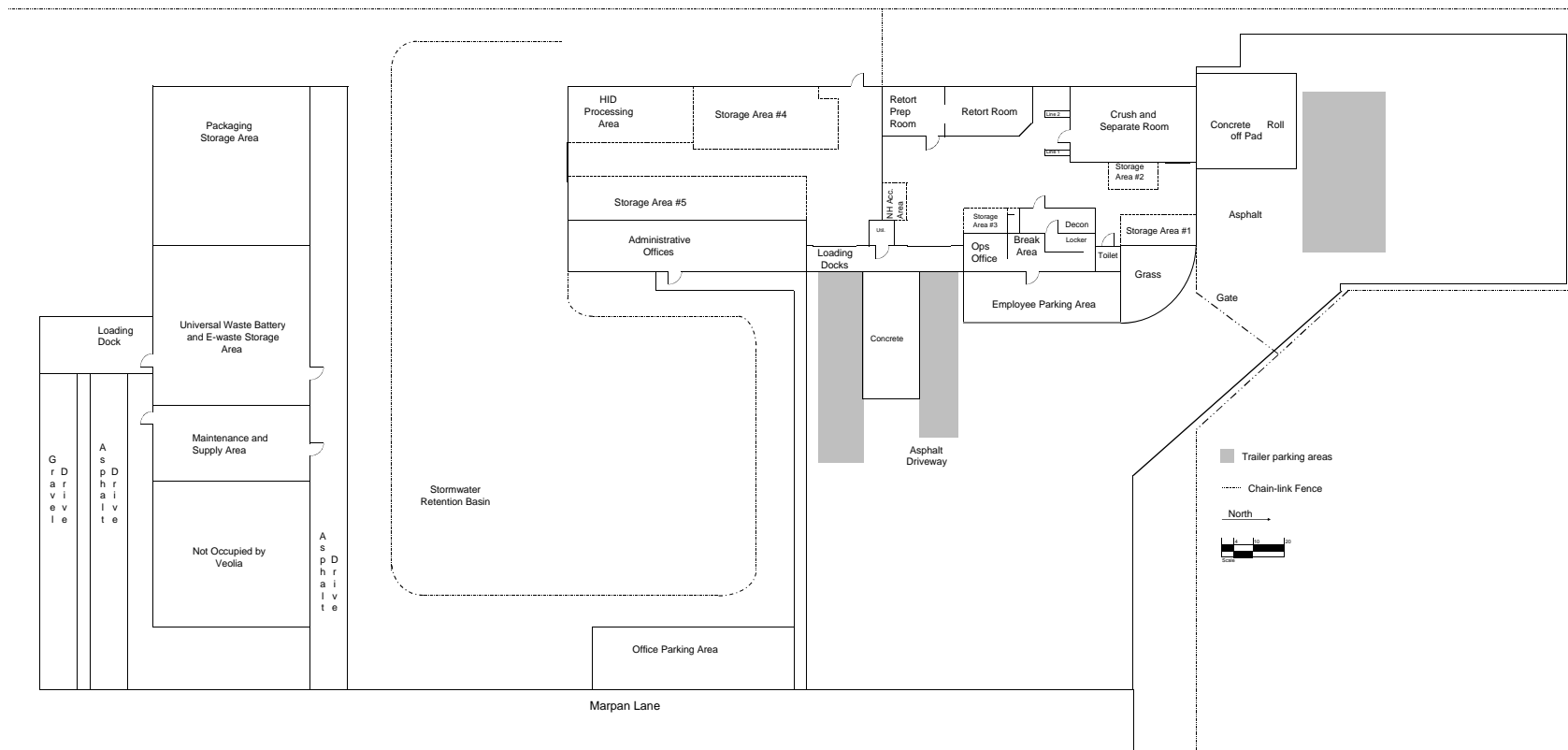
Florida Registration Number: 58064

Mailing Address: P.O. Box 7495
Street or PO. Box

| | | |
|--------------|-----------|--------------|
| <u>Tampa</u> | <u>FL</u> | <u>33673</u> |
| City | State | Zip |

Date: 3/24/2016 Telephone(813) 930-9074

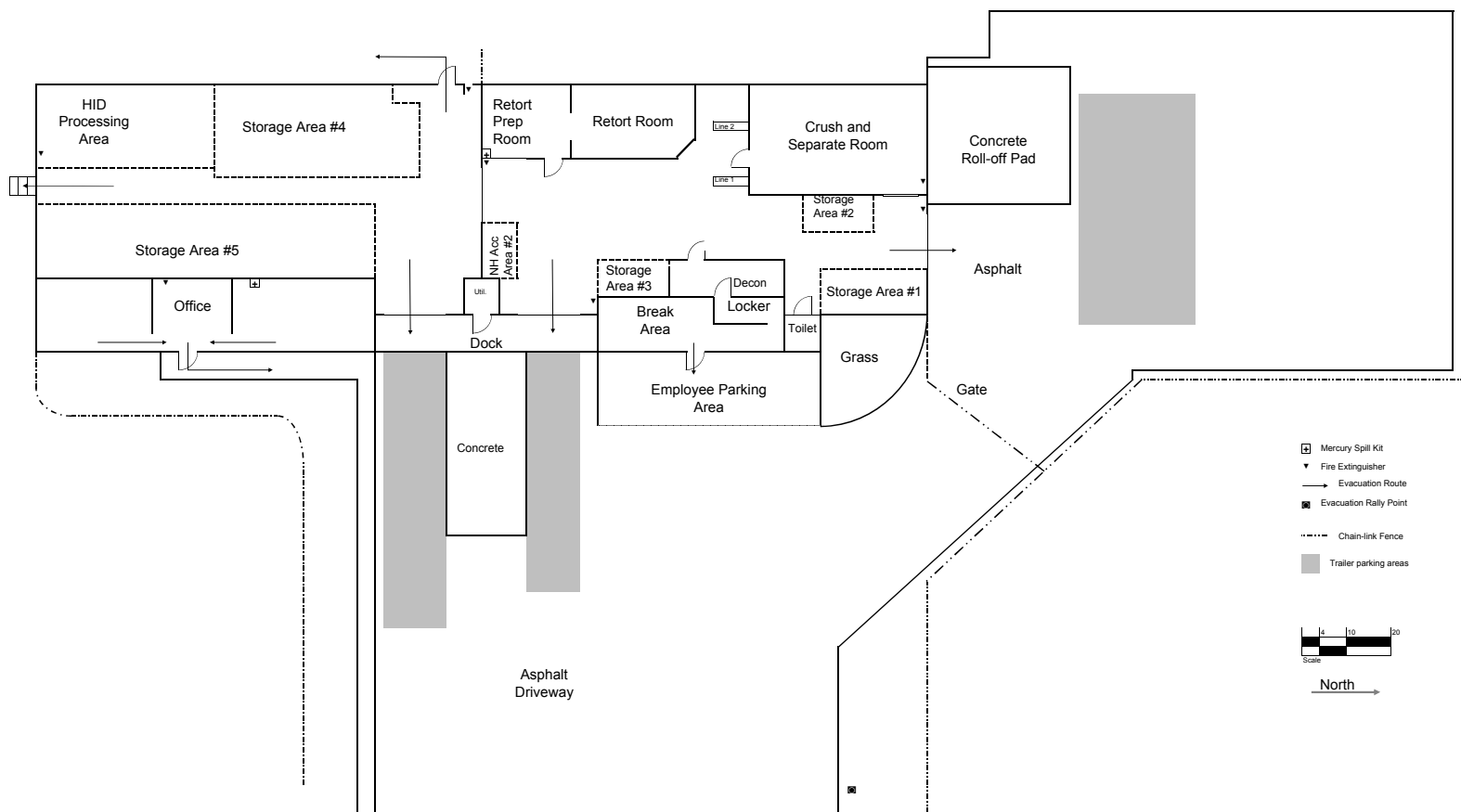
[PLEASE AFFIX SEAL]



Site Plan
Figure 1

Veolia ES Technical Solutions, L.L.C.
342 Marpan Lane
Tallahassee, FL 32305

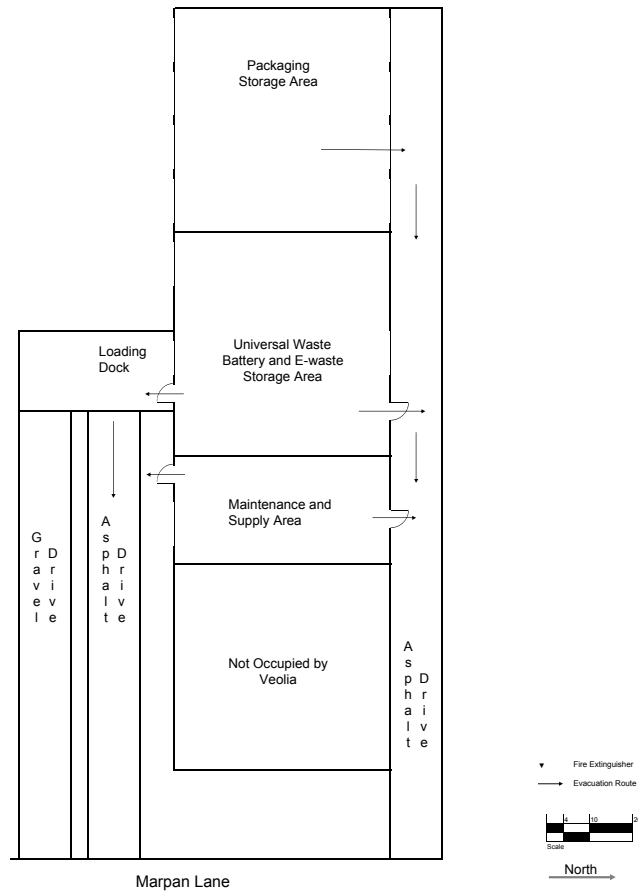
Revision Date: 3/11/2016

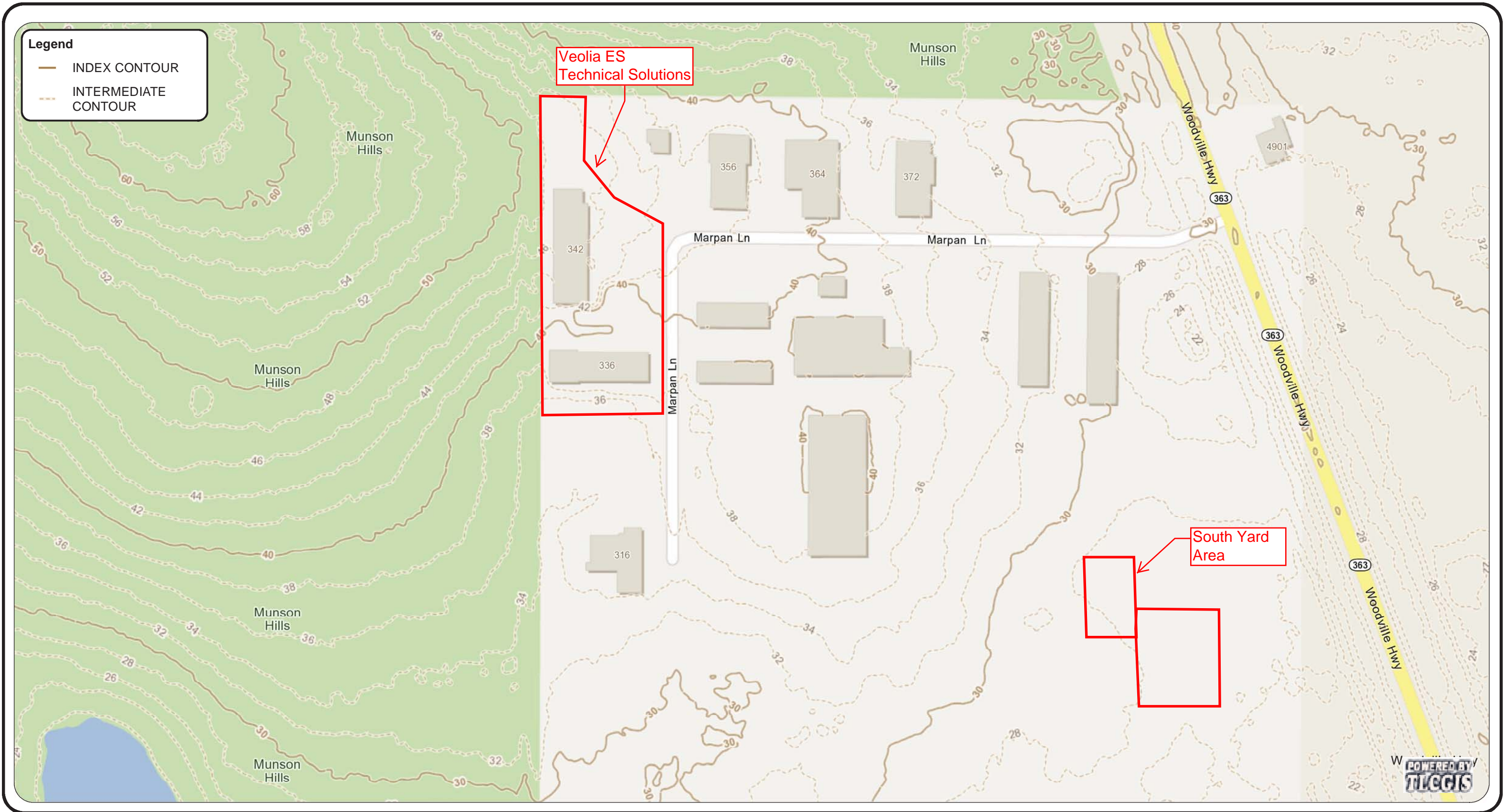


Floor Plan
Mercury Recovery and Reclamation Facility
Figure 2

Veolia ES Technical Solutions, L.L.C.
342 Marpan Lane
Tallahassee, FL 32305

Revised: March 11, 2016





- Legend**
- FEMA DFIRM Panels
 - Base Flood Elevation Profile Lines (Ft)
 - Zone AE - 100 Year (Floodway)
 - Zone AE - 100 Year
 - Zone A - 100 Year
 - Zone X5 - 500 Year
 - Property Parcels



FEMA Flood Map

DISCLAIMER

This product has been compiled from the most accurate source data from Leon County, the City of Tallahassee, and the Leon County Property Appraiser's Office. However, this product is for reference purposes only and is not to be construed as a legal document or survey instrument. Any reliance on the information contained herein is at the user's own risk. Leon County, the City of Tallahassee and the Leon County Property Appraiser's Office assume no responsibility for any use of the information contained herein or any loss resulting therefrom.

Industrial Park Aerial Photo

Figure 5



Tallahassee/Leon County GIS

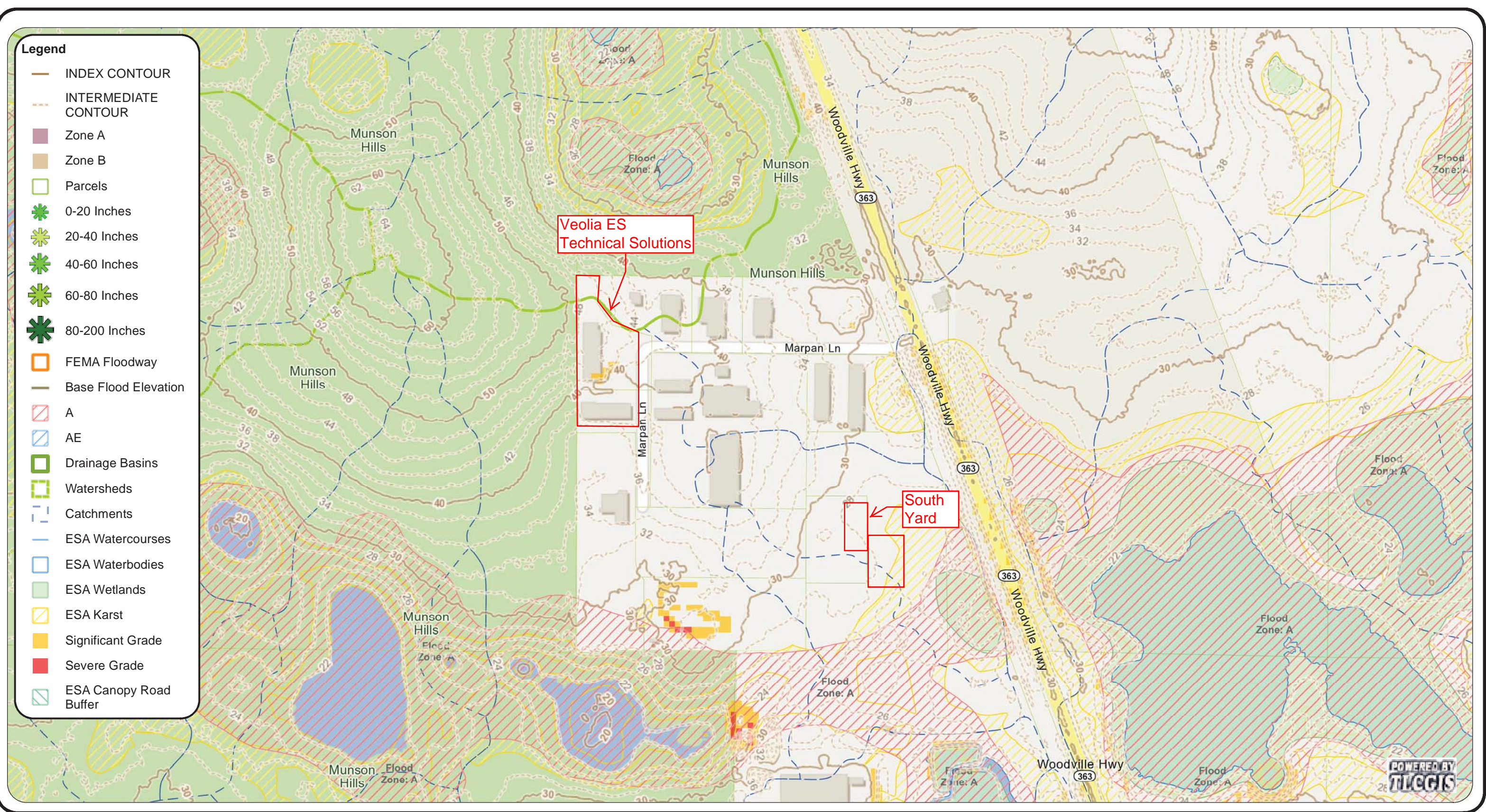
Scale:

Not To Scale

Date Drawn:

March 10, 2016

Management Information Services
Leon County Courthouse
301 S. Monroe St, P3 Level
Tallahassee, FL 32301
850/606-5504
<http://www.tlccgis.org>





Natural Features

DISCLAIMER

This product has been compiled from the most accurate source data from Leon County, the City of Tallahassee, and the Leon County Property Appraiser's Office. However, this product is for reference purposes only and is not to be construed as a legal document or survey instrument. Any reliance on the information contained herein is at the user's own risk. Leon County, the City of Tallahassee and the Leon County Property Appraiser's Office assume no responsibility for any use of the information contained herein or any loss resulting therefrom.

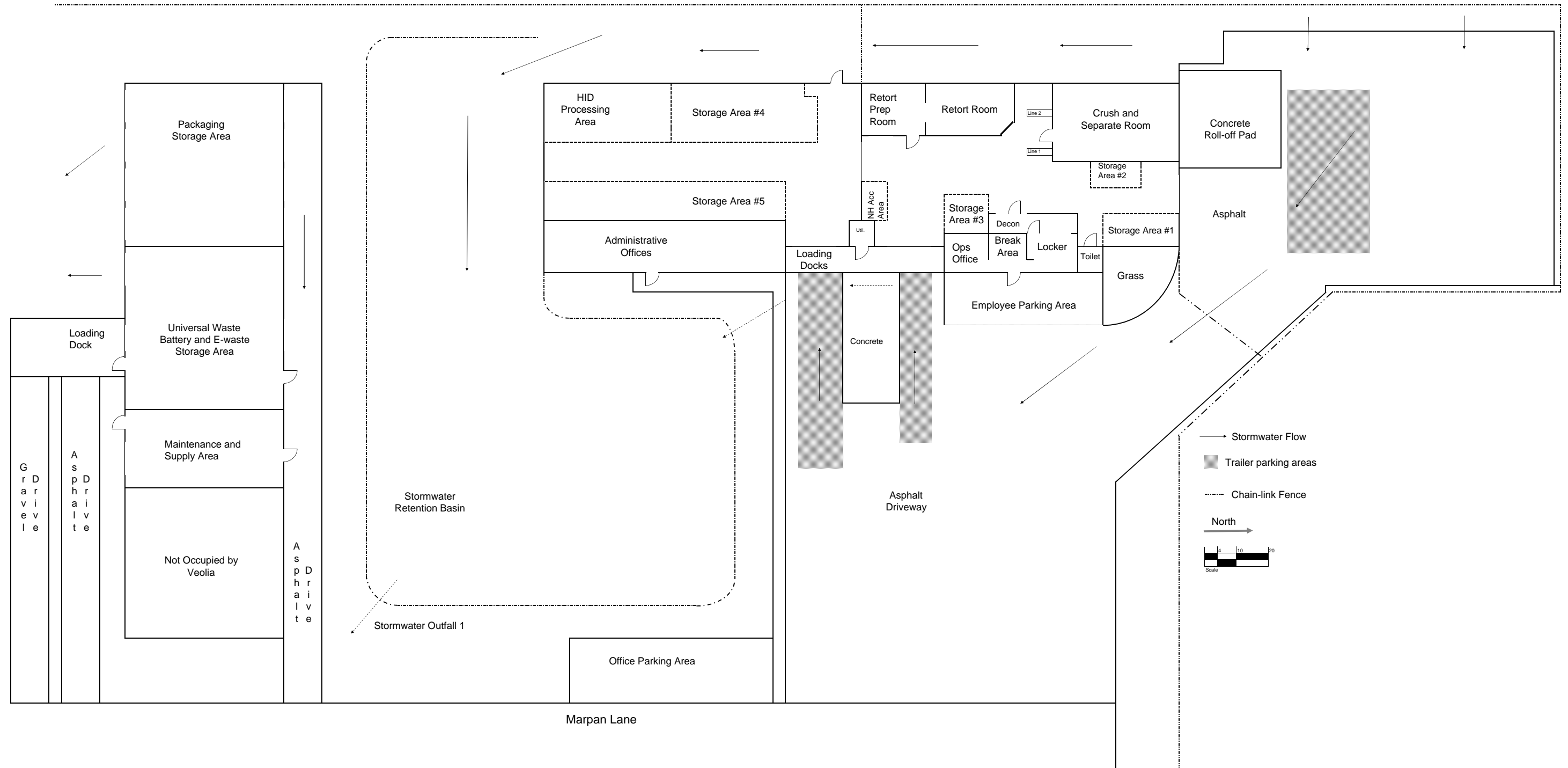
Area Map with Natural Features

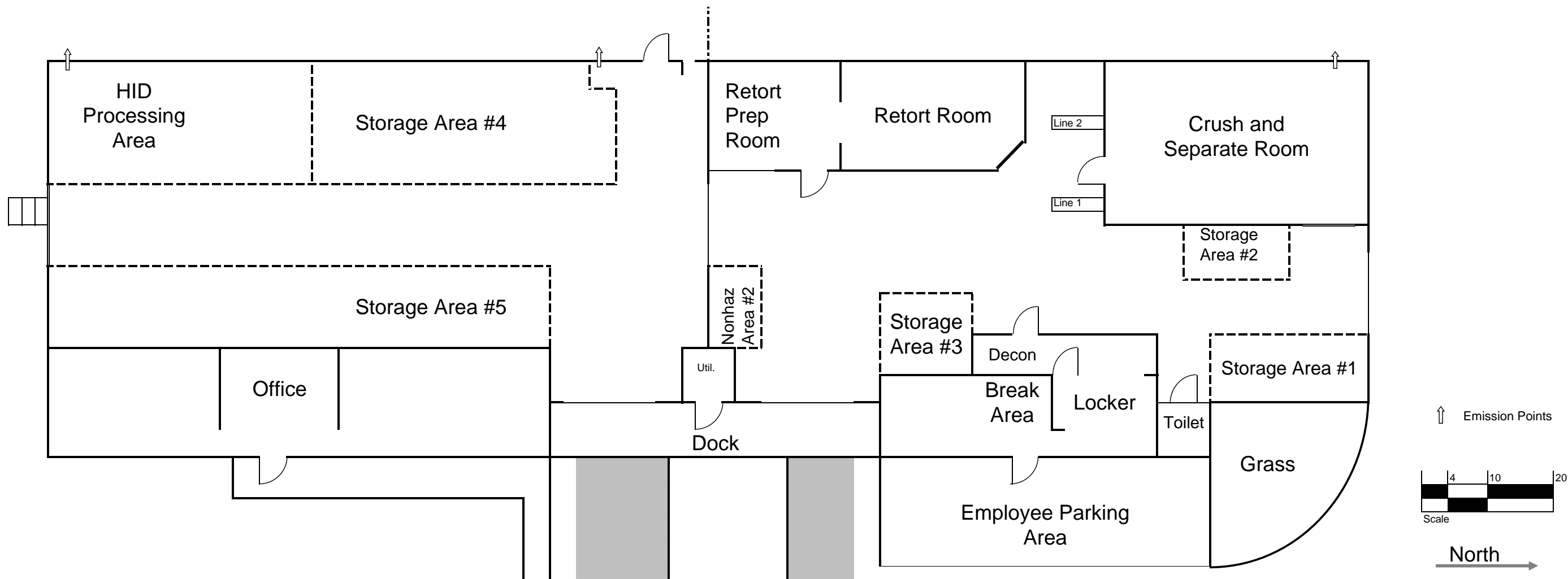
Figure 6



Tallahassee/Leon County GIS

| | |
|--------------------|---|
| Scale: | Management Information Services Leon County Courthouse 301 S. Monroe St, P3 Level Tallahassee, FL 32301 850/606-5504 http://www.tlccgis.org |
| Not To Scale | |
| Date Drawn: | |
| March 10, 2016 | |





Site Plan
Process Emission Points
Figure 8

Veolia ES Technical Solutions, L.L.C.
342 Marpan Lane
Tallahassee, FL 32305

Revised: March 11, 2016

Attachment D-2

Brief Description of Operation, Nature of Business

Veolia ES Technical Solutions, L.L.C. (Veolia) is a full service hazardous waste management company with locations throughout the United States. To service our customers who generate universal waste, Veolia operates four universal waste destination facilities. The Tallahassee, FL facility is one of the four universal waste destination facilities.

The Tallahassee facility is designed to recycle mercury containing devices, including fluorescent lamps, HID lamps and mercury containing manufactured articles (MCMA).

- Fluorescent lamps are recycled using a combination of manual and automated dry separation processes to separate the primary components of the lamps; glass, aluminum and the phosphor powder. Glass and aluminum are shipped off-site for further reuse. The phosphor powder derived from the fluorescent lamps is accumulated on-site and the mercury contained in the powder is reclaimed using a retort oven. In the recycling process small amounts of other scrap metals and plastics are also generated.
- HID lamps are recycled using a combination of manual and automated separation processes to separate the outer lamp glass, brass or aluminum bases and the mercury containing arc tube. The arc tubes are crushed and loaded into containers for retort processing to recover the mercury.
- MCMA is recycled through a combination of manual separation followed by retort processing or the articles may be placed directly into the retort oven.

All fluorescent lamp processing equipment, with the exception of the feed belt, is contained within a separate room that is equipped with special air handling systems. The air handling systems maintain a negative air pressure within the room. The HID process is performed within the controlled environment of the HID machine. Some HID lamps due to their construction, are dismantled by hand, however the arc tubes removed from these lamps are feed into the HID machine for crushing. All phases of the separation process are conducted within a negative pressure enclosure. The retorting of mercury containing materials, including phosphor powder, crushed arc tubes and MCMA, occurs in a separate room with its own air handling systems. The systems impart a negative pressure to the room to control mercury vapors.

Elemental mercury is recovered from the retort operation and shipped to a mercury refiner/seller. This company may sell the mercury as is or may further refine the mercury and repackage for sale for use in the manufacture of new products.

In addition to the recycling of mercury containing lamps and MCMA, the facility also operates as a handler of other universal wastes and non-RCRA-regulated wastes such as computer equipment and lamp ballasts. The facility also conducts hazardous and nonhazardous waste transporter and transfer activities.

Attachment D-3

Daily Design Capacity and Annual Quantities

Daily Design Capacities

| Activity | Material Description | Quantity |
|-----------------------------|---|---|
| Storage | Mercury containing lamps, Mercury containing manufactured articles (MCMA), Mercury containing in-process material and other universal wastes such as universal waste batteries, or non-RCRA hazardous materials | 13,504 ft ³ of lamps, or 844 55 gallon drum equivalents |
| Fluorescent Lamp Processing | Fluorescent Lamps, including straight lamps, circular lamps, u-tube lamps, compact lamps and UV lamps | 156,000 lamps/day (6,500 lamps/hr X 24 hr/day) |
| HID Processing | HID Lamps, including mercury vapor lamps, metal halide lamps and high and low pressure sodium lamps | 96,000 lamps (4,000 lamps/hr X 24 hr/day) |
| Retort Processing | Phosphor powder, MCMA, Crushed Arc Tubes | 3 drums/day |
| | | |

Annual Quantities (Maximum Design Capacity)

| Activity | Material Description | Quantity |
|-----------------------------|---|---|
| Storage | Mercury containing lamps, Mercury containing manufactured articles (MCMA), Mercury containing in-process material and other universal wastes such as universal waste batteries, or non-RCRA hazardous materials | 13,504 ft ³ of lamps, or 844 55 gallon drum equivalents |
| Fluorescent Lamp Processing | Fluorescent Lamps, including straight lamps, circular lamps, u-tube lamps, compact lamps and UV lamps | 56,160,000 lamps (6,500 lamps/hr X 24 hr/day X 360 days/year) |
| HID Processing | HID Lamps, including mercury vapor lamps, metal halide lamps and high and low pressure sodium lamps | 34,560,000 lamps (4,000 lamps/hr X 24 hr/day X 360 days/year) |
| Retort Processing | Phosphor powder, MCMA, Crushed Arc Tubes | 1,080 drums (3 drums/day X 360 days/year) |

Attachment D-4

Maximum Storage Capacity

Below is a table listing the maximum storage capacity by storage area and by material type. The maximum volume of waste to be stored on-site at any one time will not exceed the capacity of the individual storage areas.

Storage Area Capacities

| Description | Quantity |
|--|---|
| Storage Areas #1 - #5, combined Mercury Containing Manufactured Articles (MCMA), Dental Amalgam and Traps, Universal Waste Lamps, Mercury Containing Phosphor Powder, HID Arc Tubes, Prep Room Debris and PPE, Condensate Water, Spent Carbon | 13,504 ft ³ of lamps, or 844 55 gallon drum equivalents |
| Storage Area #1 | 960 ft ³ of lamps, or 60 55 gallon drum equivalents |
| Storage Area #2 | 1,280 ft ³ of lamps, or 80 55 gallon drum equivalents |
| Storage Area #3 | 768 ft ³ of lamps, or 48 55 gallon drum equivalents |
| Storage Area #4 | 4,352 ft ³ of lamps, or 272 55 gallon drum equivalents |
| Storage Area #5 | 6,144 ft ³ of lamps, or 384 55 gallon drum equivalents |
| | |
| South Building Universal Waste Batteries, Non-hazardous Batteries, Lead Acid Batteries, Computers and associated peripherals, CRTs and Televisions, Lamp Ballasts, Other non-hazardous materials | 72 pallets |
| | |
| Glass in roll-offs in North Yard | 100 tons |
| Aluminum in cube boxes | 10 cubic yard boxes (5 Tons) |
| Plastics/Trash in roll-offs adjacent to drive | 30 tons |
| Cardboard in bales in North Yard | 30 tons |
| Elemental Mercury in Prep Room | 500 pounds |

ATTACHMENT D-5

5.0 Operations Plan

5.1 Introduction

Veolia ES Technical Solutions, L.L.C. (Veolia) is currently permitted as a Mercury Recovery and Reclamation Facility under the provisions of Permit Number 71455-HO-007 issued by the Florida Department of Environmental Protection (Department). Veolia is renewing the permit and this operations plan is intended to describe the current mercury recovery and reclamation activities at the facility as well as proposed modifications. This plan addresses the following topics:

General Facility Information
Incoming Material Acceptance Procedures
Outgoing Material Shipments and Documentation
Material Processing Descriptions
Air Pollution Control Technology
Container Storage Areas
Recovered Material Quality Control
Operating Records
Hazard Prevention
Facility Inspection Procedures
Maintenance Procedures
Personnel Training

5.2 General Facility Information:

A general description of the Veolia ES Technical Solutions, LLC (Veolia) facility, as required by 40 CFR 270.14(b) (1), follows:

| | |
|----------------------------|--|
| Company Name: | Veolia ES Technical Solutions, LLC. |
| Corporate Address: | 4760 World Houston Parkway, Suite 100 Houston, TX 77032 |
| Facility Address: | 342 Marpan Lane Tallahassee, FL. 32305 |
| Telephone Number: | 850-877-8299 |
| Facsimile Number: | 850-878-3349 |
| EPA Identification Number: | FL0000207449 |
| Facility Contact: | Matthew Melott, Operations Manager |

Veolia operates a mercury recovery and reclamation facility that provides full-service recycling for articles containing mercury. For the purpose of this plan, mercury-containing manufactured articles (MCMA) includes but is not limited to fluorescent lamps, high intensity discharge lamps, devices containing elemental mercury, dental

amalgam and clean up articles from the clean-up of releases of or components of mercury-containing manufactured articles. Based on the volumes of wastes received and the methods of recycling, fluorescent and HID lamps will be addressed as a category of waste separate from the other types of MCMA. The remaining waste types will be referred to generically as MCMA throughout the plan.

In addition to the mercury recovery and reclamation operations, Veolia also conducts the following operations under the management and direction of the facility:

- On-site Universal Waste Battery accumulation and storage
- On-site Lamp ballast accumulation and storage
- On-site Electronic Waste accumulation, sorting and disassembly
- On-site Hazardous Waste Transfer
- Off-site Universal Waste Transport and Transfer
- Off-site Hazardous Waste Transport
- Off-site PCB Transport and transfer

5.2.1 Company Chronology

| | |
|---|---|
| July 1, 2006 to present FL0000207449 | Veolia ES Technical Solutions, L.L.C. 342 Marpan Lane, Tallahassee, FL 32305 |
| January 2005 to July 1, 2006 FL0000207449 | Onyx Environmental Services, LLC 342 Marpan Lane, Tallahassee, FL 32305 |
| January 2003 to December 2004 FL0000207449 | Onyx Special Services, Inc. 342 Marpan Lane, Tallahassee, FL 32305 |
| January 2000 to January 2003 FL0000207449 | Superior Special Services, Inc. 342 Marpan Lane, Tallahassee, FL 32305 |
| August 1996 to January 2000 FL0000207449 | Recyclights, Inc. 4972 Woodville Hwy, Tallahassee, FL 32305 |

5.2.2 Compliance History of Facility

Inspection dates and any alleged violations and associated Notices of Violation (NOVs) are summarized in this section as reference to the compliance history at the facility.

Table 5.1 Compliance History

| Date | Agency | Program | Description of Violation(s) | Penalty Assessed |
|----------|--------|---------|-----------------------------|------------------|
| 12/18/96 | FL DEP | RCRA | No violations | None |
| 9/5/1997 | FL DEP | RCRA | No violations | None |
| 3/19/98 | FL DEP | RCRA | No violations | None |
| 9/17/99 | FL DEP | RCRA | No violations | None |

| | | | | |
|----------|---------------------|------------------------------|---|---|
| 12/2/99 | FL DEP | RCRA | No violations | None |
| 3/6/00 | FL DEP | Solid Waste | No violations | None |
| 11/16/00 | FL DEP | Solid Waste | No violations | None |
| 1/17/01 | FL DEP | RCRA | Notice of Violation-exceeding Permitted capacity, achieving <99 percent recovery, and not submitting samples in a timely manner | \$6,600.00 (1) |
| 3/9/01 | FL DEP | Solid Waste | No violations | None |
| 8/30/01 | FL DEP | Air | No violations | None |
| 2/13/02 | FL DEP | Solid Waste | No violations | None |
| 5/22/02 | FL DEP & US EPA | RCRA | Improperly sealed container, inadequate aisle space | \$1,234 fine and a Pollution Prevention Project of \$2,275.00 (2) |
| 2/3/03 | FL DEP | RCRA | No violations | None |
| 2/28/03 | FL DEP | Air | No violations | None |
| 5/15/03 | FL DEP | Air | No violations | None |
| 6/3/03 | FL DEP | RCRA | No violations | None |
| 7/14/04 | FL DEP | RCRA | No violations | None |
| 8/11/04 | City of Tallahassee | Water | No violations | None |
| 12/29/04 | FL DEP | Air | No violations | None |
| 4/1/05 | FL DEP | NPDES | No violations | None |
| 4/20/05 | FL DEP | RCRA | No violations | None |
| 9/20/05 | FL DEP | RCRA | Self Report to FLDEP of improper storage of material offsite | \$42,450.00 (3) |
| 10/17/05 | FL Dept of Health | Prescription Drug Inspection | No violations | None |
| 1/30/06 | FL DEP | Air | No violations | None |
| 5/4/06 | FL DEP | RCRA | Storage of material in excess of 10 days on trailers in transfer lot | 2,750.00 (4) |
| 7/18/06 | FL DEP | RCRA | No violations | None |
| 11/15/06 | FL DEP | Air | No violations | None |
| 5/16/07 | FL DEP | RCRA | Residual contaminant level in aluminum in excess of permit limit | \$4,300.00 (5) |
| 5/29/07 | City of Tallahassee | Wastewater | No violations | None |
| 4/2/08 | FL DEP | Air | Only monitoring discharge from HID machine after second carbon filter and not prior to second carbon filter | \$2,500.00 (6) |

| | | | | |
|-----------|--------------------------------|---------------|--|--|
| 8/28/08 | FL DEP | RCRA | Non-compliance letter regarding glass in north lot. Response submitted and no violations cited. | None |
| 3/16/09 | FL DEP & US EPA | RCRA | No violations | None |
| 4/22/09 | FL DEP | Air | No violations | None |
| 1/27/10 | FL DEP | RCRA | No violations | None |
| 4/8/10 | FL DEP | Air | Processing lamps outside a negative pressure area (preparing CFLs for recycling | \$800.00 (7) |
| 6/8/10 | FL DEP | Air | No violations | None |
| 12/7/10 | FL DEP & US EPA | RCRA | Warning letter issued NOV - temporary placement of containers outside of processing building, container missing accumulation start date, failure to implement contingency plan for small spill of glass on soil. | \$18,600.00 with \$6,100.00 offset by P2 project (8) |
| 8/1/2011 | FLDEP | Air Resources | Possible issue with two sample points | No further action |
| 8/1/2011 | USEPA | PCB's | No violations noted | |
| 9/12/2011 | FL DEP | Air Resources | NOV - Exceeding permitted limit between carbon filters on retort equipment | \$1,300.00 (9) |
| 6/11/2012 | FL DEP | RCRA | No violations noted - report pending | |
| 8-20-12 | FL DEP | Air | No Violations | None |
| 10-16-12 | US EPA & FL DEP | RCRA | No Violations | None |
| 11-6-12 | City of Tallahassee/ Leon Cnty | Water | No Violations | None |
| 12-11-13 | FL DEP | Air | No Violations | None |
| 1-7-14 | FL DEP | RCRA | No Violations | None |
| 9-3-14 | FL DEP | Water | No Violations | None |
| 6/2/2015 | FL DEP | RCRA | No violations noted | None |

| | | | | |
|------------|----------------------|------|----------------|--|
| 12/17/2015 | FL DEP and US EPA | RCRA | Report pending | |
|------------|----------------------|------|----------------|--|

Footnote 1- Superior Special Services was inspected by Florida Department of Environmental Protection (FLDEP) on January 17, 2001. The inspection revealed violations for exceedance of storage capacity, not submitting samples for analytical testing in a timely manner, and not able to demonstrate 99 percent recovery of mercury in material processed at the facility. A warning letter was issued by FLDEP on February 26, 2001. A consent order was issued by FLDEP on April 26, 2001 with penalties of \$6,100.00 for violations and \$500.00 to reimburse the department for a total of \$6,600.00. Superior made payment of the violation on May 22, 2001.

Footnote 2- Veolia Special Services, Inc was inspected on May 22, 2002 by FLDEP and US EPA in a cross media inspection for RCRA compliance. The inspection revealed violation for employee training, insufficient aisle space, and containers not secured. The inspection also revealed evidence of glass in an unpaved area north of the facility which may have caused cross contamination to that area of the facility. A warning letter was issued by FLDEP on July 29, 2002. A consent order was issued on November 14, 2002 with penalties of \$2,937.00 for violations and \$500.00 to reimburse the department for a total of \$3,437.00. FLDEP offered Veolia the option of doing a pollution prevention program that would offset up to 75 percent of the monetary penalty. Veolia conducted a site soil investigation of the unpaved area and had a third party consultant prepare a report detailing no environmental impact to the area. The cost of this assessment was \$2,275.00 and Veolia paid FLDEP a total of \$1,234.00 to finalize the consent order. A letter was received from FLDEP on June 1, 2004 closing the consent order.

Footnote 3- Veolia Environmental Services, LLC (Veolia) became aware of potential violations involving storing material on trailers offsite at a transfer lot. Veolia conducted a full site investigation and after the findings were complete, Veolia self reported the violations to the Florida Department of Environmental Protection (FLDEP) on September 9, 2005. The department issued a warning letter on October 13, 2005 for unpermitted operations, contingency plan, operating records, and maximum quantity stored. As part of the warning letter from FLDEP an investigation of the transfer lot was order to determine if any of the improperly stored material resulted in environmental impact to the yard area. Veolia hired Environmental Consulting and Technologies (ECT) to conduct soil sampling of the transfer yard. Veolia met with FLDEP on December 14, 2005 to come to an amicable resolution of the matters as outlined in the warning letter. Veolia submitted a report titled Soil Sampling and Analysis for Mercury to FLDEP on February 15, 2006. FLDEP issued a Site Rehabilitation Completion order on June 8, 2006 closing the transfer yard investigation. On June 27, 2006 a Consent Order OGC #06-1307-37HW was issued to Veolia with a proposed fine of \$40,950.00 with \$1,500.00 to reimburse Department costs for a total of \$42,450.00. Veolia made payment of the penalty on August 22, 2006.

Footnote 4- Veolia was inspected by FLDEP at our transfer location located at 4972 Woodville Highway, Tallahassee, FL. The inspection revealed several trailers in the transfer yard that were stored in excess of the allotted ten day storage requirement as allowed by rule. The FLDEP subsequently issued a letter on August 2, 2006 to Veolia which included a copy of the inspection report detailing the storage violations, a warning letter for exceeding storage times, and a consent order OGC #06-1373-37HW with a proposed fine amount of \$2,750.00. Veolia made payment of the penalty on August 22, 2006.

Footnote 5- Veolia was inspected by the FLDEP on May 16, 2007 and during that inspection it was found that the sampling result for one of the weekly samples for aluminum had been entered into the facility records as 1.4 mg/kg whereas the final retest result for this sample was actually 14 mg/kg. The FLDEP subsequently issued a warning letter August 6, 2007 for failure to comply with the residual

mercury standards. A short form consent order was entered into and a penalty of \$4,600 was paid by Veolia.

Footnote 6- Veolia was inspected by the FLDEP on April 2, 2008 and during that inspection it was found that the exhaust monitoring for the automated HID system was occurring following the final carbon canister. The FLDEP subsequently issued a warning letter May 19, 2008 identifying the monitoring of the exhaust discharge after the final carbon, as opposed to between the primary and final carbon absorbers, and failing to record the results of the monitoring on the retort room air handling system as a potential violations. At no time did the actual discharge of mercury exceed any regulatory limit. A short form consent order was entered into and a penalty of \$2,250 was paid by Veolia.

Footnote 7- Veolia was inspected by the FLDEP on April 8, 2010 and during that the preparation of compact fluorescent lamps for recycling was occurring outside of a negative pressure area. The FLDEP subsequently issued a warning letter May 18, 2010 citing the processing of compact fluorescent lamps outside a negative pressure area as a potential violation. A short form consent order was entered into and a penalty of \$800 was paid by Veolia.

Footnote 8- Veolia was inspected by the FLDEP on December 7, 2010. As a result of that inspection the FLDEP has issued a warning letter alleging six violations of the hazardous waste and mercury recovery facility regulations. Veolia has submitted a response to the warning letter. A short form consent order was entered into and a penalty of \$18,600 was assessed with an offset of \$6,100 for the implementation of a pollution prevention program. The penalty amount of \$12,500 was paid by Veolia and the pollution prevention project was completed in November 2011.

Footnote 9- Veolia was inspected by the FLDEP on August 10, 2011 and during that inspection it was found that the exhaust monitoring data recorded for the retort system exceeded the authorized permit limit on June 24 and August 1-5, 2011. The FLDEP subsequently issued a warning letter September 12, 2008 alleging a violation of the pollution control permit requirements. A short form consent order was entered into and a penalty of \$1,300 was paid by Veolia.

5.3 Incoming Material Acceptance Procedures:

All waste materials brought into or through the facility must be profiled and entered into the waste tracking system. Profiles are completed by the generator or completed by Veolia based upon information provided by the generator of the waste prior to receipt and are kept on file at the facility. Veolia uses three different types of profiles for the materials received.

Prior to receipt of a waste at the Veolia facility, specific waste evaluation and acceptance procedures are employed to qualify a generator's waste materials for acceptance and to ascertain RCRA status, chemical and physical characteristics, and compatibility with the on-site recycling operations or availability of off-site outlets for the material. Veolia has developed a tiered process to acquire the necessary data and conduct this evaluation. There are three categories of approvals under this program:

- **Standard Approvals**, this category applies to universal wastes. Standard material profiles have been developed for these wastes and are maintained on file at the facility.

- Generic Approvals, this category applies to materials that are not federal universal wastes; however, there is little variation between generators yet the materials may be subject to varying degrees of regulation, requiring additional review and evaluation.
- Case-by-case Approvals, this category applies to waste that may vary between generators and requires a detailed review of the physical and chemical properties of the material prior to approval.

The written generator notification as required under 40 CFR 264.12(b) may vary from generator to generator depending on the type of material that the generator is shipping to Veolia and the type of contract/arrangements that the generator has in place. This notification may take the form of an Approval Letter, be contained in a Quotation, printed directly on packaging materials provided to generators by Veolia, or some other form of written communication as deemed appropriate at the discretion of the facility. An example of an Approval Letter is included in Appendix D-5-I to this Attachment.

Since the facility only accepts mercury containing manufactured articles and clean up articles and PPE from handling of manufactured articles, generator knowledge will typically be sufficient to properly characterize the waste. If at any point during the approvals process, analytical testing is needed to provide additional information, generators will be required to submit analytical data obtained using methods specified by the US EPA or FLDEP as applicable.

5.3.1 Standard Approvals

Once Veolia has been notified by a generator that they wish to ship materials subject to the standard approvals process, the generator's information will be recorded and the generator will be notified in writing that Veolia has the appropriate licenses and processing capabilities to accept their material for recycling. Since these wastes are universally generated and will not vary from generator to generator, the generators of these types of materials will not be required to submit a site specific waste material profile sheet for waste contained in this category.

5.3.2 Generic Approvals

Generators wishing to ship materials contained in the generic approvals category will be required to submit a site specific waste material profile sheet. The waste material profile sheet must contain specific information regarding the identity of the waste, physical and chemical properties of the waste, and the regulatory status of the waste. This information will then be reviewed by the Operations Manager or his designee to ensure that the material can be received at the facility. Once the material has been approved the generator will be notified in writing that the facility has the appropriate licenses and the processing capabilities to accept the waste. A sample waste material profile sheet is included as Appendix D-5-I to this Attachment.

5.3.3 Case-by-case Approvals

Generators wishing to ship materials contained in the case-by-case approvals category will be required to submit a site specific waste material profile sheet. The waste material profile sheet must contain specific information regarding the identity of the waste, physical and chemical properties of the waste, and the regulatory status of the waste. This information will then be reviewed by the Operations Manager or his/her designee and by corporate approvals staff to ensure that the material can be received at the facility. Once the material has been approved the generator will be notified in writing that the facility has the appropriate licenses and the processing capabilities to accept the waste. A sample waste material profile sheet is included as Appendix D-5-I to this Attachment.

As part of the above referenced procedures, Veolia staff will assign a product code to each profile. The product code is an internally assigned code designating the type of material, the type of process to be used for the management of the material and links the material to pricing categories. A list containing common product codes used by the facility is included below along with a reference to the applicable product codes and approvals category. Product codes may be added or may include a suffix that may be added to one of the codes listed below which further identifies the material.

5.3.4 Common Product Codes and Waste Descriptions

5.3.4.1 Lamps

| Product Code | Description | Approval Category |
|--------------|-------------------------------|-------------------|
| LP-F | Fluorescent Lamps | Standard |
| LP-FCIRC | Circular Fluorescent Lamps | Standard |
| LP-FCMP | Compact Fluorescent Lamps | Standard |
| LP-FDM | Crushed Lamps | Standard |
| LP-FSS | Shielded Fluorescent Lamps | Standard |
| LP-FUT | U-Tube Lamps | Standard |
| LP-FUV | UV Fluorescent Lamps | Standard |
| LP-H | HID Lamps | Standard |
| LP-MH01 | Metal Halide Lamps | Standard |
| LP-MISC | Miscellaneous Specialty Lamps | Standard |
| LP-MV01 | Mercury Vapor Lamps | Standard |
| LP-NEON | Neon Lamps | Standard |
| LP-SHP | High Pressure Sodium Lamps | Standard |

5.3.4.2 Mercury

| Product Code | Description | Approval Category |
|--------------|--|-------------------|
| MC-BATT | Mercury Batteries | Standard |
| MC-AMALG | Dental Amalgam | Generic |
| MC-DE | Mercury Contaminated Clean-up Articles and PPE | Generic |

| | | |
|------------|--|--------------|
| MC-HG | Mercury | Generic |
| MC-HGREG | Mercury Containing Gas Regulators | Generic |
| MC-LABPACK | Mercury Containing Lab packs, used for packages contained mixed types of acceptable wastes | Case-by-case |
| MC-MA | Mercury Containing Articles | Standard |
| MC-PD | Phosphor Powder | Generic |

Product codes are internally generated codes which may be periodically updated or revised. However, these revisions will not alter the types of materials being received by Veolia.

5.3.5 Scheduling Material Into the Facility

There are four methods by which materials may be transported to the facility:

- Generator self transport
- Common carrier transport
- Generator arranged transport, and
- Veolia arranged transport.

5.3.5.1 Generator self transport and common carrier transport

In order to promote the recycling of fluorescent lamps from small businesses, Veolia has developed and marketed a line of packaging which includes the prepayment for the transport and recycling of the materials. Under this program, a generator purchases the container, fills the container with the designated universal waste, calls a phone number that is preprinted on the packaging to schedule the pick up of the package by a common carrier, such as FedEx Ground, and the container is transported to Veolia's facility. The delivery of these containers and generator self transported universal waste will arrive at the facility without prior notice to the facility. FedEx Ground makes their deliveries at approximately the same time each day and accommodations are made at the facility to accept the delivery of these shipments. With respect to other self-transported materials, the deliveries are of a small volume and the nature of the material, only universal wastes, allow the facility to accept these materials as they arrive. (See Section 5.3.6)

5.3.5.2 Generator arranged transport

In the case where a generator arranges for the transportation of materials to the facility, the generator will contact the facility and request a permission to deliver the material on a particular date. If the delivery does not conflict with other deliveries already scheduled the generator will be given an appointment. If there is a conflict an alternate date for the delivery of the material will be proposed. Under this scenario, the generator, or his agent is responsible for ensuring that the materials are accompanied by the appropriate shipping papers. If the material is subject to the hazardous waste manifesting requirements, the procedures outlined

below will be used by the facility for the completion and distribution of the manifest.

5.3.5.3 Veolia arranged transport

Generators will contact Veolia to request the pick up of approved materials. Customer Services Representatives will then enter all of the pertinent customer information into our waste tracking system. The system tracks the customer's location of pickup, billing address, pickup contacts, phone numbers, and what material is scheduled to be picked up. Once this information is entered into the waste tracking system it creates an open sales order which transportation can then put onto the schedule for pickup. Customers are then notified by phone of the day and approximate time that the material will be picked up. Veolia will normally assist the customer in preparation of the shipping documents for the pickup.

5.3.5.4 Completion of the Uniform Hazardous Waste Manifest

Before collection or delivery occurs, the customer will provide the Veolia with the following information:

- Type and quantity of containers
- Material classification(s)
- Scaled or estimated weight(s) and/or lamp counts
- Date(s) accumulation began
- Labels, placards and markings on containers
- Generator's USEPA ID number
- Generator's State ID number (if applicable)
- State hazardous waste permit number (if applicable)
- Transporter ID numbers, dates, and times

Based on the above information, the appropriate federal or state manifest, non-hazardous waste manifest, or bill of lading will be completed to the extent possible and either mailed to the customer prior to scheduled shipment or accompany the transport vehicle. Upon arrival at the generator's facility, any necessary changes are made to the manifest, such as entering the actual quantity of material to be transported, and it is subsequently signed and dated by the generator and transporter according to procedures under 40 CFR 262.20-23. Upon receipt of material by Veolia, the manifest is signed and dated by the receiving agent and significant discrepancies are noted, pursuant to 40 CFR 264.70-72.

5.3.6 Receipt of Material Into the Facility

Upon arrival of a shipment at the Veolia facility, the following sequence of events occurs:

- a. The driver presents the paperwork for the load to the shipping and receiving coordinator or designated representative trained to receive material into the facility.
- b. Veolia personnel will compare shipping documents and material description against the material profiles and the material actually received.
- c. If the shipping documents conform to the material profile, the truck will be unloaded by personnel qualified to operate a forklift or pallet jack and staged in the loading dock area or on the paved area immediately north of the facility for inspection.
- d. The containers are visually inspected to verify that the shipment contains only the waste material as described in the material profile and shipping document.
- e. Upon verification, the shipping documents are signed acknowledging receipt of the material at the facility and copies of the shipping document/hazardous waste manifest are then forwarded to the generator (and customer if they are not the same) within 30 days.
- f. Should Veolia deny acceptance of the delivery, the shipment will be returned to the generator or shipped to an alternate facility selected by the generator.
- g. Upon off-loading, each container is logged into the waste tracking system and placed into an appropriate storage area or transferred directly to a processing area.
- h. A Veolia receiving record is executed to record all pertinent information. Sample Receiving Reports are included in Appendix D-5-I to this Attachment.

5.3.6.1 Waste Rejection

Wastes will be rejected for the following reasons:

- Waste does not conform to the material profile and the waste contains materials that the facility is not permitted to accept.
- Other wastes that cannot be accepted by Veolia are included in the shipment.
- Unscheduled load that would cause Veolia to exceed permitted storage limit.

5.3.6.1.2 Rejection Procedures

Upon discovery of the material that cannot be accepted at the facility, a generator will be contacted and notified of the unacceptable material. The facility will request direction from the generator as to whether the material is to be forwarded to an alternate facility or returned to the generator. Based on the instructions from the generator the following procedures will be used to document the rejected shipment.

For materials shipped to the facility on a uniform hazardous waste manifest, the facility will follow the procedure contained in 40 CFR 264.72 for the manifesting of rejected shipments. Any material designated to be rejected that cannot immediately be reloaded for off-site shipment will be marked with a

label noting the material as non-conforming and will be placed into one of the container storage areas. If the material is a liquid it will be placed on a spill containment pallet for storage. Once a material is designated for rejection the facility will have 60 days to arrange for the transport of the material to an alternate facility or back to the generator.

If a non-conforming material is discovered after the material has been accepted by the facility, the generator will be notified and the material will be rejected in accordance with the above rejection procedures.

For materials that are not subject to uniform hazardous waste manifesting, the facility will note that the material is being rejected on the original bill-of-lading and complete a new bill-of-lading for use in shipping the material back to the generator or to an alternate facility.

5.3.6.2 Manifest Discrepancies

Upon receipt of materials at the Veolia facility, shipments are checked for significant discrepancies, according to 40 CFR 264.72. Discrepancies are noted on the manifest by the receiving personnel. Discrepancies in quantity or type of hazardous waste are reconciled with the generator through telephone calls by Veolia personnel within 15 days following receipt at the Veolia facility. If a significant discrepancy cannot be resolved within 15 days after receipt of the waste, Veolia shall immediately submit a letter report, including a copy of the manifest to the Department.

5.3.6.3 Un-manifested Waste Report

If Veolia receives an un-manifested shipment of hazardous waste not specifically authorized by the regulations, Veolia will prepare and submit an un-manifested waste report to the Department within 15 days of receipt of the un-manifested waste.

5.4 Process Information

To more accurately reflect the nature of the processes that occur on-site, the processes will be addressed in five general categories, material handling, fluorescent lamp processing, HID lamp processing, mercury retort processing, and management of site generated wastes. Below is a listing of some of the materials recycled and generated by the facility.

- Fluorescent Lamp Process
 - Straight lamps,
 - Circular lamps,
 - U-tube lamps, and
 - Compact fluorescent lamps
- High Intensity Discharge Lamp Process

- Mercury vapor lamps,
- High pressure sodium lamps, and
- Metal halide lamps.
- Mercury Retort Process
 - Phosphor powder derived from the recycling of fluorescent lamps,
 - Crushed arc tubes from HID lamps,
 - Devices containing elemental mercury, such as thermometers, thermostats, pressure regulators and switches,
 - Dental amalgam and dental traps and filters, and
 - Clean-up articles (debris) from the clean up of releases of mercury containing manufactured articles,
- Site Generated Wastes
 - Personal Protective Equipment used when handling mercury containing manufactured articles.
 - Spent filter material from lamp processing equipment,
 - Spent carbon from emission control devices, and
 - Waste water from facility cleaning operations and condensate water from retort operations.
 - Other wastes to be evaluated on a case by case basis

5.4.1 Material Handling

For the purpose of this permit, material handling activities as defined below are performed within the internal confines of the building(s):

- movement of containers within the facility,
- staging lamps for recycling,
- staging universal waste batteries, electronic waste or other non-hazardous materials prior to moving them to their designated storage area,
- unpacking and sorting of various lamp types,
- separating lamps and other devices from any packing materials that may be present in the packages, including removing tape from lamps that have been taped together prior to shipment,
- disassembly of lighting fixtures and other electronic equipment, and
- removing lamps from protective plastic tubes or removing plastic coatings from lamps

These activities do not alter the portion of the device that contains the mercury or release elemental mercury. As such these activities may be performed throughout the facility. These activities may periodically be performed within the universal waste storage area.

5.4.2 Fluorescent Lamp Processing

5.4.2.1 Manual Preparation of Lamps for Recycling

A number of lamp types require some type of processing prior to placement into the automated recycling equipment. The purpose of this step is to remove non-recyclable components or to remove components that will cause the failure of the automated recycling equipment. This process includes removing the bases from compact fluorescent lamps and opening and separating the components of broken shattershield lamps.

The manual processing will take place in the space immediately behind lamp line 2 and will be contained within a vinyl curtained area and under negative pressure. This area makes use of the same air handling system as the retort room to supply the negative pressure to the space. The system is comprised of a blower rated for 1500 cubic feet of air per minute and discharged through a series of two carbon filter systems. The exhaust from the carbon filters is then discharge through an exhaust vent located along the west wall just south of the centerline of the building. The exhaust gases are monitored on a daily basis for mercury. When mercury readings approach a regulatory limit the carbon is removed from the system, and shipped off-site for recycling. In addition to the air handling system that provides negative pressure to this area, the use of a downdraft table may also be used in this area for improved work safety.

5.4.2.2 Automated Recycling Systems

The facility is equipped with two processing lines for the recycling of fluorescent lamps. Both lines use the same technology for the separation of the various lamp components.

The fluorescent lamp recycling systems are dry separation processes utilizing both manual and automated systems. The processing equipment is contained within a separate room with an area of approximately 500 square feet located in the northwest corner of the building. This equipment has a maximum design capacity of approximately 52,000 4-foot lamp equivalents per 8-hour shift with an asset recovery rate of approximately 100%. Of total bulb weight, roughly 96% is recovered as glass, 2% as aluminum, less than 2% as phosphor powder and less than 1% as mercury for refining. The equipment is able to process a variety of lamp types and sizes with great efficiency. Routine monitoring of mercury values in all recovered materials, through total mercury testing and TCLP mercury testing when applicable, is standard operating procedure.

Lamps are brought into the mercury recycling area on pallets containing lamps within cardboard boxes or fiber drums. The lamps are brought to the lamp feed staging area where they enter the recycling process. In-feed to the

process consists of pallets moved from storage to a staging area where the shipping containers are opened and the lamps are manually inserted into the system for initial crushing.

The lamps are removed from the boxes, bins or drums and placed onto an in-feed conveyor. In the case of circular, U-tube and certain compact fluorescent lamps, excess plastics and metals are manually removed prior to placement onto the in-feed container. When the removal of these items meets the definition of processing, this activity will be conducted as described above. Where this activity does not alter the mercury containing portion of the lamp and is done at either the staging point for the in-feed conveyor or adjacent to the HID processing area. The lamps then enter a pre-breaker. From the pre-breaker, the lamps are transported to a sizing crusher. The sizing crusher, a dual drum crusher, sizes the material for transfer to the separation equipment. The separation step agitates the lamp components and separates the crushed lamps into glass, aluminum end caps and phosphor powder. The mercury-bearing phosphor powder is collected by a bag tower which consists of filters which trap the powder and purges into a 55 gallon drum for further processing. Recovered glass (cullet) is transferred to a roll-off container for transport off-site for beneficial reuse or recycling. Aluminum end caps are discharged from the separation process to a transfer belt which conveys the aluminum to a secondary crusher. The discharge from this crusher passes through a magnetic separator prior to being discharged to a hopper for accumulation and off-site recycling. The magnetic components separated from the end caps are accumulated and further processed in the retort on-site or transported off-site for mercury reclamation. Cardboard containers are baled and accumulated for recycling. Plastic lamp components and non-recyclable packaging materials are accumulated for off-site recycling or off-site disposal. All byproducts are analyzed for total mercury in accordance with the facility's waste analysis plan contained in Section 8 and shipped to appropriate recyclers.

A fluorescent lamp process flow diagram is included as Figure 5.1. Figure 5.6, Lamp Room Floor Plan, shows the general configuration of the fluorescent lamp processing equipment. Figure 5.7, Side View – Aluminum Management System, shows the configuration of the mechanism to convey the aluminum end caps to the crusher. Figure 5.8, Top View – Aluminum Management System shows the configuration of the aluminum management system separate from the existing lamp processing equipment.

The powder recovery system imparts a negative pressure to the processing equipment and processing room. This system ensures that mercury emissions are controlled and that particulates containing mercury and mercury vapors are collected in the emissions control equipment. The air stream from the equipment is directed first through a bag tower that filters out particulate matter, phosphor powder and glass fines from the lamps. The bag tower

consists of 20 bags that are 95 inches long. The powder collects on the bags causing the pressure drop across the filter to increase. When that pressure drop reaches a set point, below the maximum operating range of the filter, the bags are purged using compressed air. This liberates the powder from the filter media allowing the powder to drop into a collection container. When the exhaust air leaves the bag tower it is then directed through a HEPA filter system to capture any particulates which may pass through the bag tower. Once the air exits the HEPA filter any residual mercury vapor is collected by a series of eight carbon canisters that are connected to the HEPA filter system. The carbon is impregnated with sulfur, which facilitates the adsorption of mercury vapors from the exhaust air. Each canister contains approximately 130 pounds of sulfur impregnated carbon. The exhaust from the carbon filters is then discharged through a stack located at the northwest corner of the building. The exhaust gases are monitored on a daily basis for mercury. When mercury readings approach a regulatory limit the carbon is removed from the system, and shipped off-site for recycling. In addition to the mercury monitoring conducted on the exhaust gases, each emission control device is equipped with a magnahelic that is checked daily to ensure that the system is operating properly. The HEPA filter and carbon canister system have a combined efficiency rating of greater than 99 percent for the capture of mercury emissions from the system.

Veolia is proposing to replace or reconfigure the existing mercury canisters to facilitate the installation of additional handling equipment. See Section 5.5 for a detailed discussion of the emission control equipment.

5.4.3 HID Lamp Processing

5.4.3.1 Manual Processing

HID lamps that cannot be processed by the automated HID process are manually processed to separate the various components of the lamps. This processing occurs in one of two locations within the facility, at the feed station to the HID automated process equipment or in the CFL processing area immediately behind lamp line 2. Manual processing begins with the sorting and removal of any packaging material (the corrugated cardboard sleeves or wrap) used to prevent breakage during transport. This removal of packaging material from the HID lamps is considered material handling and not processing. The next step involved in manually processing HIDs is the removal of the outer globe glass. The remaining base, harness and arc tube are then manually separated. The ceramic or metal base of the lamp is placed into a container for recycling. The arc tube which contains mercury is separated and containerized for further processing. The remaining metal from the HID lamp is containerized for recycling. If necessary to meet recycler specifications, the HID outer glass is run through the lamp processing equipment to properly size the material for off-site shipment. Cardboard

containers are combined with the cardboard from the lamp recycling operation and baled for recycling. Non-recyclable packaging material is placed into the roll-off with the non-recyclable materials from the lamp processing operation for off-site disposal. All byproducts are analyzed for total mercury in accordance with the facility's Quality Control Plan contained in Section 8 and shipped to appropriate recyclers.

The HID arc tubes are further processed by placing the tube into a crusher which breaks the arc tube and sizes it for placement into the retort oven. The crushed arc tubes are collected and consolidated into 55 gallon drums. Full 55 gallon drums are placed into the retort oven for processing. The retorted arc tubes are consolidated and shipped off-site for disposal.

5.4.3.2 Automated HID Process

Veolia uses a custom built HID lamp machine to process various types of HID lamps. The system is comprised of conveyor belts, crushers, and air pollution control equipment to control fugitive mercury emissions.

The HID lamp process is a dry separation process that uses mechanical equipment to separate the components of the HID lamp. The lamps are initially placed onto an incline belt that feeds the automated process. The lamps are then transferred to a conveyor belt which moves the lamp to a squeeze point which breaks the outer glass from the lamp. The outer glass drops into a collection drum and is then transferred to the fluorescent lamp processing equipment for further sizing or is sampled and accumulated for off-site beneficial reuse or recycling. From there the glass goes into a roll-off container for off-site beneficial reuse or recycling. After the outer glass is broken, the remaining components of the lamp are dropped into a roller crusher which breaks the arc tube separating it from the base and metal wire which holds the arc tube in place. The arc tubes are discharged from the crusher into a drum and are collected for retorting. The brass end caps and metal are picked up by a magnet separator and conveyed into another collection drum for recycling. The recovered metals are accumulated and shipped off-site for recycling. The crushed arc tubes are retorted to remove the mercury. The retorted arc tubes are then consolidated and shipped off-site for disposal. Cardboard containers are combined with the cardboard from the lamp recycling operation and baled for recycling. Non-recyclable packaging material is placed into the roll-off with the non-recyclable materials from the fluorescent lamp processing operation for off-site disposal. All byproducts are analyzed for total mercury in accordance with the facility's waste analysis plan contained in Section 8 and shipped to appropriate recyclers.

The process is under negative pressure to the outside and the entire machine is enclosed. The air stream from the equipment is directed first through a bag tower that filters out particulate matter and glass fines from the lamps. The

bag tower consists of 20 bags that are 95 inches long. The particulate matter collects on the bags and at a predetermined interval the bags are purged using compressed air which forces the material into a collection container. When the exhaust air leaves the bag tower it is then directed through a HEPA filter system to capture any particulates which may pass through the bag tower. Once the air exits the HEPA filter any residual mercury vapor is collected by a series of six carbon canisters that are connected to the HEPA filter system. The carbon is impregnated with sulfur, which facilitates the adsorption of mercury vapors from the exhaust air. Each canister contains approximately 150 pounds of sulfur impregnated carbon. The exhaust from the carbon filters is then discharged through a stack. The exhaust gases are monitored on a daily basis for mercury. When mercury readings approach a regulatory limit the carbon is removed from the system, and shipped off-site for recycling.

An HID Automated Processing flow diagram is attached as Figure 5.2.

5.4.4 Mercury Retort Processing

As part of the mercury recycling process, the mercury retort operation consists of a completely enclosed room located within the same building as the lamp recycling operation and immediately to the south of the lamp feed station. Initially, mercury-containing devices are disassembled using pneumatic or manual equipment within the prep area of the retort room. Clean metals, glass and plastics removed from intact devices are segregated for recycling or disposal. Once the metals, glass, and plastics have been recovered from the device, where possible, the elemental mercury is drained from the device into a mercury flask. The remaining components are consolidated into a drum for placement into the retort oven. During consolidation, the drum is kept within the prep room. In addition to processing mercury containing devices the retorts are used to recover elemental mercury from drums of mercury containing phosphor powder and crushed arc tubes generated in the lamp recycling operation.

The retort operation is comprised of an oven which is used to heat the mercury containing waste, liberating mercury vapors. The mercury vapors are drawn off the oven using a vacuum pump and are pulled through a series of heat exchangers. Within the heat exchangers the mercury is condensed back into a liquid form. The liquid mercury is then decanted from the collection point on the heat exchangers and consolidated into a mercury flask. Once the mercury flask is filled, the mercury is sold to other companies for repackaging and sale or additional refining. In accordance with the Boiler and Industrial Furnace (BIF) regulations contained in 40 CFR 266.100, only inorganic materials or specific organic materials contained in Appendix 13 of 40 CFR 261 may be processed in the retort oven. Furthermore any materials processed in the retort must contain recoverable levels of mercury. As such, all retort materials will be visually inspected prior to retort processing. Any organic materials, such as

rubber gloves, tyvek suits and plastic sheeting that appear to be uncontaminated will be segregated from the retort material and accumulated for off-site disposal.

5.4.5 Site Generated Wastes

As part of the mercury recycling processes, Veolia generates the below listed waste streams for which there are currently no viable markets for recycling or beneficial reuse of the materials.

5.4.5.1 PPE from Lamp Processing

In order to protect employee health, Veolia has conducted a thorough review of the lamp recycling operation and determined what personal protective equipment (PPE) is necessary for employees to wear while working in this area. The PPE required for use in this area is defined in the Employee Health and Safety Plan included in Attachment 7. Spent PPE is accumulated in cubic yard boxes and is stored in the area adjacent to staging area. Based on past analytical testing, this material does not fail the TCLP for mercury and is managed as a non-hazardous waste. This material will be periodically retested in accordance with the quality control procedures contained in Attachment 8.

5.4.5.2 PPE and debris from retort operations

In order to protect employee health, Veolia has conducted a thorough review of the retort operation and determined what personal protective equipment (PPE) is necessary for employees to wear while working in this area. The PPE required for use in this area is defined in the Employee Health and Safety Plan included in Attachment 7. In addition to spent PPE this waste stream also includes non-recyclable non-contact materials removed from mercury containing manufactured articles. This waste stream is accumulated in 55 gallon drums or cubic yard boxes and when full is stored in one of the storage areas within the facility. This material has a high degree of variability and levels of contamination can vary significantly. As such, this material will be assumed to be a hazardous waste and will be managed in accordance with the land disposal restriction standards for hazardous debris. Although this waste has the potential for high levels of contamination, work practices have been established to minimize this potential and to meet treatment facility acceptance requirements. . This material will be periodically tested in accordance with the quality control procedures contained in Attachment 8.

5.4.5.3 Retort Residues (excluding retorted phosphor powder)

As part of the retort operation Veolia will generate residues from the retorting of mercury containing articles that is a mixture of metals, glass and other inorganic residues. Because of the nature of the material, viable recycling markets are not currently available. This material is accumulated in 55 gallon

drums or cubic yard boxes and stored in one of the storage areas within the facility. Once a sufficient quantity of the material is accumulated, the material will be sampled in accordance with the quality control procedures contained in Attachment 8 and shipped off-site for disposal. In the event that the material does not meet the quality control standards required of this material, it will be re-sampled or reprocessed in the retort.

5.4.5.4 Condensate Water

As part of retort operation, water contained in wastes and humidity from the ambient air that is drawn into the oven is condensed in the heat exchangers. Additionally, water from the ambient air in the room will condense on the exterior of the heat exchangers. The water is collected and placed into 55 gallon drums. Once a drum is filled the drum is moved to one of the storage areas to await shipment off-site for recycling or disposal. In addition to condensate water, the facility will occasionally generate mop/decon water. This material is collected and combined with the condensate water for off-site management as hazardous waste or is tested and disposed in accordance with the results of the analysis.

5.4.5.5 Spent Carbon

The air emission control devices use a sulfur impregnated activated carbon for the control of mercury vapors. As air emissions approach an emission limit, the carbon is removed and replaced with new carbon. The spent carbon is accumulated in 55 gallon drums and stored in one of the drum storage areas to await shipment off-site for recycling or disposal.

5.5 Air Pollution Control Systems

All mercury recycling processes located at the Veolia facility are equipped with emission control devices in accordance with Rule 62-296.417 F.A.C.

5.5.1 Fluorescent Lamp Processing Equipment

The emission controls systems on the fluorescent lamp processing equipment currently consists of one bag tower followed by a secondary panel filter for the control of particulate matter and a series of carbon filters for the control of mercury vapors. As part of this renewal, Veolia is proposing to add a second air emission control system to increase the air flow through the processing equipment and provide greater control of fugitive emissions.

5.5.1.1 Air Flow Rates

| | |
|-------------------|-----------|
| Maximum flow rate | 1500 ACFM |
| Average flow rate | 1200 ACFM |

| | | |
|---|---------------|-------------------------|
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|---|---------------|-------------------------|

5.5.1.2 Bag Tower Specification

The bag tower currently in use on the fluorescent lamp processing line is a SLY, Inc. SBR-45-8 bag tower. This tower is equipped with 20 cloth bag filters with a surface area of 12 ft² per bag for a total surface area of 240 ft². At the maximum flow rate this will result in a 5:1 air to cloth ratio. Based on manufacturer data this ratio of air to cloth will provide for a maximum emission of 0.02 gr./CF (0.458 g/m³). A copy of a letter from the manufacturer is included in Appendix D-5-II to this Attachment.

Veolia is proposing to add a second bag tower to the lamp processing operation. The second bag tower will be designed and constructed to provide the same capture efficiency as described for the SLY bag tower currently is use at the facility.

5.5.1.3 Secondary Pleated Filter

The air handling system for the fluorescent lamp processing equipment is designed to use a commercially available standard size pleated air filter (24" x 24" x 11 ½"). As such, a number of manufacturers offer stock filters that can be used in this application. The filters are at least 95% efficient to a particle size of 0.3 microns. The filters are constructed of a microfiber paper or glass microfiber material supported by corrugated metal separators between the pleats of the filter. Technical specifications for two commercially available filters are included Appendix D-5-II to this Attachment.

Veolia is proposing to add a second pleated air filter associated with the second bag tower proposed for installation. This filter will utilize the same size and style of filter currently in use and provide the same capture efficiency as described above.

5.5.1.4 Carbon Filtration

The carbon filtration system on the fluorescent lamp processing equipment is currently comprised of eight carbon canisters configured to have four canisters serving as the primary carbon filters, two canisters as secondary filters and two carbon canisters as a tertiary filter. Figure 5.6 shows a graphic representation of the configuration. The carbon canisters are cylindrical with overall dimensions of 16 inches in diameter and 48 inches tall. Each canister is capable of holding 130 pounds of activated carbon. This configuration provides for a residence time of 0.4 seconds in the primary filter and an overall residence time of greater than 0.8 seconds of residence time within the carbon bed. The system uses a sulfur impregnated activated carbon for the removal of mercury vapors. Technical specifications for the activated carbon are included in Appendix D-5-II to this Attachment.

Veolia is proposing to replace the current carbon canister train with two dual filter carbon filter systems. These filter systems will be comprised of commercially available carbon canisters design for vapor capture. The canisters will be configured in series providing a redundant filter system as required by the air pollution control general permit for mercury recovery facilities. These carbon canisters will provide for a residence time of equal to or greater than 0.3 seconds per filter. These filters will utilize the same carbon as is currently used by the facility.

5.5.2 HID Lamp Processing Equipment

The emission controls systems on the automated HID lamp processing equipment consist of a bag tower followed by a secondary panel filter for the control of particulate matter and a series of carbon filters for the control of mercury vapors. The bag tower and panel filter used on the HID lamp processing equipment is the same as that used on the fluorescent lamp processing equipment. The carbon filters are configured in the same pattern as that of the fluorescent lamp equipment but the dimension of the canisters is slightly different.

5.5.2.1 Air Flow Rates

| | |
|-------------------|-----------|
| Maximum flow rate | 1500 ACFM |
| Average flow rate | 1200 ACFM |

5.5.2.2 Bag Tower Specification

The bag tower in use on the HID lamp processing equipment was manufactured by SLY, Inc. This tower is equipped with 20 cloth bag filters with a surface area of 12 ft² per bag for a total surface area of 240 ft². At the maximum flow rate this will result in a 5:1 air to cloth ratio. Based on manufacturer data this ratio of air to cloth will provide for a maximum emission of 0.02 gr./CF (0.458 g/m³). A copy of a letter from the manufacturer is included Appendix D-5-II to this Attachment.

5.5.2.3 Secondary Pleated Filter

The air handling system for the HID lamp processing equipment is designed to use a commercially available standard size pleated air filter (24" x 24" x 1 1/2"). As such, a number of manufacturers offer stock filters that can be used in this application. The filters are at least 95% efficient to a particle size of 0.3 microns. The filters are constructed of a microfiber paper or glass microfiber material supported by corrugated metal separators between the pleats of the filter. Technical specifications for two commercially available filters are included in Appendix D-5-II to this Attachment.

5.5.2.4 Carbon Filtration

The carbon filtration system on the HID lamp processing equipment is comprised of six carbon canisters configured to have four canisters serving as the primary carbon filters and two canisters as secondary filters. Figure 5.9 in shows a graphic representation of the configuration. The carbon canisters are cylindrical with overall dimensions of 25 inches in diameter and 38 inches tall. Each canister is capable of holding 175 pounds of activated carbon. The system uses a sulfur impregnated activated carbon for the removal of mercury vapors. Technical specifications for the activated carbon are included in Appendix D-5-II to this Attachment.

5.5.3 Retort Equipment

The emission controls systems on the retort equipment consist of a series of two carbon filters for the control of mercury vapors. The carbon filters are configured in series to provide primary and secondary filtering of exhaust gases. This system discharges to the air handling system that provides negative pressure to the retort and preparation rooms. The air flow rates for this system will range from 30 to 90 CFM.

The carbon filtration system on the retort is comprised of two carbon canisters configured in series. Figure 5.10 shows a graphic representation of the configuration. The carbon canisters are cylindrical with overall dimensions of 16 inches in diameter and 48 inches tall. Each canister is capable of holding 130 pounds of activated carbon. The system uses a sulfur impregnated activated carbon for the removal of mercury vapors. Technical specifications and for the activated carbon are included in Appendix D-5-II to this Attachment.

5.5.4 Fugitive Emission Controls

To prevent fugitive emissions from escaping from the retort room and retort prep room are connected to an air handling system. This system imparts a negative pressure to each of these process areas. The system is comprised of a prefilter, a primary carbon canister, a blower, and secondary carbon filter system.

5.5.4.1 Air Flow Rates

| | |
|-------------------|-----------|
| Maximum flow rate | 1500 ACFM |
| Average flow rate | 1200 ACFM |

5.5.4.2 Primary Carbon Filter

The primary carbon filter is a cylindrical tank with a diameter of 36 inches and an overall height of 90 inches. A total of 1,000 pounds of activated carbon is used in the primary filter. This amount of carbon results in a carbon column of at least 48 inches. With an air flow rate of 1200 CFM, the air stream travels through the filter with a linear velocity of 9.43 ft/sec. At this velocity the air stream has a contact time of 0.42 seconds with the activated carbon.

5.5.4.3 Secondary Carbon Filter

The secondary carbon filter system is comprised of six carbon banks in a parallel configuration. Each bank contains three trays of carbon in series. Each tray is 24 inches wide by 24 inches deep by 3 inches high. Each tray contains one cubic foot of carbon for a total of 18 cubic feet, or 620 pounds of activated carbon.

5.5.5 Internal Mercury Vapor Monitoring

Internal air quality is routinely monitored for mercury vapor in the air. Veolia monitors specific areas of the facility on a daily basis to ensure that the mercury levels are below the OSHA PEL of 0.1 mg/m^3 . The areas where monitoring is performed are shown on the Mercury Vapor Monitoring Log. Veolia takes ambient air readings with a Jerome 431 X mercury analyzer or similar instrument. Air readings are taken in an office area, the warehouse area, and the process equipment areas. The mercury monitoring form will list the sampling location and air monitoring readings obtained. Samples are taken at varying times throughout the work day. The log records the date/time of sampling, location, sampler's name, and mercury vapor reading. A sample Mercury Vapor Monitoring form is included in Appendix D-5-II to this Attachment.

Veolia also does routine Industrial Hygiene monitoring to ensure that personnel are working in a safe environment and that the equipment is operating properly. The IH monitoring results are used to evaluate engineering controls and if additional PPE is necessary to work in a particular area of the facility.

5.5.6 Subpart CC Emission Controls

40 CFR 264 Subpart CC was written to control organic air emissions from tanks, surface impoundments, and containers at hazardous waste treatment, storage and disposal facilities and large quantity generator facilities. The Subpart CC rules apply to those materials that:

- a. are hazardous wastes, and
- b. have a volatile organic (VO) concentration of greater than 500 ppmw.

Veolia does not accept any wastes with a VO concentration in excess of 500 ppmw. This provision is verified through the waste approvals procedures described above and detailed in the Waste Analysis Plan included in Attachment 7.

5.6 Storage Areas and Container Management Practices

As a mercury recovery and reclamation facility, Veolia is required to store all incoming mercury containing universal wastes in designated storage areas. In addition to these requirements, as a large quantity generator of hazardous waste, Veolia may accumulate containers of hazardous waste within designated areas. On-site generated hazardous waste must be stored within the Storage Areas prior to being reclaimed on-site or shipped off-site to another permitted facility. Facility Map, Figure 5.5, shows the location of the each of these storage areas. The storage areas, as shown on Figure 5.5 and as described below define the maximum storage capacity of the facility. However, in order to efficiently operate the facility, other equipment or non-hazardous material may be located within one or more of these storage areas. The placement of this equipment or other non-hazardous material will reduce the actual amount of material authorized to be stored in this areas. However to provide for operational flexibility and to ensure adequate closure funding, each of these areas is being described based on its maximum capacity.

These storage areas will be used primarily for the storage of the following waste types:

- Universal waste lamps that cannot be immediately transferred to the staging area for processing,
- Universal waste mercury containing equipment prior to on-site processing in the retort,
- Mercury containing materials derived from the processing of universal and hazardous waste lamps awaiting on-site processing, and
- Hazardous wastes derived from the recycling of mercury containing universal wastes prior to shipment for recycling or treatment and disposal.

Due to the size and configuration of the facility, it may be necessary to locate a cardboard baler or other non-hazard process equipment and safety equipment within this storage area. When other equipment is located within this storage area, the footprint occupied by the equipment will be deducted from the overall storage capacity. These areas may, on occasion, also be used for the storage of other universal wastes and non-hazardous materials. Due to the limited size of the facility, other universal wastes, such as universal waste batteries, or non-RCRA hazardous materials may be temporarily placed within this area. When other materials are placed into this storage area the overall volume of lamps will be decreased to correspond to the remaining space available.

The storage areas will also be used by employees for the performance of material handling activities including the repackaging of lamps for storage, removing excess packaging materials prior to recycling and removing lamps from protective plastic shields and coatings.

5.6.1 Storage Area #1

Storage Area #1 is located in the northeast corner of the facility. The area is approximately 8' deep by 22' wide and has a capacity for the storage of 7 double-stacked pallets and one single pallet for a total of 15 pallets. This storage configuration will provide for a minimum 2 foot aisle space on each side of the pallet allowing access to all containers for inspection and responding to potential emergencies. With this configuration the storage area has a capacity for 60 drums or 960 cubic feet of lamps. This volume of lamps would be equivalent to the storage of 16,320 4-foot lamp equivalents. The lamp equivalents is based on the following calculations and assumptions.

- A 4'x 1'x 1' box will hold 68 T-12 lamps.
- Each pallet will hold 4 boxes per tier.
- Each pallet can be stacked to a height of 8'
- 4 boxes/tier X 8 tiers/pallet X 68 lamps/box = 2,176 lamps/pallet
- 7.5 pallets X 2,176 lamps/pallet = 16,320 lamps

Figure 5.5 shows the location of these storage areas and the configuration of each of these storage areas.

5.6.2 Storage Area #2

Storage Area #2 is located within the northern portion of the warehouse adjacent to the east wall of the lamp processing room. This area has overall dimensions of 8' deep by 28' wide and has a capacity for the accumulation of 10 double stacked pallets for a total of twenty pallets in this area. This provides an area sufficient to accumulate 80 x 55 gallon drum equivalents. With this configuration the storage area has a capacity for 80 drums or 1280 cubic feet of lamps. This volume of lamps would be equivalent to the storage of 21,760 4-foot lamp equivalents. The lamp equivalents is based on the following calculations and assumptions.

- A 4'x 1'x 1' box will hold 68 T-12 lamps.
- Each pallet will hold 4 boxes per tier.
- Each pallet can be stacked to a height of 8'
- 4 boxes/tier X 8 tiers/pallet X 68 lamps/box = 2,176 lamps/pallet
- 10 pallets X 2,176 lamps/pallet = 21,760 lamps

Figure 5.5 shows the location of these storage areas and the configuration of each of these storage areas.

5.6.3 Storage Area #3

Storage Area #3 is located in the northern half of the facility adjacent to the employee decon room. This area is approximately 16' wide by 8' deep with a capacity of 6 pallet spaces. If each space holds 8 drums on double stacked pallets this equals a total capacity of 48 drums. With this configuration the storage area has a capacity for 48 drums or 768 cubic feet of lamps. This volume of lamps would be equivalent to the storage of 13,056 4-foot lamp equivalents. The lamp equivalents is based on the following calculations and assumptions.

- A 4'x 1'x 1' box will hold 68 T-12 lamps.
- Each pallet will hold 4 boxes per tier.
- Each pallet can be stacked to a height of 8'
- 4 boxes/tier X 8 tiers/pallet X 68 lamps/box = 2,176 lamps/pallet
- 6 pallets X 2,176 lamps/pallet = 13,056 lamps

Figure 5.5 shows the location of these storage areas and the configuration of each of these storage areas.

5.6.4 Storage Area #4

Storage Area #4 is located in the southern portion of the facility. This area is located to the west of the center aisle and is approximately 40' by 20' and has a capacity for the storage of 34 pallet spaces. The total number of pallet spaces is based on 5 pallets per row and 7 rows of pallets with a 2 foot aisle space between each row, with the exception of the northernmost two rows which are only able to store 4 pallets because the carbon filtration system located along the back wall occupies one of the pallet spaces in each row.

With this configuration the storage area has a capacity for 272 drums or 4,352 cubic feet of lamps. This volume of lamps would be equivalent to the storage of 73,984 4-foot lamp equivalents. The lamp equivalents is based on the following calculations and assumptions.

- A 4'x 1'x 1' box will hold 68 T-12 lamps.
- Each pallet will hold 4 boxes per tier.
- Each pallet can be stacked to a height of 8'
- 4 boxes/tier X 8 tiers/pallet X 68 lamps/box = 2,176 lamps/pallet
- 34 pallets X 2,176 lamps/pallet = 73,984 lamps

Figure 5.5 shows the location of these storage areas and the configuration of each of these storage areas.

5.6.5 Storage Area #5

Storage Area #5 is located in the southern portion of the facility. This area is located along the east wall and is approximately 74' by 16' and has a capacity for the storage of 48 pallet spaces. The total number of pallet spaces is based on 4 pallets per row and 12 rows of pallets with a 2 foot aisle space between each row.

With this configuration the storage area has a capacity for 384 drums or 6,144 cubic feet of lamps. This volume of lamps would be equivalent to the storage of 104,448 4-foot lamp equivalents. The lamp equivalents is based on the following calculations and assumptions.

- A 4'x 1'x 1' box will hold 68 T-12 lamps.
- Each pallet will hold 4 boxes per tier.
- Each pallet can be stacked to a height of 8'
- 4 boxes/tier X 8 tiers/pallet X 68 lamps/box = 2,176 lamps/pallet
- 48 pallets X 2,176 lamps/pallet = 104,448 lamps

Figure 5.5 shows the location of these storage areas and the configuration of each of these storage areas.

5.6.6 Non-hazardous Waste Accumulation Area

The facility has one designated non-hazardous waste accumulation areas. This area are located in the center area of the facility near the loading docks. Non-haz Acc. Area, located adjacent to the scale at the loading dock, will be used for the accumulation and storage of electronic components removed from lighting fixtures, such as lamp ballasts, small capacitors from HID fixtures and dry transformers removed from HID and neon lamp fixtures. These devices may arrive at the facility separately or within the fixtures.. This area is approximately 9' by 10' including the space for the scale. Within this space is room for 8 drums. Figure 5.5 shows the location of these storage areas and the configuration of each of these storage areas.

5.6.7 Satellite Accumulation Containers

Veolia generates two waste streams on an ongoing basis which are accumulated in containers that meet the definition of "Satellite Accumulation". These waste streams are phosphor powder and flammable liquids from aerosol cans. The containers used to accumulate these hazardous wastes must meet the following requirements.

- Container is stored at or near the place where the waste is generated, and under the control of the operator of the process generating the waste.
- No more than 55 gallons of waste is stored at the point of generation.
- The date the container becomes full is marked on the label.
- The container is moved to the 90 day accumulation area or the hazardous waste storage area within 3 days of becoming full.
- The container is inspected weekly.

5.6.8 South Building

In addition to the operations within the mercury recovery and reclamation facility, Veolia also occupies three areas in the building located immediately to the south. An additional area within this building is not occupied by Veolia. The operations in this building include the following:

- Storage and shipping of packaging materials and supplies,
- Storage of maintenance and safety supplies
- E-waste handler activities,
- Universal waste battery handler activities
- Scrap metal and other non-hazardous material handler.

The packaging material storage and shipping is located in the western end of the building. The e-waste, universal waste battery handler activities, and are conducted within the area located in the center of the building. The storage of maintenance and safety supplies is located within the easternmost portion of the areas occupied by Veolia.

Handler activities include the accumulation and storage of e-waste, universal waste batteries, and other non-hazardous material. The other non-hazardous materials will primarily be comprised of scrap metals and materials that are similar to or derived e-waste and universal waste batteries. This may include partially disassembled electronic components and appliances. These materials do not meet any of the characteristics of a hazardous waste or are specifically excluded from regulation.

Handler activities also will include the sorting and disassembly of certain items. The most common of these will be the removal of batteries from hand-held tools and appliances. However, this may also include the disassembly of certain electronic items on a less frequent basis.

This area has the capacity to store 72 pallet spaces of material. This will be comprised of a mixture of universal waste batteries, non-hazardous batteries, electronic waste and non-hazardous items.

5.6.9 Hazardous Waste 10-Day in Transit Material

| | | |
|---|---------------|-------------------------|
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|---|---------------|-------------------------|

Veolia has registered with the FL DEP as a Hazardous Waste Transfer Facility and can store 100 55-gallon drums or 55 gallon drum equivalents of hazardous waste at the facility in trailers or transport vehicles at any given time for a period to not exceed 10 days. The storage areas are either of the trailer storage areas in the loading docks or within the paved portion of the fenced yard. See Figure 1.

The requirements of 62-730.171 are followed including but not limited to:

- Waste is stored in proper DOT containers and is inspected daily when the facility is in operation and 10-Day in transit material is present.
- A 10-Day log is maintained which notes the manifest number for the shipment or other identifying number for a CESQG, the day the material is received and shipped, generators name and EPA/DEP identification number or name and address for a CESQG, amounts of hazardous waste and waste codes associated for each shipment.
- The waste is stored in containers in trailers or transport vehicles on a manmade surface which is capable of preventing spills or releases to the ground.

5.6.10 North Yard

The area immediately north of the mercury recovery and reclamation building is used for the accumulation of processed glass in roll-of containers, empty poly and steel drums and pails, wooden pallets and baled cardboard generated from on-site activities. In addition this area is used for the storage of reusable poly bins and salvage drums for use within the facility as needed. This area may also be used for the placement of storage trailers for equipment and supplies.

The north yard may also used for the unloading and staging of material delivered to the facility in vehicles that are not dock height trucks. These materials are off-loaded, sorted and palletized on the paved area of the north yard then immediately moved into the facility for processing or storage. A second type of staging activity is the staging of outgoing non-hazardous materials prior to shipping. These materials may be temporarily staged in the north yard in order to make final preparations to the containers for shipment. These preparations may include putting new labels or markings on the containers, inspecting containers in order to ensure they are properly closed and sorting the containers to assure they are loaded in the proper order.

This area is also used as a designated parking area for any trailer that may contain manifested hazardous wastes which are on-site as 10 day in-transit materials.

5.7 Container Marking and Labeling

All material that is in process, storage, or transportation must be clearly marked and labeled to communicate the contents of the materials in each container. Veolia uses a variety of labels to accomplish this, these are listed below:

- Generator applied labels and markings – Containers of lamps staged for processing, without being placed into storage will remain marked with generator applied markings. These markings will typically identify the containers as “Universal Waste Lamps”
- Hazardous Waste Label- Hazardous Waste labels are affixed to RCRA hazardous waste containers that are site generated wastes that are designated for off-site shipment. These labels will go on mercury debris containers, mercury contaminated water and containers of spill clean-up materials that are characteristically hazardous.
- In-process Waste Labels – In-process Waste labels are affixed to mercury containing materials that are derived from the lamp recycling process and designated for on-site mercury recovery. These labels will go on phosphor powder drums and crushed arc tubes from HID lamps.
- Universal Waste Label- Universal Waste labels are affixed to lamp, battery, and mercury containing equipment containers. Crushed fluorescent lamps received from off-site will be labeled as a universal waste; however, if the generator of the lamps has chosen to label them as a hazardous waste, these labels will be maintained.
- Other Waste Labels - Other labels will be affixed to each container of non-hazardous and non-RCRA waste to identify the contents of the container. Examples of these types of materials includes lamp ballasts, electronic waste, non-hazardous waste derived from retort processing (retorted phosphor powder, arc tubes and debris), and non hazardous scrap metal containers.
- Unused chemicals, such as, unused carbon, and unused floor sweeping compound will be marked in a manner appropriate to identify the product, such as an original manufacturers label or other GHS compliant labels that indicate the material is an unused product.

Sample labels are included as Figures 5.11 through 5.14.

5.8 Recovered Material Quality Control

All by-products and wastes generated in the recycling of mercury containing materials will be tested on a periodic basis to establish compliance with the 62-737. FAC. Attachment 8, Quality Control Plan, contains a detailed description of the recovered material quality control sampling and testing procedures.

5.9 Outgoing Material Shipments and Documentation

Veolia tracks and maintains accurate records for all off-site shipments to end users. Materials that are shipped off-site from Veolia include: Cullet Crushed Glass, Processed Phosphor Powder, Aluminum End Caps, Retort Residues, and Elemental Mercury. All by-products derived from the recycling of mercury containing lamps will be tested to ensure compliance with Rule 62-737.840(3) F.A.C. In addition to the processed materials Veolia generates additional wastes as part of the facility operations including spent activated carbon and filter material from emission control devices, condensate water from retort operations and used personal protective equipment. Veolia enters all off-site shipments into our waste tracking system which details what type of material is being shipped, container size, weight of shipment, and the destination of the material. If the material must leave the facility on a Hazardous Waste Manifest it is done in accordance with Chapter 62-730, F.A.C. See Quality Control Plan in Attachment 8.

5.10 Operating Record

Veolia maintains written records that document receipt of lamps, MCMA, universal waste batteries, electronic scrap and other non-hazardous wastes associated with batteries and electronics. These records include information on the quantity, source (generator and/or transporter), date received, number of lamps in storage, source of the lamps, amount of other mercury-containing wastes in storage, date shipped to Veolia, products and wastes from recycling, dates products were shipped from the facility, and quantities shipped from the facility. In addition to this information Veolia retains waste analysis results, incident reports, manifests, inspection records (regulatory and facility), closure plan, biennial reports, and employee training records.

5.11 Hazard Prevention

This section contains a discussion of procedures at Veolia to prevent hazards associated with management of universal wastes, mercury containing manufactured articles and the by-products and waste derived from the recycling operations. This section includes a discussion of security measures, inspection protocols, and preparedness and prevention procedures.

5.12 Security

The Veolia facility is located in an industrial park that does not receive a significant volume of traffic from the general public. The west side of the facility is bordered by National Forest and there is no access from the facility yard area. The facility is locked and secured during non business hours and the yard area of the facility is secured by chain link fence. The fence is topped with barbed wires. The exterior of the facility is well-lit at night. Access gates are maintained locked at all times that the facility is not in operation. Access to the building and yard area is only permitted to personnel who have signed into the visitors' log which is maintained in the main office of the facility.

Appropriate warning signs are posted at perimeters and elsewhere in the facility as necessary.

5.12.1 Barrier and Means to Control Entry

During normal business hours access to the facility is controlled. Access to the buildings and the yard areas are available only through the main front building entrances. Personnel outside of the company requiring access to the waste handling portions of the facility must register at the front desk and will be escorted into the facility. Specific personnel, typically the Operations Manager and/or the Operations Supervisor, retain keys to open the gates. In addition to the barriers, internal communication devices are employed, including telephones, and a paging system.

5.12.2 Warning Signs

Appropriate warning signs are posted at the perimeter of the facility and elsewhere in the facility, as needed. These include “No Trespassing” and applicable “Hazardous Materials” signs.

5.12.3 Preparedness and Prevention

The Veolia facility is designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface and ground water that could threaten human health or the environment.

A description of emergency equipment and internal and external communications equipment is provided in the Contingency Plan, contained in Attachment 6.

Veolia’s communication, alarm, fire protection, spill control, and decontamination equipment are periodically tested and inspected to ensure proper operation during an emergency. Veolia’s Inspection Schedule (Attachment 12) includes the inspection checklists for site safety and emergency equipment.

5.12.4 Preventive Procedures, Structures and Equipment

Veolia strives to prevent hazards to human health or the environment through the preventive procedures, structures, and equipment described in this section.

5.13 Loading/Unloading Operations

The loading and unloading of containers transported in dock height vehicles is conducted within the loading dock area. Loading and unloading of vehicles that are not dock height will be conducted on the paved area north of the facility or at the loading dock.

5.13.1 Unloading at the loading docks

The unloading of containers at the loading dock is done by employees who are trained in waste receiving procedures. The containers are off-loaded and transferred into the building and are placed into the receiving/staging area. Containers are then inspected and logged into the facility's waste tracking system. Once the receiving procedures have been completed, the incoming materials are transferred to either the processing area or a storage area.

5.13.2 Unloading in north lot

Under normal circumstances the unloading of containers in the north lot will only occur when delivery of materials is performed in vehicles where the cargo portion of the vehicle is not at dock height and activities on the loading dock prevent the unloading of the vehicles in that area. This includes pick-up trucks, cargo vans typically used by electrical contractors and panel delivery trucks as used by package delivery services such as FedEx Ground. Containers are manually off-loaded and placed onto pallets. The containers are inspected then moved into the building upon conclusion of the off-loading process. Once moved into the building, the materials are logged into the facility's waste tracking system and transferred to either the processing area or a storage area.

5.13.3 Managing improperly packaged containers and material spills

In the event that materials arrive in packaging which does not conform to the universal waste standards, provisions will be made for moving that material directly to the processing area or for the repackaging of the material. In most cases the material will be repackaged during off-loading; however there may be occasions where the material is first moved to a storage area and repacked within the storage area. In the event of a release during off-loading, facility personnel will clean up the spill in accordance with the procedure contained in Attachment 6 for routine or non-routine clean-up activities as appropriate to the scenario.

5.14 Environmental Controls

Environmental controls are required because of the toxicity of mercury. It is a contaminant when introduced into the atmosphere, the soil or ground water. The following controls are installed to minimize the hazard associated with handling of the lamps during the process.

- Processing is conducted within areas that are maintained under negative pressure for the control of particulates and mercury vapors.
- A portable Jerome mercury vapor analyzer, or similar analyzer, is used to monitor mercury vapor concentrations in the air throughout the work place, on a daily basis.
- The atmosphere exhausted from the crusher, separator, and dust collector is treated by carbon filters to remove any mercury in the vapor phase.

5.15 Personal Protective Equipment

Veolia provides personal protective equipment (PPE) to every operations and maintenance employee. The PPE is issued for use during routine operations and for emergency situations. A detailed description of the PPE available at Veolia, its locations, and capabilities is provided in the Contingency Plan contained in Attachment 6

5.16 Prevention of Reaction of Ignitable, Reactive or Incompatible Wastes

Veolia does not receive any ignitable or reactive hazardous wastes at the facility with the exception of materials that are handled as 10-day in transit hazardous waste. The only other potentially incompatible materials received are universal waste batteries. Veolia requires the generators of the universal waste batteries to package the batteries in accordance with the US DOT requirements for the shipment of hazardous materials. As such, incompatible batteries should not be received in the same outer shipping container. If during the visual inspection of the incoming materials, it is identified that the batteries are not properly packaged the batteries are immediately repacked by Veolia personnel.

5.17 Contingency Plan

The Contingency Plan for Veolia, required under 40 CFR 270.14(b)(7) and 40 CFR 264, Subpart D, is included in Section 6 herein.

5.18 Inspection Programs

This section presents the inspection schedule as required by 40 CFR 270.14(b)(5). Additionally, Veolia's inspection program also meets the general requirements of 40 CFR 264.15 and the container requirements of 40 CFR 164.174.

As part of its weekly safety inspection and audit program, Veolia inspects facility areas, structures, and equipment to ensure proper condition and operation. The following is a list of the general safety items that are inspected on a weekly basis:

Egress / Housekeeping
Hazard Communication Information
Material Storage / Handling and Process Equipment
Electrical
Fire Prevention

Emergency Response Contractor Safety

An example of the weekly *Safety Inspection* form is included in our Inspection Program contained in Attachment 12. Veolia conducts daily visual inspections and weekly documented inspections to check for equipment malfunctions, structural deterioration, and any other deficiencies that could threaten human health, safety, or the environment or cause a release of waste materials. Inspections are conducted by assigned qualified individuals. The condition of items being inspected is noted along with corrective actions to be taken, the name of the inspector, and the date of the inspection. When a hazard is imminent or has already occurred, corrective action is taken immediately. The inspection form is reviewed by the Operations Manager to verify the completion of the inspection and that actions were taken, or were scheduled to be taken, to correct deficiencies. Completed inspection forms are maintained in Operations Managers office for review.

The container storage areas and universal waste storage areas are inspected weekly for containers that may be deteriorated (40 CFR 264.174). Loading, unloading, and process areas (or other areas subject to spills) are inspected daily when in use (40 CFR 264.15(b)(4)).

Attachment 12 contains a listing of all regularly scheduled inspections as well as the forms to be used for those inspections.

5.19 Maintenance Programs

Veolia's maintenance program is designed to identify and correct conditions relating to equipment and systems that can cause environmental degradation or endangerment of public health and safety before the equipment or system fails. The preventive maintenance policies and procedures are required to be followed by Veolia personnel at the facility in Tallahassee, Florida.

The preventive maintenance program is facilitated through a number of inspections that take place daily, weekly, quarterly, and annually on the process equipment. Inspection results are communicated to the Operations Manager. The equipment and systems are inspected to ensure that they are operating as per the manufacturer's specifications. A supply of high wear items and replacement parts are maintained in inventory and are available if equipment should breakdown.

5.19.1 Objectives

The objectives of the maintenance program are as follows:

- To ensure that the facility operations are safe
- To determine what maintenance work must be performed
- To document and confirm the actions taken and to measure their effectiveness

5.19.2 Maintenance Notification System

Because Veolia's recycling processes rely heavily on properly functioning equipment and machinery, our employees are trained to quickly identify any malfunctions and subsequently notify the appropriate personnel so that corrective action may be taken. Upon identification of a problem, the employee who discovers the problem immediately notifies the Operation Supervisor. The Operators are responsible for assessing the situation and notifying the Operations Supervisor of the malfunction. Once the Operations Supervisor has dispatched personnel to the work area where the malfunction has occurred, he will work with the Operations Manager to take the necessary corrective actions. Depending on the nature of the problem, corrective actions will vary.

Because Veolia relies on immediate notification of problems in order to maintain operations, problems are identified quickly and resolved in as timely a fashion as possible, depending on the nature of the problem. In order to document significant maintenance activities, Veolia uses a Corrective Action Form or a Maintenance Work Order form, contained in Attachment 12. This form contains information regarding the nature and date of the problem identified a description of the corrective actions taken, and the date the problem was remedied. Each form is signed off by the Operations Manager, who is responsible for reviewing the forms. The Corrective Action Forms are maintained in the Operations Managers office along with the Weekly Inspection Logs.

5.20 Housekeeping Program

The purpose of Veolia's housekeeping / daily visual inspection program is to perform housekeeping practices that will reduce the possibility of accidents, including spills, and safety hazards to facility personnel. It is essential that the facility be operated in a manner providing the greatest degree of safety for employees and visitors. Proper housekeeping assists significantly in providing safe operating conditions. It is the responsibility of each individual to contribute to proper housekeeping by correcting deficiencies where feasible and informing supervisors of housekeeping needs beyond their individual capability. In addition to those items identified on the inspection schedules, housekeeping issues include the following:

| OUTSIDE AREA: | |
|----------------------|--|
| 1. | Perimeter fence will be maintained in a good state of repair. |
| 2. | Grass, trees, shrubs will be cut and trimmed. |
| 3. | Outside storage of spare construction materials and equipment are to be positioned neatly for easy retrieval. The materials stored will be periodically reviewed to ensure there is a need for retention. |
| 4. | The bulk trash container areas will be kept neat with all trash in the container. If there are large items to be discarded which cannot be put in the trash container, they will be neatly stacked near the container. Additional trash pick ups will be arranged if required. |
| 5. | Outside lights are to be maintained in good operating order |
| 6. | Roadway and parking areas are to be maintained in good order. |

ADMINISTRATIVE AREA

1. The entry/reception area, lavatories, and offices will be kept clean at all times.
2. The administrative area is to be cleaned daily.

FACILITY OPERATIONS AREA

1. Ensure proper and orderly storage of all pallets and containers
2. Provide for proper containment and regular refuse pickup and disposal
3. Maintain all areas in a clean condition
4. Debris from any lamps broken during shipment will be cleaned up and processed or placed into waste accumulation drums for storage prior to processing.
5. Debris from any lamps broken during processing will be cleaned up and processed or placed into waste accumulation drums for storage prior to processing. De minimis amounts of broken glass will be cleaned up periodically throughout the day and at the end of each shift or work period. For example, prior to going on break or lunch.
6. Ensure proper storage of containers, equipment, tools, etc. Ensure that there are no obstructions of walkways, pathways, or roadways.
7. Restrooms, showers, lockers, and lunch areas must be clean and orderly.

Appendix D-5-I

Sample Waste Approval and Receiving Forms

| | | |
|---|----------------|-------------------------|
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|---|----------------|-------------------------|



3/24/16

John Doe
TEST COMPANY
123 MAIN STREET

SOMEWHERE FL 33333

Veolia ES Technical Solutions, L.L.C. (Veolia ES) is pleased to notify you that the waste stream listed below has been approved for acceptance at our TALLAHASSEE, FL facility in accordance with all applicable federal, state, and local permits, licenses, and agreements. This approval is based on the information that you have provided to us and is subject to the conditions of approval listed below.

| | |
|----------------------------|-------------------|
| WASTE NAME: | FLUORESCENT LAMPS |
| PROFILE NUMBER: | 00154755 |
| PROFILE WASTE TYPE: | LP-G |

- If the waste arrives with different constituents or is off-specification, you may be subject to applicable surcharges or, if you wish the waste may be returned to you. In addition, Veolia ES may be required to notify the regulatory agencies as directed by regulation.

- The profile number listed above must appear on the shipping paper accompanying the waste.

If you have any questions, or want to schedule the delivery of your waste shipment, please contact our Customer Service department at .

Sincerely,

VEOLIA ES TECHNICAL SOLUTIONS, L.L.C.

A handwritten signature in black ink, appearing to read 'Phillip Ditter'.

Phillip Ditter
EH&S Manager

CC: Regional Sales Manager

Veolia ES Technical Solutions, L.L.C.
1275 Mineral Springs Drive
Port Washington, WI 53074



WASTESTREAM INFORMATION PROFILE

☐ Recertification

WIP Number

Originating Veolia ES Location: Tallahassee, FL

☐ Invoice Address:

☐ Manifest from – blank if direct

Veolia ES TSDF requested _____ Technology requested _____ Generator No. _____ Generator EPA ID No. _____

1. Generator Name _____ Generator State No. _____

Address _____ State Wastestream No. _____

City _____ State _____ Country USA ZIP _____

NAICS (SIC) Code _____ Source _____ Origin _____ Form _____ System Type _____

2. Waste Name _____ Lab or Waste Area _____

3. Process Generating Waste _____

4. Shipping Name _____

Hazard Class _____ UN/NA No. _____ PG _____ RQ amt _____ lb

RQ Desc: 1. _____ 2. _____

DOT Desc: 1. _____ 2. _____

5. Waste Codes _____

Wastewater ☐ Non Wastewater ☐ Sub Category _____

6. Physical and chemical properties (check all that apply)

| | | | | |
|--|--|---|--|---|
| pH a <input type="checkbox"/> < 2 b <input type="checkbox"/> 2 - 5 c <input type="checkbox"/> 5 - 9 d <input type="checkbox"/> 9 - 12.5 e <input type="checkbox"/> > 12.5 _____ exact | Specific Gravity a <input type="checkbox"/> < .8 b <input type="checkbox"/> .8 - 1.0 c <input type="checkbox"/> 1.0 d <input type="checkbox"/> 1.0 - 1.2 e <input type="checkbox"/> > 1.2 _____ exact | Flash Point (F) a <input type="checkbox"/> < 80 b <input type="checkbox"/> 80 - 100 c <input type="checkbox"/> 101 - 140 d <input type="checkbox"/> 141 - 200 e <input type="checkbox"/> > 200 f <input type="checkbox"/> no flash _____ exact | Solids _____ % suspended _____ % settleable _____ % dissolved Free Liquid Range _____ to <u>5</u> % | _____ % ash _____ water solubility _____ BTU/lb |
|--|--|---|--|---|

| | | |
|--|---|--|
| Physical State s <input type="checkbox"/> solid m <input type="checkbox"/> semi-solid l <input type="checkbox"/> liquid p <input type="checkbox"/> pumpable semi-solid f <input type="checkbox"/> flowable powder g <input type="checkbox"/> gas a <input type="checkbox"/> aerosol r <input type="checkbox"/> pressurized liquid d <input type="checkbox"/> debris per 40 CFR 268.45 h <input type="checkbox"/> sharps | Hazardous Characteristics a <input type="checkbox"/> air reactive w <input type="checkbox"/> water reactive c <input type="checkbox"/> cyanide reactive f <input type="checkbox"/> sulfide reactive e <input type="checkbox"/> explosive o <input type="checkbox"/> oxidizing acid p <input type="checkbox"/> peroxide former r <input type="checkbox"/> radioactive or NRC regulated s <input type="checkbox"/> shock sensitive t <input type="checkbox"/> temp sensitive m <input type="checkbox"/> polymerization/monomer n <input type="checkbox"/> OSHA carcinogen I <input type="checkbox"/> infectious h <input type="checkbox"/> inhalation hazard Zone: _____ | Odor a none <input type="checkbox"/> b mild <input type="checkbox"/> c strong <input type="checkbox"/> describe _____ Halogens Br _____ % Bromine Cl _____ % Chlorine F _____ % Fluorine I _____ % Iodine |
|--|---|--|

| | | | | |
|----------------------------|--|--|--|---|
| Layers: | a <input type="checkbox"/> multilayered: | b <input type="checkbox"/> bi-layered: | c <input type="checkbox"/> single phase: | Color _____ _____ _____ |
| | Top Layer | Second Layer | Bottom Layer | |
| Viscosity by Layer: | <input type="checkbox"/> high (syrup) <input type="checkbox"/> medium (oil) <input type="checkbox"/> low (water) <input type="checkbox"/> solid | <input type="checkbox"/> high (syrup) <input type="checkbox"/> medium (oil) <input type="checkbox"/> low (water) <input type="checkbox"/> solid | <input type="checkbox"/> high (syrup) <input type="checkbox"/> medium (oil) <input type="checkbox"/> low (water) <input type="checkbox"/> solid | |
| | | | | |

Used oil y/n _____ HOC <1000 ppm ☐ or > 1000 ppm ☐

page 1 of 2

WIP No. _____

7. Chemical Composition [M = Marine Pollutant, S - Severe Marine Pollutant, O = Ozone Depleting Substance, U = Underlying Hazardous Constituent, B = Benzene NESHAP, T = TRI Chemical, C = OSHA Carcinogen]

| Constituents | Range | Units | Constituents | Range | Units |
|--------------|-------|-------|--------------|-------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Total Composition Must Equal or Exceed 100%

Other:

8. Is the wastestream being imported into the USA?

Yes☐ No☐

9. Does the wastestream contain PCBs regulated by 40CFR?

Yes☐ No☐

PCB concentration _____ppm

10. Is the wastestream subject to the Marine Pollutant Regulations?

Yes☐ No☐

11. Is the wastestream subject to Benzene NESHAP?

Yes☐ No☐

If yes, is the wastestream subject to Notification and Control Requirements?

Yes☐ No☐

Benzene concentration _____ ppm

12. Is the wastestream subject to RCRA subpart CC controls?

Yes☐ No☐

Volatile organic concentration, if known _____ ppmw

CC approved analytical method ☐ Generator Knowledge ☐

13. Is the wastestream from a CERCLA or state mandated cleanup?

Yes☐ No☐

14. Container Information (Identify UN container marking if known)

Packaging: Bulk Solid ☐ Type/Size: _____ Bulk Liquid ☐ Type/Size: _____ Drum ☐Type/Size: _____

Other _____

Shipping Frequency: Units _____ Per Month ☐ Quarter ☐ Year ☐ One Time ☐ Other _____

15. Additional Information:

Is analytical or an MSDS available that describes the waste? Yes ☐ No ☐ If yes, please attach.

GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize sampling of any waste shipment for purposes of recertification.

| | | |
|----------------------|-------|------|
| NAME (PRINT OR TYPE) | PHONE | DATE |
| SIGNATURE | TITLE | |

FACILITY NOTIFICATION

If approved for management, Veolia ES has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

TSDF PROCESSING USE ONLY: PPE REQUIRED No _____ Yes _____ Describe _____

VEOLIA ENVIRONMENTAL SERVICES

WIP INSTRUCTIONS

Veolia ES requires completion of all sections of the Wastestream Information Profile (WIP). Sections not applicable to the wastestream must have N/A written in the space provided.

Documented WIP information is used to comply with TSDF Waste Analysis Plans, RCRA and DOT regulations, Emergency Planning and Community Right-to-Know Act (EPCRA), Pollution Prevention Act, Toxic Release Inventory Report and other regulatory and generator requirements.

MARINE POLLUTANT

- The wastestream is subject to the Marine Pollutant Regulations if:
 1. it is a bulk (>119 gallons) packaging with Marine Pollutant concentration $\geq 10\%$ or Severe Marine Pollutant concentration $\geq 1\%$
or
 2. it is non-bulk Marine Pollutant shipped by vessel (boat) in packages larger than 5 liters (liquid) or 5 kg (solid)
or
 3. it is a non-bulk Severe Marine Pollutant, shipped by vessel (boat) in packages larger than 0.5 liters (liquid) or 0.5 kg (solid).
- Refer to the list of Marine Pollutants.

OZONE DEPLETING SUBSTANCE (ODS)

Refer to the list of Ozone Depleting Substances.

UNDERLYING HAZARDOUS CONSTITUENT (UHC)

Refer to the list of Underlying Hazardous Constituents (40 CFR 268.48)

BENZENE NESHP

- The wastestream is subject to Benzene NESHP notification and control requirements if it:
 1. contains > 10 ppm benzene, **and**
 2. is generated by a chemical manufacturing plant, petroleum refinery or coke by-product recovery plant, **and**
 3. the generator's Total Annual Benzene (TAB) is ≥ 10 Mg/yr

TRI CHEMICAL

- The wastestream is subject to Toxic Release Inventory Reporting if it contains a Section 313 Toxic Chemical and meets Qualifier requirements.

OSHA CARCINOGEN

- OSHA promulgated standards in 1974 to regulate the industrial use of 13 chemicals identified as occupational carcinogens. Exposures are to be controlled through the required use of engineering controls, work practices, and personal protective equipment, including respirators. See 29 CFR 1910.1003-1910.1016 for specific details.

RCRA SUB-PART CC CONTROLS

- Subpart CC Air Emission Control requirements apply to large quantity hazardous waste generators and to treatment, storage, and disposal facilities.
- Waste in containers greater than 0.1 cubic meters (i.e., 26.4 gallons) with greater than 500 ppm volatile organics are subject to this rule., unless otherwise exempted. Allowable controls include DOT approved containers, containers with an adequate cover and closure devices, and containers which operate with no detectable emissions (less than 500 ppm).

LAMP RECEIVING REPORT BY LOAD

LOAD: 214565

| | |
|----------------|--------------|
| DATE RECEIVED: | RECEIVED BY: |
|----------------|--------------|

| | |
|------------|----------------------|
| GENERATOR: | SALES ORDER: 1483550 |
| | DOCUMENT: D7091554 |
| | PROFILE: 828558 |

| | |
|---|------------|
| TSDF: VEOLIA ES TECHNICAL SOLUTIONS, L.L.C. | FL00002074 |
|---|------------|

MANIFEST/BOL & LINE NUMBER: BOL 1483550

NUMBER OF BOXES/DRUMS: _____

FACILITY INSTRUCTIONS:

| PRODUCT | LAMP COUNT |
|--------------------------------|------------|
| LP-F01 | _____ |
| LP-F02 | _____ |
| LP-F03 | _____ |
| LP-F04 | _____ |
| LP-F05 | _____ |
| LP-F06 | _____ |
| LP-F07 | _____ |
| LP-F08 | _____ |
| LP-F09 | _____ |
| LP-F10 | _____ |
| LP-F11 | _____ |
| LP-F12 | _____ |
| LP-FCIRC: Circular | _____ |
| LP-FUT U-Tubes | _____ |
| LP-CMP01 Compact | _____ |
| LP-CMP02 Compact with Ballasts | _____ |
| LP-FSS<4 Shattershield <4ft | _____ |
| LP-FSS>5 Shattershield >5ft | _____ |
| LP-H01 HID | _____ |
| LP-MV01 Mercury Vapor | _____ |
| LP-FUV Ultraviolet | _____ |
| LP-I Incandescent | _____ |
| LP-NEON Neon | _____ |
| LP-FDM Crushed Lamps | _____ |

OFF-SITE SHIPMENT:

NOTE: ANY OTHER ADDITIONAL MATERIALS MUST BE APPROVED BY THE OFFICE AND RECORDED ON A DISCREPANCY FORM BEFORE SIGNING MANIFESTS/BOLS:

BATTERY RECEIVING REPORT BY SALES ORDER

LOAD: 214565

| | |
|----------------|--------------|
| DATE RECEIVED: | RECEIVED BY: |
|----------------|--------------|

| | |
|------------|----------------------|
| GENERATOR: | SALES ORDER: 1485990 |
| | DOCUMENT: D7091603 |

| | |
|---|------------|
| TSDF: VEOLIA ES TECHNICAL SOLUTIONS, L.L.C. | FL00002074 |
|---|------------|

| | |
|---------------------|---|
| PROFILE: 832030 | MANIFEST/BOL & LINE NUMBER: BOL 1485990 |
| PRODUCT: BT-ALK-RE | Recycle - Alkaline Batteries |
| EPA WASTE CODE: N/R | STORAGE LOCATION: _____ |

FACILITY INSTRUCTIONS:

| NO | WGT(P) | TYPE/SIZE | TAPE | SORT | TYPE | WEIGHT (P) | REPACK # |
|------------|--------|-----------|------|------|------------------|------------|----------|
| D7091603-5 | | | | | Lead Acid Wet | | |
| | | | | | Lead Acid Sealed | | |
| | | | | | Alkaline | | |
| | | | | | NiCad - Wet | | |
| | | | | | NiCad - Dry | | |
| | | | | | NiMH | | |
| | | | | | Zinc Carbonaire | | |
| | | | | | Magnesium | | |
| | | | | | Zinc Carbon | | |
| | | | | | Lithium | | |
| | | | | | Silver Oxide | | |
| | | | | | Mercury | | |
| | | | | | Absolyte | | |

OFF-SITE

NOTE: ANY OTHER ADDITIONAL MATERIALS MUST BE APPROVED BY THE OFFICE AND RECORDED ON A DISCREPANCY FORM BEFORE SIGNING MANIFESTS/BOLS:

Appendix D-5-II

Emission Control Equipment Information

| | | |
|---|-----------------|-------------------------|
| U:\ESTLHR1\Secure\Shared\Tallahassee Permit Folder\2016 Renewal\Attachment D-5 Operations Plan March 2016.doc | Appendix D-5-II | Revised: March 22, 2016 |
|---|-----------------|-------------------------|



MIN

July 27, 1994

Mr. Brian Golob
Environmental Manager
RECYCLIGHTS INC.
2010 East Hennepin Ave.
Minneapolis, MN 55413

Reference: Sly Model No. SBR-45-8
Sales Order No. JP7-8826
Emission Statement

Gentlemen:

With reference to the above subject dust collector we offer the following emission statement.

Based on 1200 ACFM, 240 sq. ft. cloth area, A/C ratio: 5:1, and a dust load of 3 to 7 gr/CF inlet we expect the outlet to be no more than 0.02 gr/CF.

We trust the above will meet your requirements.

If you have any questions please do not hesitate to contact us.

Very truly yours,

SLY INCORPORATED

Andy Usis
Technical Service Manager

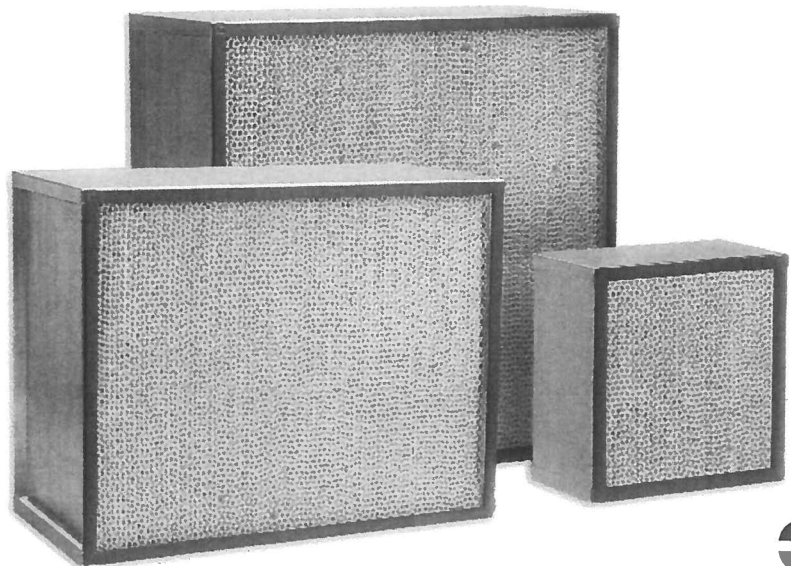
AU/tmk/jp78826.ltr

Genuine
Torit-Built®
Filters
Engineered for
Dust, Fume, and
Mist Collection

Longer
Filter Life
than the
Leading
Competitors

HEPA & 95% DOP Panel Filters

- 99.97% or higher filtration efficiency on 0.3 micron particles for HEPA panel filters
- 95.0% or higher filtration efficiency on 0.3 micron particles for 95% DOP panel filters
- Variety of sizes and airflow capacities to meet specific application requirements
- Sturdy aluminum separator media pack
- Durable aluminum frame construction with built-in handles
- High-density urethane gaskets with interlocking dovetail corners provide reliable seal
- Airflows rated from 500 to 2300 cfm



HEPA & 95% DOP Panel Filters

Take a Closer Look at our Panel Filter Products

Lightweight Aluminum

- Provides built-in corrosion resistance
- Resists swelling in moist conditions
- Less weight than wood board, galvanized, or stainless steel frames

Proven Separator Pack Design

- Creates uniform flow channels
- Every pleat has positive separation

Filter Media

- Our HEPA and 95% DOP medias both outperform the leading competitors
- Proprietary, premium materials
- Non-glass fiber content provides greater media strength
- Enhanced oil loading capabilities in both HEPA and 95% DOP

Built-In Handles

- For easier maintenance

Expanded Metal Liners

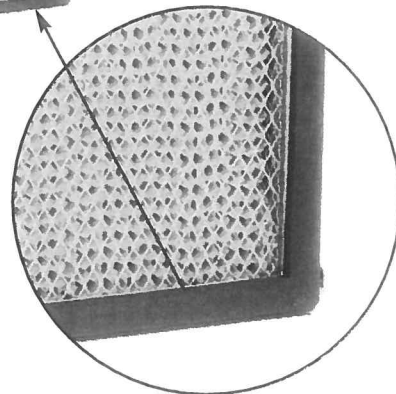
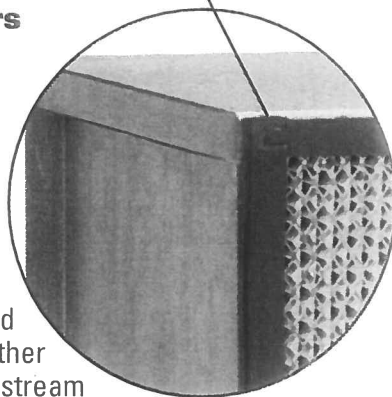
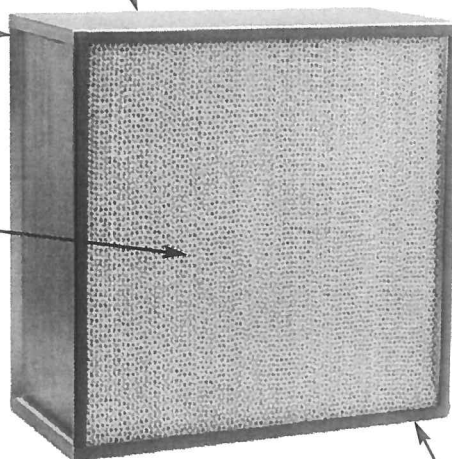
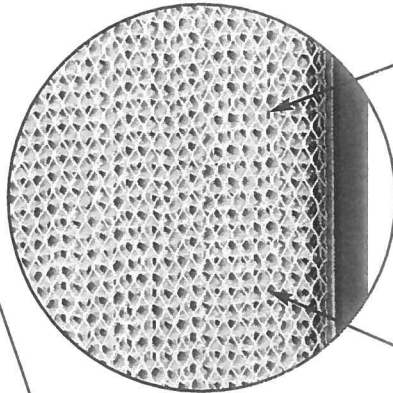
- Reinforced squareness and rigidity in frame construction
- Protects filter media from damage

Gaskets/Corners

- High density urethane gaskets
- Interlocking and sealed dovetail corners
- Single gasket design allows the filter to be installed with the gasket either upstream or downstream depending on application

Urethane Potting Compound

- Media pack is securely attached to the frame interior

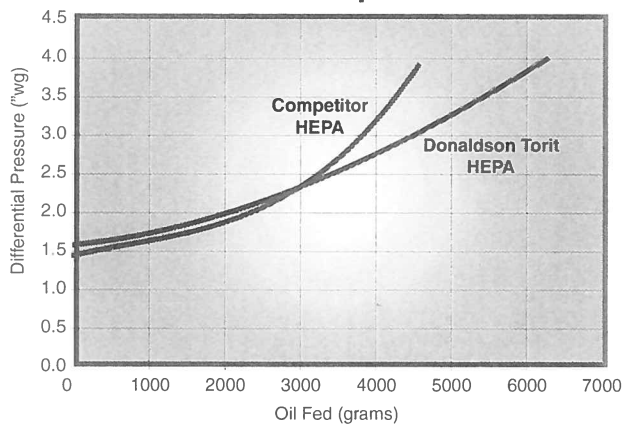


HEPA & 95% DOP Panel Filters

**Proprietary Filter Media is the Basis for Panel Filters
that Outperform Our Toughest Competitors**

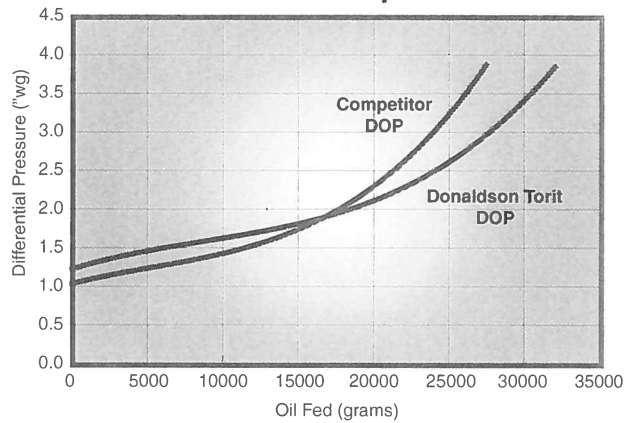
Donaldson® Torit® Panel Filters Exhibit Superior Oil Handling

HEPA Comparison



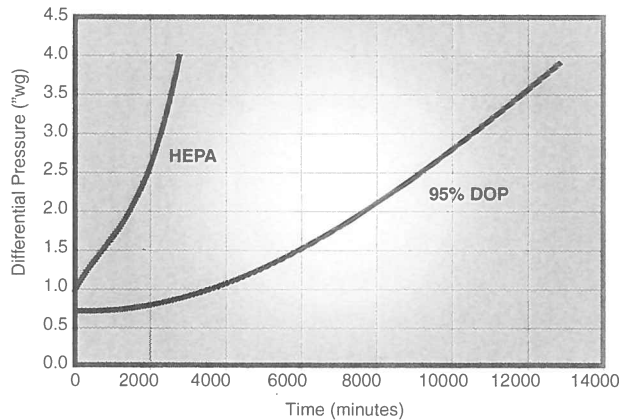
Donaldson Torit HEPA panel filters handle 35% more oil than competitor HEPA filters, resulting in 35% longer filter life.

95% DOP Comparison



Donaldson Torit 95% DOP panel filters handle 15% more oil than competitor DOP panel filters resulting in 15% longer filter life.

HEPA vs. 95% DOP



Applications where 95% DOP filters provide adequate filtration efficiency (see page 4), the 95% DOP filters last 3-5 times longer than the HEPA filters, as shown above in this oil test.*

* Based on accelerated test results. Oil fed at a rate of 8 grams/minute with additional submicron oil generators.

HEPA & 95% DOP Panel Filters

Use the right panel filter for your application. HEPA and 95% DOP panel filters dramatically improve the quality of air, but each are designed to meet different application requirements. Here are some guidelines to help you select which panel filter will best meet your needs.

When to Select HEPA Panel Filters

- Higher filtration efficiency
 - 99.97% on 0.3 micron particles (emits three-0.3 micron particles per 10,000 particles)
- Exhaust airstream is near breathing zone
- Lighter loading applications
- Visible emissions are unacceptable
- Customer specified HEPA level filtration

When to Select 95% DOP Panel Filters

- 95% on 0.3 micron particles (emits 500-0.3 micron particles per 10,000 particles)
- Heavy loading applications
- Exhaust airstream is not near breathing zone
- Customer specified 95% DOP level filtration

In heavy smoke applications, a combination of 95% DOP and HEPA panel filters may be the best solution. 95% DOP filters last 3-5 times longer and have greater holding capacity in oil loading applications.

HEPA and 95% DOP panel filters are available to ship from Donaldson Torit within 48 hours from the time of order.



Donaldson®
Filtration Solutions

Donaldson Company, Inc.
Industrial Air Filtration
P.O. Box 1299
Minneapolis, MN
55440-1299 U.S.A.

Tel 800.365.1331 (USA)
Tel 800.343.3639 (within Mexico)
donaldsontorit@donaldson.com
donaldsontorit.com

Information contained in this document
is subject to change without notice.

Printed in USA

© Donaldson Company, 2004
HEPA & 95% DOP Panel Filters 12-2008

| | |
|--|-------------------------|
| 200.59 Atomic mass | 80 Atomic No. |
| Melting point: -38.87 °C Boiling point: 356.58 °C | |
| Shells: 2,8,18,32,18,2 | |
| Orbitals: [Xe] 4f ¹⁴ 5d ¹⁰ 6s ² | |
| Electronegativity: 1.4, 1.9 | |
| Oxidation states: 2,1 | |
| Atomic volume: 14.82 cm ³ /mol | |
| Density (293 K): 13.546 g/cm ³ | |
| Crystal structure: Rhombohedral | |

PICATOX SHG

Quality high activity coal-base pelletized activated carbon chemically impregnated for chemisorption of mercury.

Features

- High activity
- Low attrition
- Low dust

Benefits

Accommodates both physical & chemical sorption
Minimal carbon fines
Easy handling and improved safety

Physical-chemical specifications

| | | |
|---|--------------|-----------|
| Apparent density (g/cc) | (ASTM D2854) | 0.53-0.56 |
| Moisture as packed (% max) | (ASTM D2867) | <3 |
| CCl ₄ adsorption (% min) - Base Carbon | (ASTM D5742) | 70 |
| Hardness No., ball pan test (min) - Base Carbon | (ASTM D3802) | 95 |

Properties

| | | |
|--|--------------|----|
| Typical loading of Hg (% W/W) | | 10 |
| Typical Sulfur Impregnant Levels (% W/W) | (ASTM D4239) | 13 |

Available particle sizes (ASTM D2862)

| ASTM mesh size | On larger screen (% max) | Between screen sizes (% min) | Through smaller screen (% max) |
|---------------------|-----------------------------|------------------------------------|--------------------------------------|
| 4x6 (4 mm pellets) | 5 | 90 | 5 |
| 6x8 (3 mm pellets) | 5 | 90 | 5 |
| 8x12 (2 mm pellets) | 5 | 90 | 5 |

This product can be tailored according to specific requests.

Packaging:

PICATOX SHG is supplied in 55 gallon fiberboard drums, 1102 lb (500 kg) big bags. Other packaging is available upon request.

Ed. 05/05- Revision No. 3.0
PICA USA, INC., 432 McCormick Blvd., Columbus, OH 43213
Tel: 614-864-8100 • Fax: 614-864-9914 • Toll free number: 1-888-GO-4-PICA.
PICA USA, INC. reserves the right to modify these specifications without prior notice.



HGR[®] for Mercury Removal

Granular Activated Carbon



Description

Calgon Carbon HGR[®] granular activated carbon is a sulfur impregnated carbon. The base carbon is made from select grades of bituminous coal and suitable binders to create the unique pore structure and superior hardness necessary for the intended service. Activation is controlled to impart a pore structure that will both accept substantial quantities of impregnant and maintain access for the gas being treated to the complex pore structure. After activation, the sulfur is distributed in a thin layer over the extensive internal surface area of the carbon. This provides it with the unique properties required for the removal of elemental and organic mercury from natural gas, air, and by-product hydrogen streams.

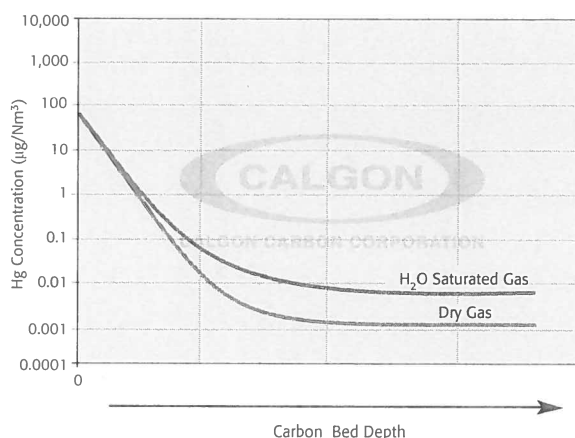
The Mercury Removal Process

Mercury removal with HGR[®] activated carbon is an established process for removal of mercury from natural gas and by-product hydrogen streams. The mercury is removed from natural gas feedstocks to LNG and LPG plants to protect aluminum heat exchangers from corrosion. The exhaust air from mercury cell chlorine plants or metallurgical processing equipment can be treated to provide an environmentally safe atmosphere for employees and delicate instruments. Type HGR[®] is also used in mercury cell chloralkali plants to remove mercury from by-product hydrogen streams.

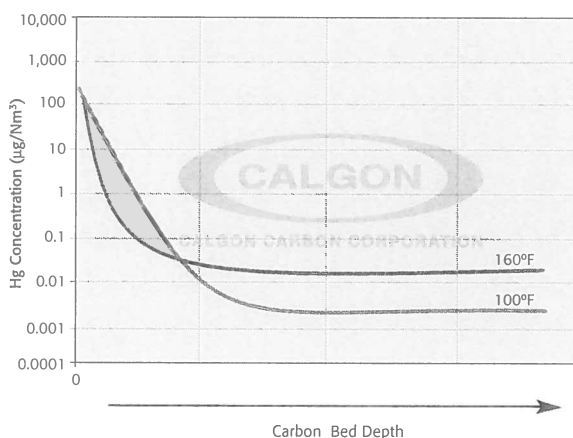
The mercury removal process employs a single or dual vessel adsorption system designed to reduce concentrations to $<0.01 \mu\text{g}/\text{Nm}^3$ in the treated gas. During the adsorption process, mercury is attracted to the activated carbon surface where a chemical reaction converts the mercury to mercuric sulfide. The sulfide product is then retained in the pores of the carbon granule. Mercury capacity of Type HGR[®] activated carbon can be as high as 20% by weight.

In a properly designed HGR[®] carbon system, the maximum attainable mercury concentration in treated gas is not affected by changing the pressure or inlet mercury concentration of the gas. However, lowering the gas temperature or moisture content of the inlet gas will improve the process and further reduce the mercury concentration in the treated gas. For instance, a gas stream at 150°F saturated with moisture will result in a treated gas containing $0.1 \mu\text{g}/\text{Nm}^3$ of mercury. The mercury level in the treated gas can be further reduced to $<0.01 \mu\text{g}/\text{Nm}^3$ by reducing the temperature to 70°F and the moisture to trace levels.

Impact of Moisture



Impact of Temperature



Specifications

| | |
|--|----------------------------------|
| Apparent Density | 37 lb./ft ³ (approx.) |
| Sulfur Content by weight | 10% (min) |
| Screen Size by weight, U.S. Sieve Series | |
| On 4 mesh | 5.0% (max) |
| Through 10 mesh | 5.0% (max) |

CALGON CARBON CORPORATION

www.calgoncarbon.com

Material Safety Data Sheet

Material Name: Picatox SHG

ID: PICA-006

*** Section 1 - Chemical Product and Company Identification ***

Chemical Family: Carbon

Formula: Mixture

Chemical Name: Picatox SHG Impregnated Coal Base Activated Carbon

Product Use: Various uses

Manufacturer Information

PICA USA, Inc.

432 McCormick Blvd.

Columbus, Ohio 43213

Phone #: (614) 864-8100

Emergency #: (800) 424-9300 CHEMTREC

NOTE: CHEMTREC emergency telephone number is to be used in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

*** Section 2 - Composition / Information on Ingredients ***

| CAS # | Component | Percent |
|-----------|-------------------------------|---------|
| 7440-44-0 | Activated Carbon (Coal base)) | 80-90 |
| 7704-34-9 | Sulfur | 10-20 |

Component Information/Information on Non-Hazardous Components

This product is considered non-hazardous by the criteria specified in 29 CFR 1910.1200 (Hazard Communication).

*** Section 3 - Hazards Identification ***

Emergency Overview

Product is a black pelletized material. May be irritating to eyes, skin and respiratory tract. High airborne dust concentrations may pose an explosion hazard. Wet activated carbon present in a confined space may produce an oxygen deficient atmosphere and presents a risk of asphyxiation to persons entering those areas.

Potential Health Effects: Eyes

Contact may produce mechanical eye irritation.

Potential Health Effects: Skin

Skin irritation would not be expected from single short-term exposure to this product. Prolonged or repeated contact may produce some irritation.

Potential Health Effects: Ingestion

Ingestion of this product may cause gastrointestinal irritation, nausea, vomiting and constipation. Small amounts of this product in solution, if aspirated into the lungs, may cause mild to severe pulmonary injury, possibly death.

Potential Health Effects: Inhalation

Overexposure to dusts may produce irritation of the respiratory system. Wet activated carbon may cause asphyxiation by adsorbing oxygen from confined spaces.

HMIS Ratings: Health: 1 Fire: 1 Reactivity: 1 Pers. Prot.: safety glasses with side shields, impervious gloves for prolonged contact

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

*** Section 4 - First Aid Measures ***

First Aid: Eyes

Immediately flush eyes with plenty of water for at least 15 minutes. Seek medical attention if irritation persists.

First Aid: Skin

For skin contact, wash with soap and large amounts of water. If irritation persists, seek medical attention.

First Aid: Ingestion

If the material is swallowed, get immediate medical attention or advice -- Do not induce vomiting unless instructed to do so by medical personnel.

Material Safety Data Sheet

Material Name: Picatox SHG

ID: PICA-006

First Aid: Inhalation

If symptoms are experienced, remove source of contamination or move victim to fresh air. Seek medical attention if irritation persists.

First Aid: Notes to Physician

This product in solution, if aspirated into the lungs, may cause chemical pneumonitis; treat the affected person appropriately.

*** Section 5 - Fire Fighting Measures ***

Flash Point: Not available

Method Used: Not available

Upper Flammable Limit (UFL): Not available

Lower Flammable Limit (LFL): Not available

Auto Ignition: Not available

Flammability Classification: Not available

Rate of Burning: Not available

General Fire Hazards

Activated carbon exposed to air is a potential fire hazard because of its very high surface area and absorptive capacity.

Accumulation of airborne dusts may present an explosion or fire hazard in the presence of an ignition source.

Hazardous Combustion Products

Upon combustion, this product may sulfur dioxide, carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons. Other materials adsorbed onto the carbon may also be released during combustion.

Extinguishing Media

Dry chemical, foam, carbon dioxide, water fog.

Fire Fighting Equipment/Instructions

Firefighters should wear full protective clothing including self contained breathing apparatus.

NFPA Ratings: Health: 1 Fire: 1 Reactivity: 1 Other:

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

*** Section 6 - Accidental Release Measures ***

Containment Procedures

Contain the discharged material. If sweeping of a contaminated area is necessary, use a dust suppressant agent.

Clean-Up Procedures

Wear appropriate protective equipment and clothing during clean-up. Sweep up or vacuum spilled material. Use of a moist absorbent is recommended.

Evacuation Procedures

None necessary.

Special Procedures

None.

*** Section 7 - Handling and Storage ***

Handling Procedures

Avoid getting this material into contact with your eyes. Avoid prolonged or repeated skin contact with this material. Wash thoroughly after handling. Avoid the formation of airborne dusts. Use with adequate ventilation.

Storage Procedures

Keep the container tightly closed and in a cool, well-ventilated place. Store away from heat, ignition sources, combustible materials and incompatible materials.

*** Section 8 - Exposure Controls / Personal Protection ***

Exposure Guidelines

A: General Product Information

Exposures should be minimized in accordance with good industrial hygiene practices. The manufacturer recommends that exposure limits for nuisance dusts be followed. The OSHA PEL for the respirable fraction is 5 mg/m³ (TWA) and for total dust the OSHA PEL is 15 mg/m³ (TWA). The ACGIH threshold limit value for Particulates Not Otherwise Classified (PNOC) is 10 mg/m³ (TWA).

B: Component Exposure Limits

Material Safety Data Sheet

Material Name: Picatox SHG

ID: PICA-006

Activated Carbon (Coal base) (7440-44-0)

NIOSH: no established RELs - see Appendix D

Sulfur (7704-34-9)

ACGIH: 10 mg/m³ (inhalable fraction), 3 mg/m³ (respirable fraction)

OSHA: 15 mg/m³ (total dust), 5 mg/m³ (respirable fraction)

NIOSH: REL, none established

Engineering Controls

Ventilation should be sufficient to effectively remove and prevent buildup of airborne dusts.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields.

Personal Protective Equipment: Skin

Wear impervious gloves for prolonged contact.

Personal Protective Equipment: Respiratory

If ventilation is not sufficient to effectively remove and prevent buildup of dusts, appropriate NIOSH/MSHA approved respiratory protection should be provided. Confined spaces containing wet activated carbon may be oxygen deficient atmospheres, use appropriate protective measures.

Personal Protective Equipment: General

Use good industrial hygiene practices in handling this material.

*** Section 9 - Physical & Chemical Properties ***

Appearance: Black pellets
Physical State: Solid
Vapor Pressure: Not applicable
Boiling Point: Not available
Solubility (H₂O): Insoluble
Freezing Point: Not available

Odor: Odorless
pH: 7 – 8 (10% solution)
Vapor Density: Not applicable
Melting Point: 3500 C
Specific Gravity: 1.8-2.1 @ 25 C

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

Stable

Chemical Stability: Conditions to Avoid

Avoid accumulation of airborne dusts. Dusts may be explosive when exposed to heat, flame, ignition sources, combustible material and incompatible materials.

Incompatibility

Contact with incompatible materials may produce ignition or explosions. Incompatible with oxides, peroxides, oxosalts, potassium, nitric acid, sodium sulfide, halogens, oxygen, ozone, bromates, chlorates, iodates, and nitrates. Unsaturated oils (such as linseed oil) may be spontaneously flammable when distributed on activated carbon.

Hazardous Decomposition

Upon decomposition, this product may emit sulfur dioxide, carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons. Other materials adsorbed onto the carbon may also be released during decomposition.

Hazardous Polymerization

Hazardous polymerization will not occur.

Material Safety Data Sheet

Material Name: Picatox SHG

ID: PICA-006

*** Section 11 - Toxicological Information ***

Acute Toxicity

A: General Product Information

No data available for this product. Overexposure to activated carbon dusts would be expected to produce mild irritation to the respiratory tract, skin and eyes. Chronic skin exposure may discolor the hair follicle, chronic inhalation may produce carbon deposition in the lungs. Oral LD50 rats: >5g/kg. Chronic inhalation of sulfur may lead to irritation of the mucous membrane; development of chronic bronchitis, phlegm, sore throat, chest pain lightheadedness. Various brachiopulmonary diseases including emphysema, bronchiectasis, and asthma, skin sensitization and skin damage. Repeated eye exposure to sulfur dust may cause permanent damage with clouding of the lens and chronic irritation. Ingestion of sulfur is not particularly toxic; it may cause diarrhea. The acute oral dose is estimated to be 10-15 grams in adults.

B: Component Analysis - LD50/LC50

Sulfur (7704-34-9)

Oral LD50 Rat: >8437 mg/kg

Rabbit, oral LD₅₀ 175 mg/kg.

Carcinogenicity

A: General Product Information

No carcinogenicity data available for this product.

B: Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Epidemiology

No epidemiological data is available for this product.

Neurotoxicity

No data available for this product.

Mutagenicity

No data available for this product.

Reproductive Toxicity

No data available for this product. Iodine is a confirmed reproductive hazard. Iodine has been reported to produce adverse effects in pregnant women and experimental animals.

Other Toxicological Information

The additives in this product are tightly bound to the carbon and under normal handling and usage should produce little exposure.

*** Section 12 - Ecological Information ***

Ecotoxicity

No data available for this product.

Environmental Fate

No data available for this product.

*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions

A: General Product Information

Material, if discarded, is not expected to be a characteristic hazardous waste under RCRA.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions

All wastes must be handled in accordance with local, state and federal regulations.

Material Safety Data Sheet

Material Name: Picatox SHG

ID: PICA-006

*** Section 14 - Transportation Information ***

US DOT Information

Shipping Name: Not regulated as a dangerous material

Hazard Class: Not regulated

UN/NA #: None

Packing Group: None

Required Label(s): None

Additional Info.: The carbon present in this product is prepared by a steam activated process. Testing using methods in 49CFR173 Appendix E has shown the product does not meet the definition of Hazard Class 4.2.

*** Section 15 - Regulatory Information ***

US Federal Regulations

A: General Product Information

No additional information.

B: Component Analysis

None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

State Regulations

A: General Product Information

No additional information.

B: Component Analysis - State

| Component | CAS # | CA | FL | MA | MN | NJ | PA |
|-----------|-----------|-----|-----|-----|-----|-----|-----|
| Sulfur | 7704-34-9 | Yes | Yes | Yes | Yes | Yes | Yes |

Other Regulations

A: General Product Information

No additional information.

B: Component Analysis - Inventory

| Component | CAS # | TSCA | DSL | EINECS |
|----------------------------------|-----------|------|-----|--------|
| Activated Carbon (Coconut Shell) | 7440-44-0 | Yes | Yes | Yes |
| Sulfur | 7704-34-9 | Yes | Yes | Yes |

C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

| Component | CAS # | Minimum Concentration |
|-----------|-----------|-----------------------|
| Sulfur | 7704-34-9 | 1% item 875 (1020) |

*** Section 16 - Other Information ***

Other Information

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration

Contact: David Baer

Contact Phone: (614) 864-8100

This is the end of MSDS PICA – Picatox SHG

Sly TubeJet Model SBR
(SIDE / BOTTOM BAG REMOVAL)

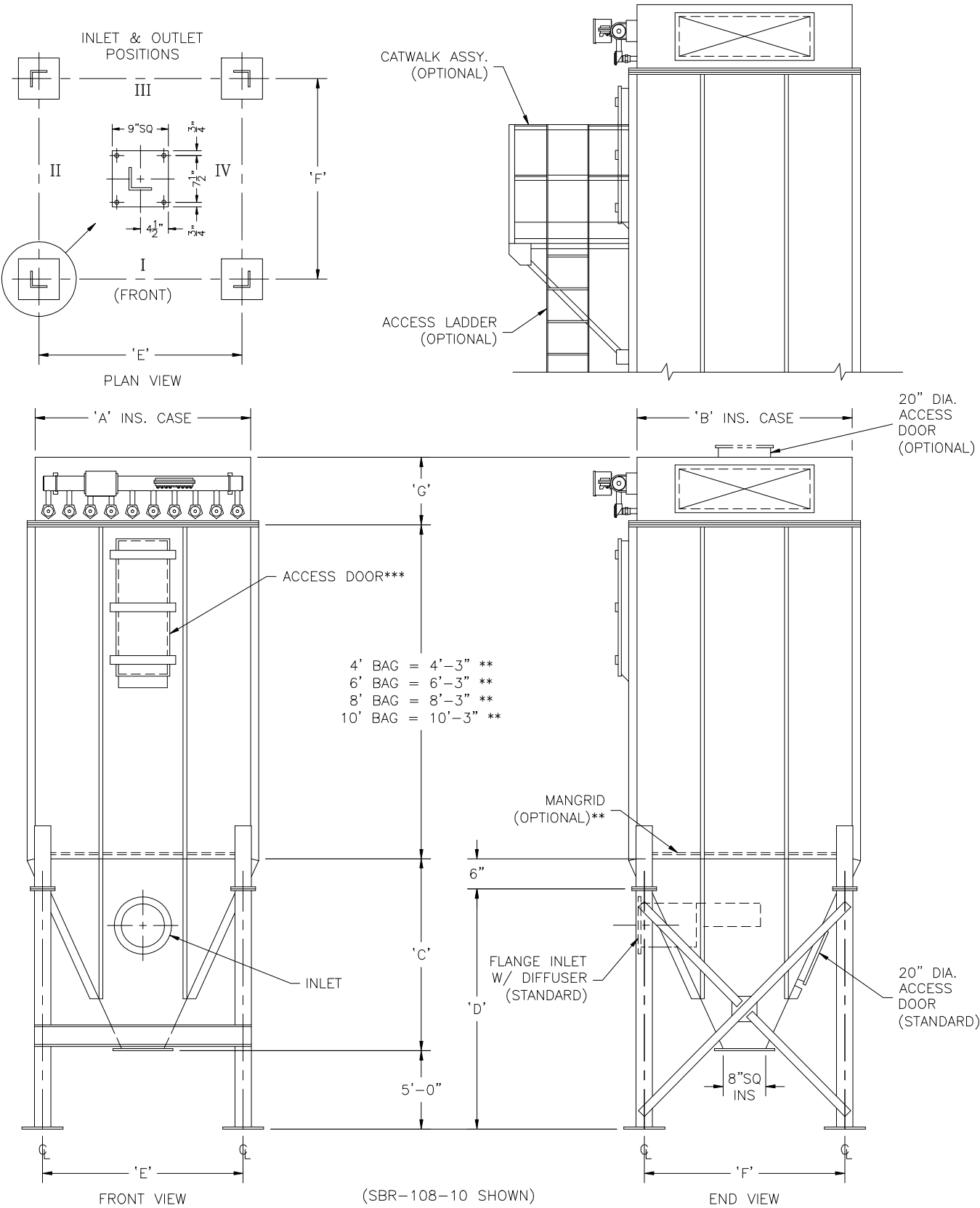
| Model No. | Bag Length (ft) | Cloth Area (SQ. ft.) | Bag Quantity | Air Usage (SCFM @ 90 psig)* | Outlet Size | A | B | C | D | E | F | G |
|-----------|--------------------|-------------------------|--------------|--------------------------------|-------------|-------|-------|--------|--------|-----------|-----------|-------|
| SBR-22- | 4 6 8 | 24 36 48 | 4 | 6 | 6" x 6" | 1'-4" | 1'-4" | 7" | 5'-1" | 1'-1 1/2" | 1'-1 1/2" | 1'-0" |
| SBR-33- | 4 6 8 | 54 81 108 | 9 | 6 | 6" x 6" | 2'-0" | 2'-0" | 1'-2" | 5'-8" | 1'-9 1/2" | 1'-9 1/2" | 1'-0" |
| SBR-34- | 4 6 8 | 72 108 144 | 12 | 6 | 6" x 8" | 2'-0" | 2'-8" | 1'-9" | 6'-3" | 1'-9 1/2" | 2'-5 1/2" | 1'-0" |
| SBR-44- | 4 6 8 | 96 144 192 | 16 | 6 | 7" x 8" | 2'-8" | 2'-8" | 1'-9" | 6'-3" | 2'-5 1/2" | 2'-5 1/2" | 1'-0" |
| SBR-45- | 4 6 8 | 120 180 240 | 20 | 6 | 8" x 8" | 2'-8" | 3'-4" | 2'-4" | 6'-10" | 2'-5 1/2" | 3'-1 1/2" | 1'-0" |
| SBR-55- | 4 6 8 | 150 225 300 | 25 | 6 | 9" x 10" | 3'-4" | 3'-4" | 2'-4" | 6'-10" | 3'-1 1/2" | 3'-1 1/2" | 1'-0" |
| SBR-56- | 4 6 8 | 180 270 360 | 30 | 11 | 9" x 12" | 3'-4" | 4'-0" | 2'-11" | 8'-0" | 3'-1 1/2" | 3'-9 1/2" | 1'-0" |
| SBR-66- | 6 8 10 | 324 432 540 | 36 | 11 | 8" x 24" | 4'-0" | 4'-0" | 2'-11" | 8'-0" | 3'-9 1/2" | 3'-9 1/2" | 1'-0" |
| SBR-68- | 6 8 10 | 432 576 720 | 48 | 11 | 8" x 30" | 4'-0" | 5'-4" | 4'-1" | 8'-7" | 3'-9 1/2" | 5'-1 1/2" | 1'-0" |
| SBR-78- | 6 8 10 | 504 672 840 | 56 | 11 | 8" x 30" | 4'-8" | 5'-4" | 4'-1" | 8'-7" | 4'-5 1/2" | 5'-1 1/2" | 1'-0" |
| SBR-88- | 6 8 10 | 576 768 960 | 64 | 11 | 12" x 24" | 5'-4" | 5'-4" | 4'-1" | 8'-7" | 5'-1 1/2" | 5'-1 1/2" | 1'-6" |
| SBR-98- | 6 8 10 | 648 864 1080 | 72 | 11 | 12" x 30" | 6'-0" | 5'-4" | 4'-8" | 9'-2" | 5'-9 1/2" | 5'-1 1/2" | 1'-6" |
| SBR-108- | 6 8 10 | 720 960 1200 | 80 | 11 | 12" x 30" | 6'-8" | 5'-4" | 5'-3" | 9'-9" | 6'-5 1/2" | 5'-1 1/2" | 1'-6" |

How to Determine Your Model Number

SBR - 10 - 8 - 8
Number of rows Number of bags per row Length of bags

* Guideline based on 10 second off time between pulses and 100 millisecond pulse duration ~ may change based on application
** Add 9" to height for Mangrid
*** Access Door
18" x 36" for 4' & 6' Long Bags
18" x 48" for 8' & 10' Long Bags
SBR-22 door is 12" wide

NOT FOR CONSTRUCTION

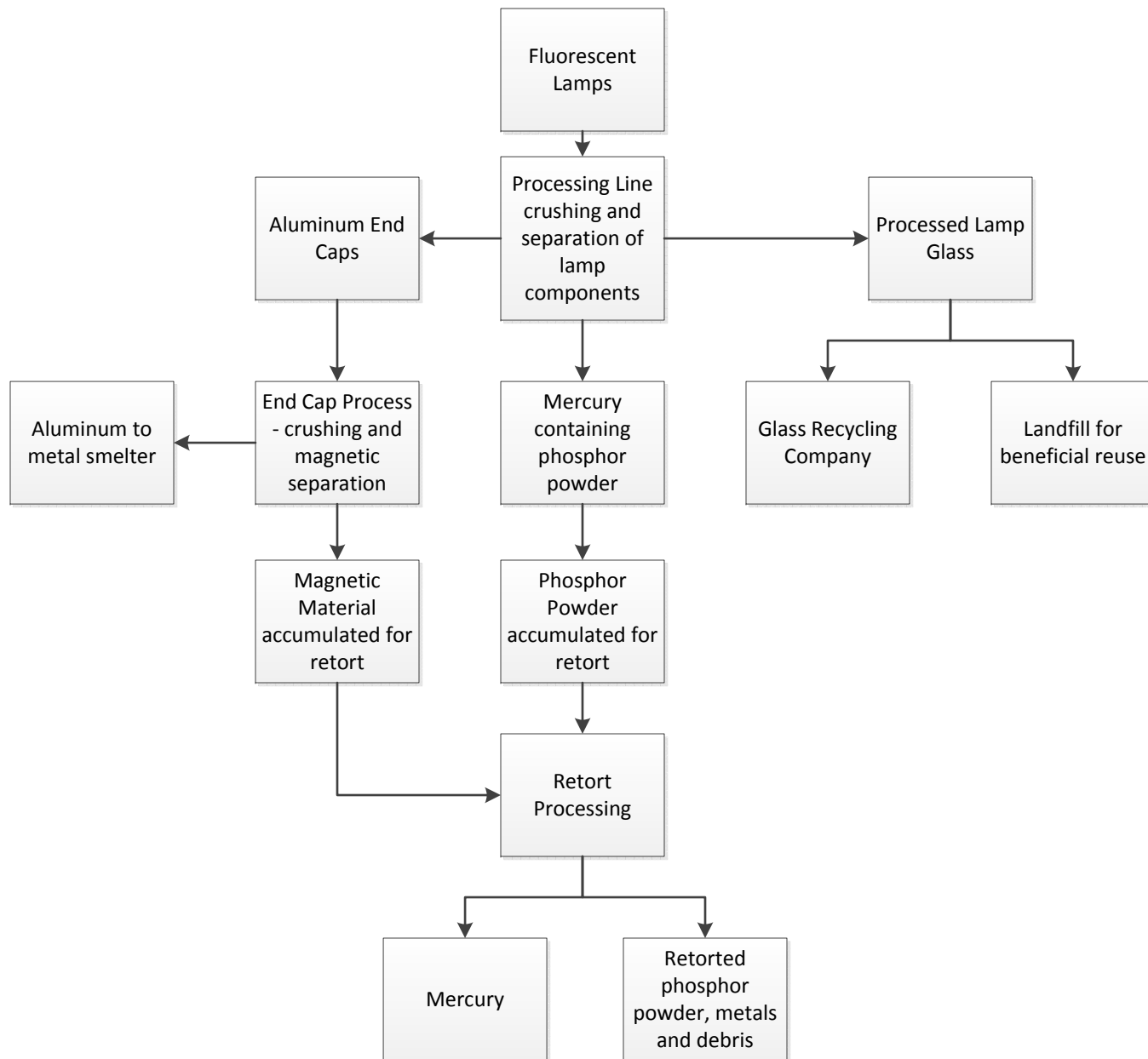


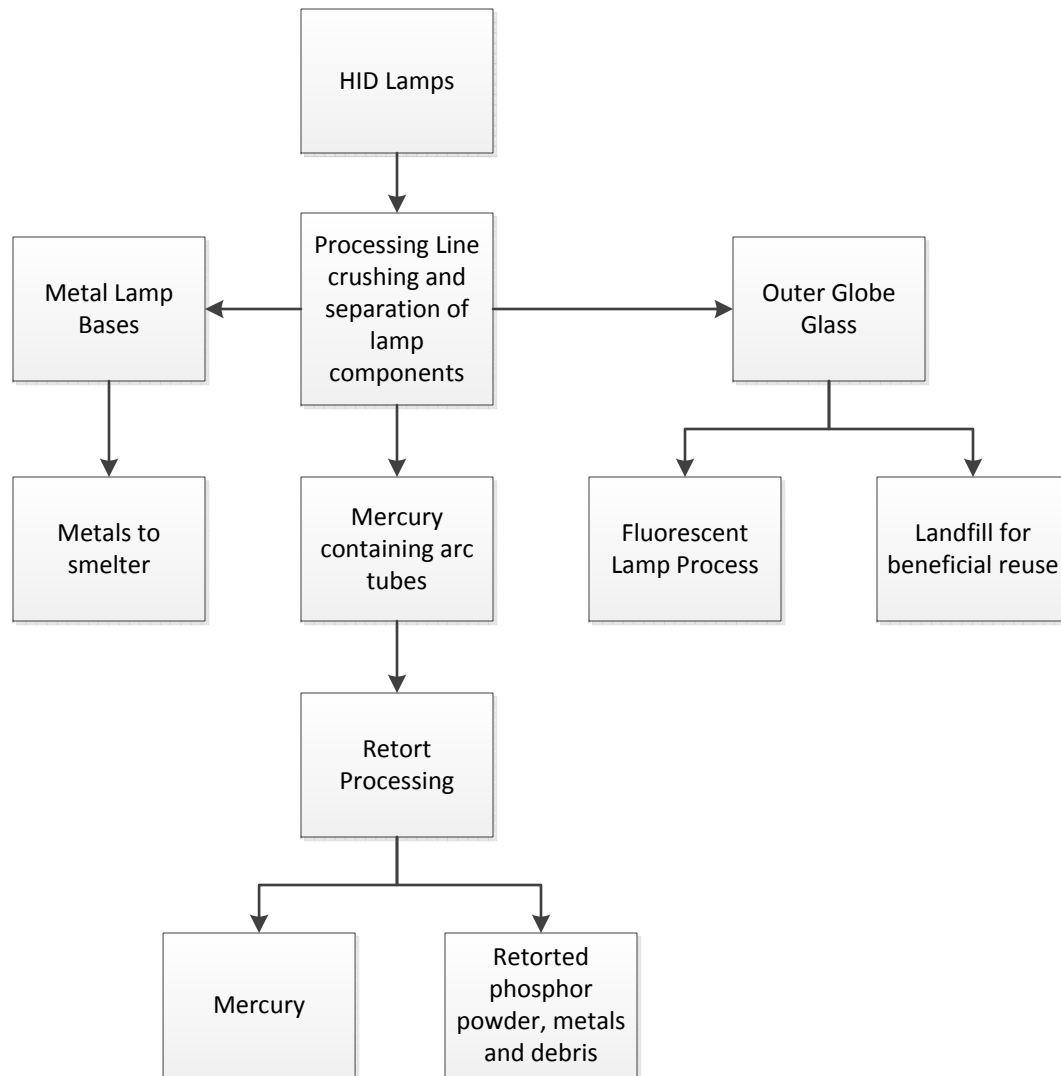
MODEL NO. _____
VOLUME _____ CFM
TEMPERATURE _____ °F
DUST _____
LOADING _____ GR/CF
CLOTH AREA _____ SQ.FT.
NO. OF BAGS _____
A/C RATIO _____ :1
PROCESS _____

NOTES:
- Inlet size based on 3000 fpm maximum velocity.
- Standard exhaust connection either right or left of header.
- Standard trough hopper has same depth as pyramidal hopper.
- Magnehelic gauge w/ bracket, tubing & fittings.
- Unless otherwise specified, timers shipped assembled & pre-wired to solenoid enclosure.
- Drawing dimensions are subject to change without prior notice.

SLY INC.
TECHNOLOGY FOR A CLEAN ENVIROMENT
8300 Dow Circle
Strongsville, OH 44136
1-800-334-2957
In Ohio (440) 891-3200
FAX: (440) 891-3210

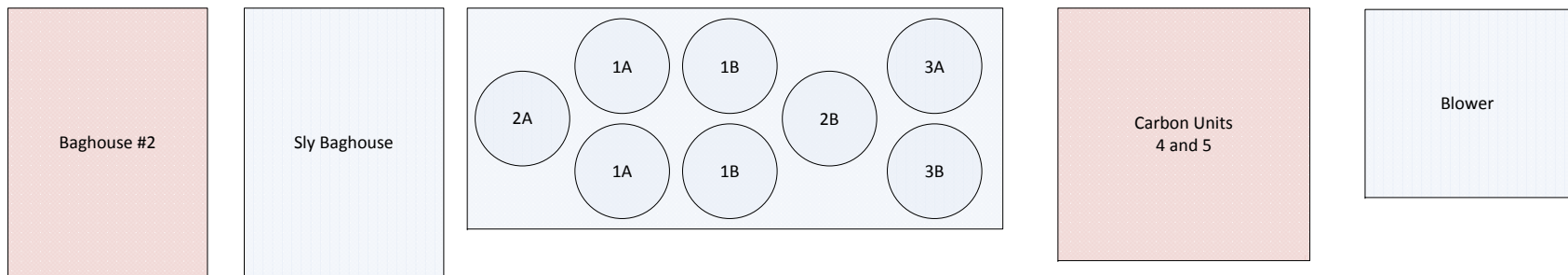
SBR-601-1 (B)





Airflow Line 1
 Sly baghouse to Carbon Canisters 1A and 1B
 Carbon Canisters 1A to 2A then to 3A
 Carbon Canisters 1B to 2B then to 3B
 Carbon Canister 3A and 3B to Blower

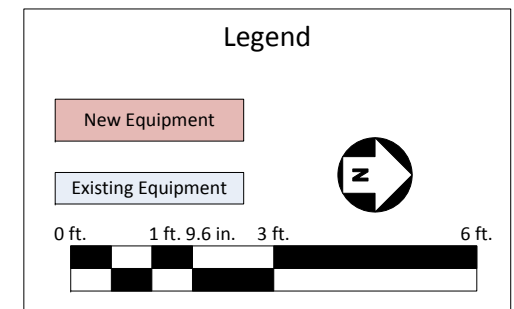
Proposed Airflow Line 2
 Baghouse #2 to Carbon Canister 4
 Carbon Canister 4 to Carbon Canister 5
 Carbon Canister 5 to Blower



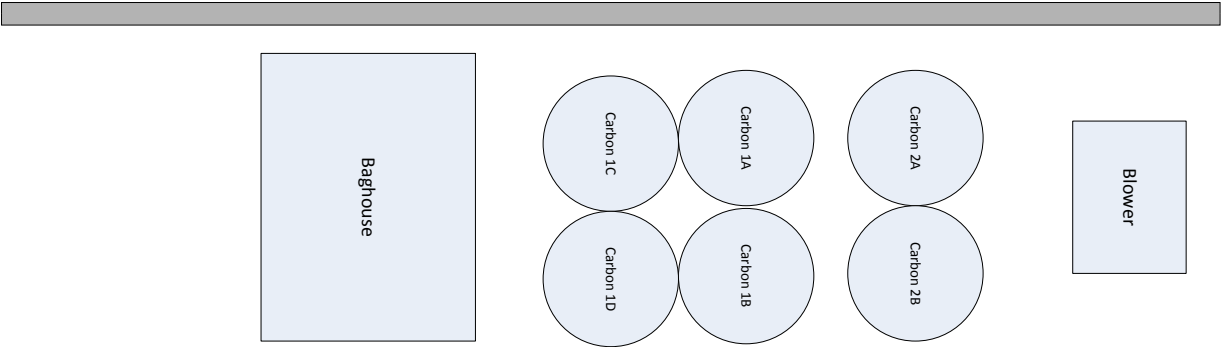
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 Figure 5.3.pdf

Figure 5.3
Lamp Process Emission Controls

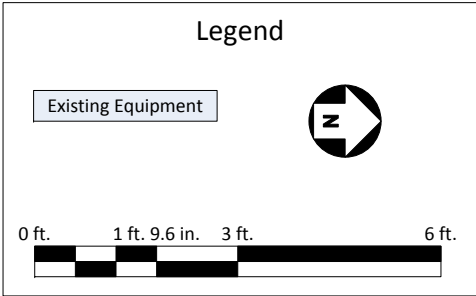
March 2016

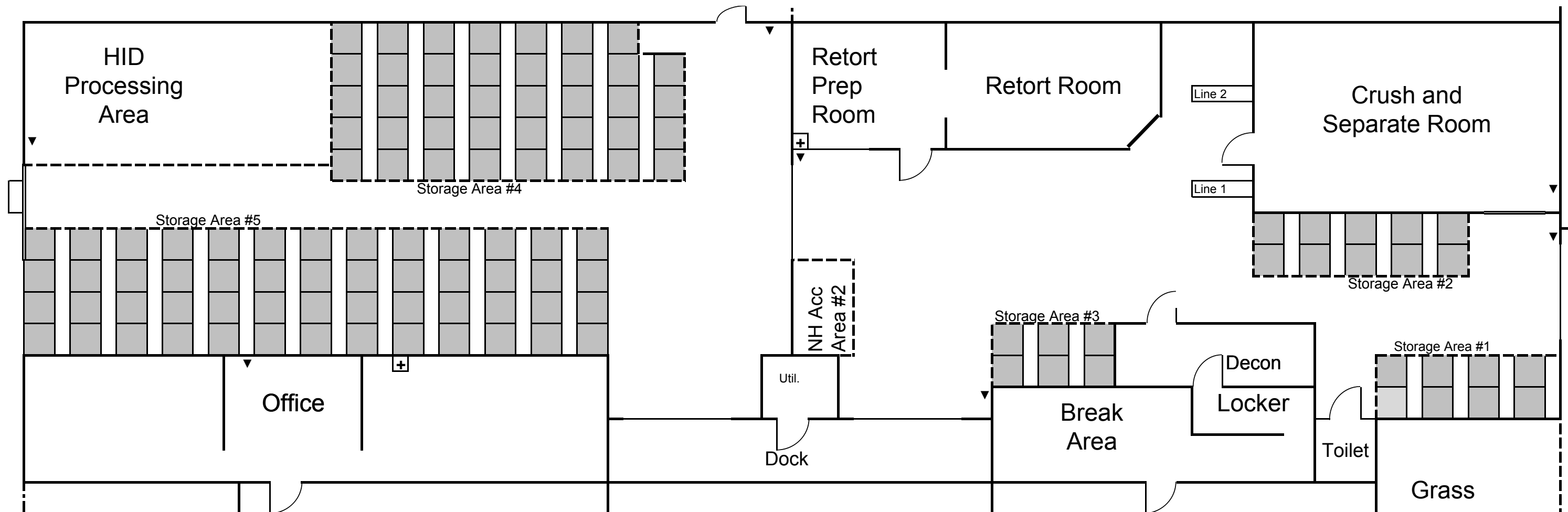






Airflow HID Line
Baghouse to Carbon Canisters 1A, 1B, 1C and 1D
Carbon Canister 1A and 1C to 2A
Carbon Canister 1B to 1D to 2B

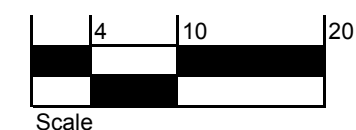


| | | |
|--|--|----------------|
| S:\Secure\Shared\Tallahassee Permit Folder\2016 Renewal\Figure 5.4.pdf | Figure 5.4 HID Air Emission Controls | March 14, 2016 |
|--|--|----------------|





-  Mercury Spill Kit
-  Fire Extinguisher
-  Double Stacked Pallets
-  Single Stacked Pallets

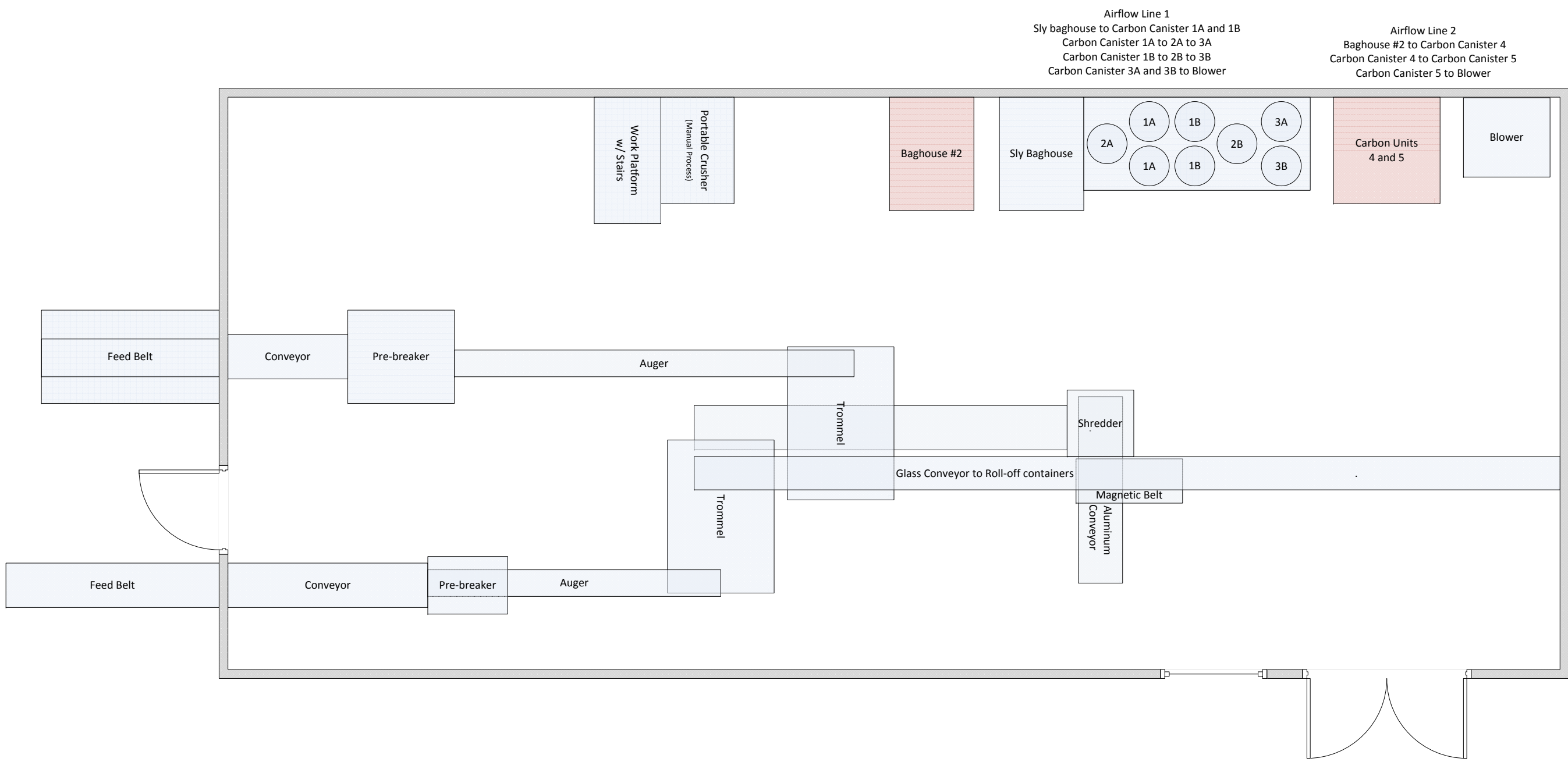


North →

Facility Floor Plan with Storage Area Configuration
Figure 5.5

Veolia ES Technical Solutions
342 Marpan Lane
Tallahassee, FL 32305

Revised: March 11, 2016



| | | |
|---|---|------------|
| S:\Secure\Shared\Tallahassee Permit Folder\2014 Modification\Figure 5_6.pdf | Figure 5.6 Lamp Room Floor Plan | March 2016 |
|---|---|------------|

Legend

New Equipment

Existing Equipment

0 ft.

3 ft.

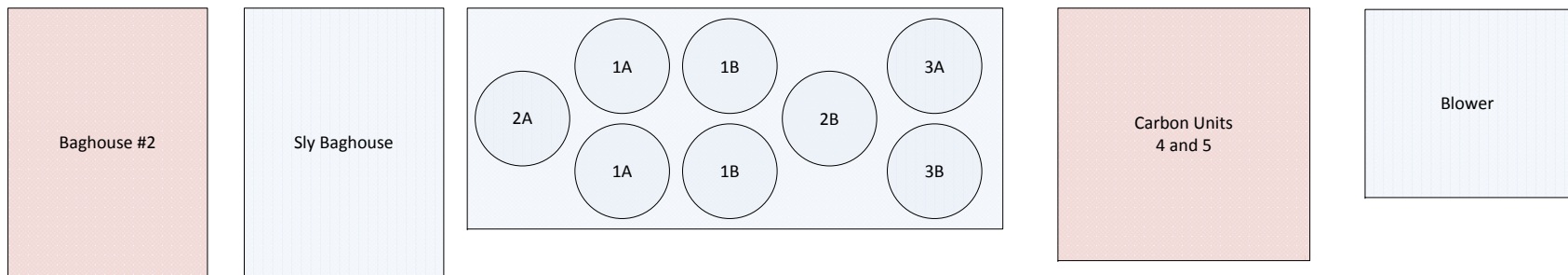
5 ft.

10 ft.

N

Airflow Line 1
 Sly baghouse to Carbon Canisters 1A and 1B
 Carbon Canisters 1A to 2A then to 3A
 Carbon Canisters 1B to 2B then to 3B
 Carbon Canister 3A and 3B to Blower

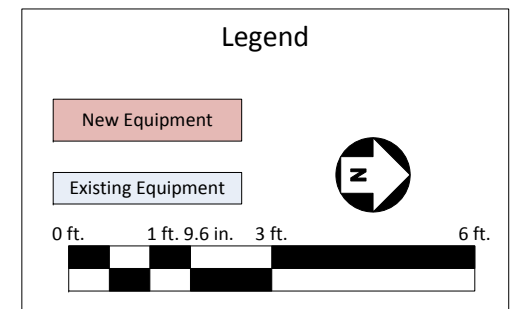
Proposed Airflow Line 2
 Baghouse #2 to Carbon Canister 4
 Carbon Canister 4 to Carbon Canister 5
 Carbon Canister 5 to Blower

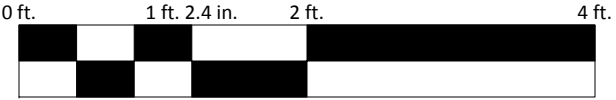
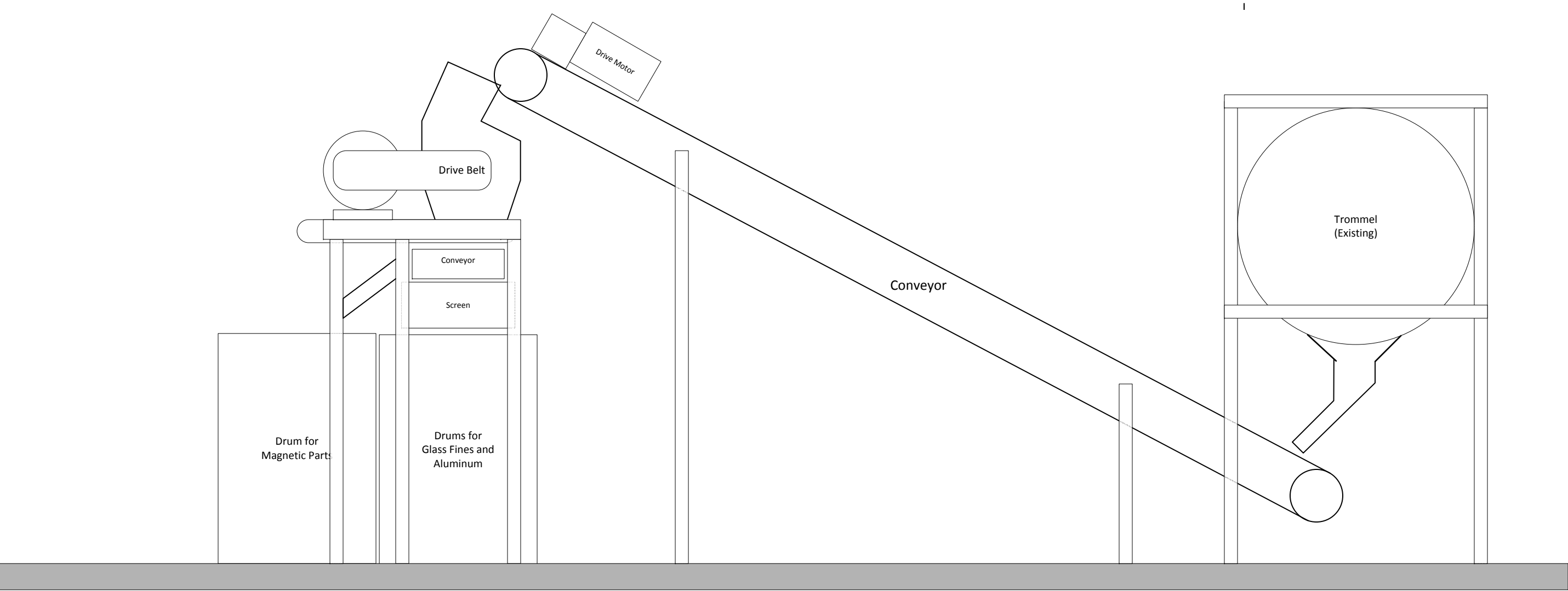


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 Permit Folder\2014 Modification\
 Figure 5.3.pdf

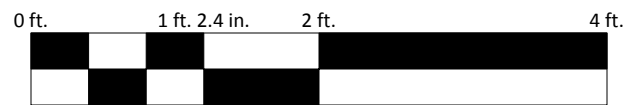
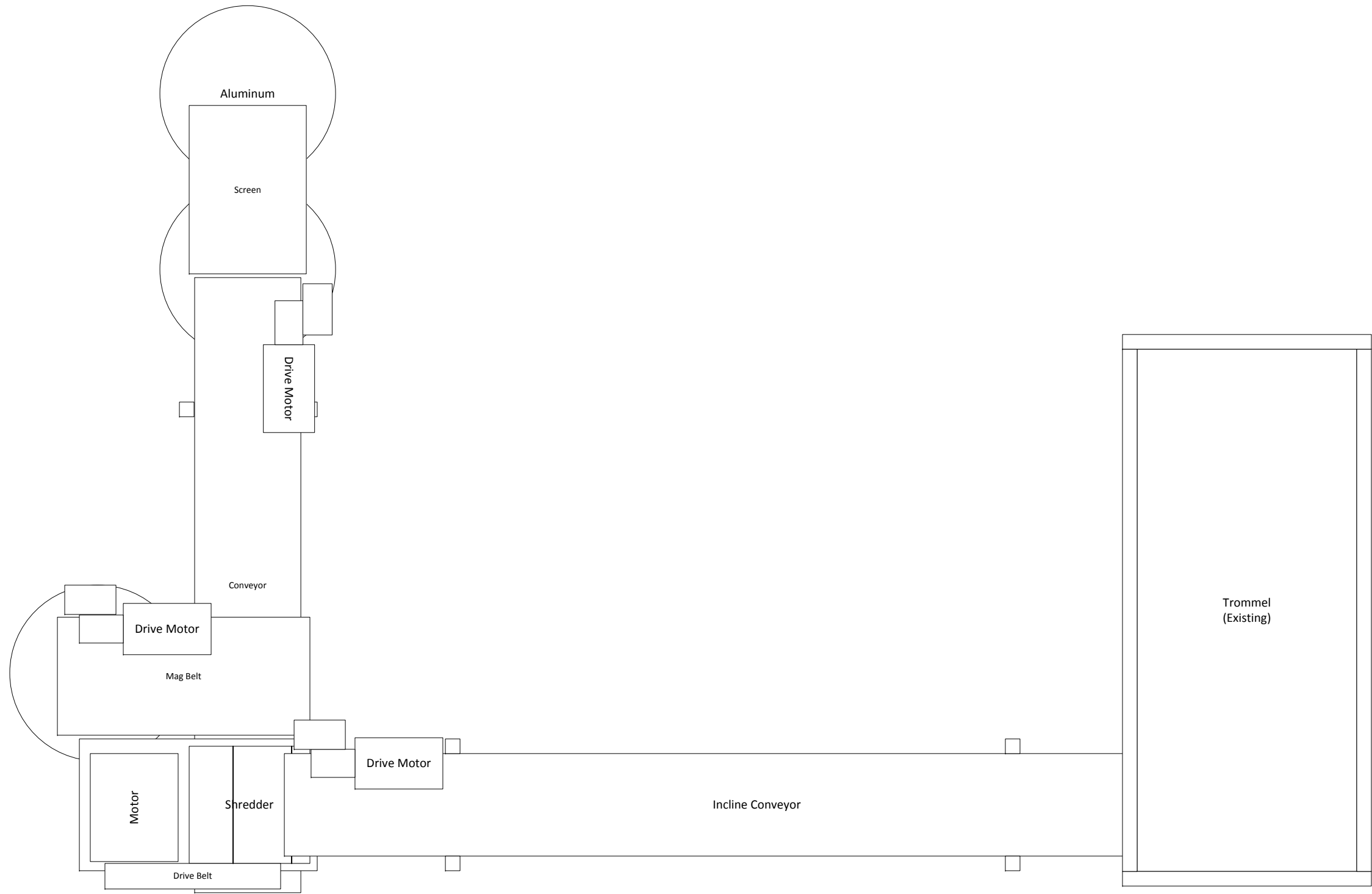
Figure 5.3
Lamp Process Emission Controls

March 2016

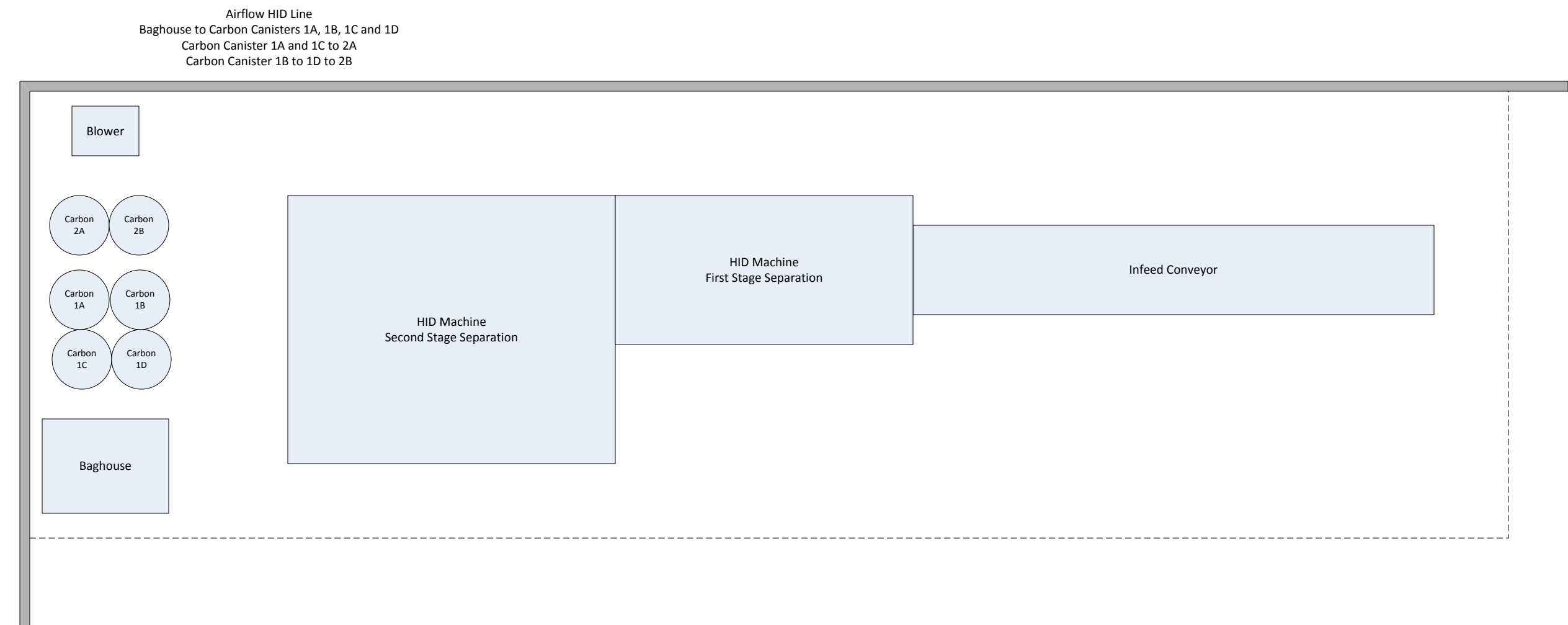




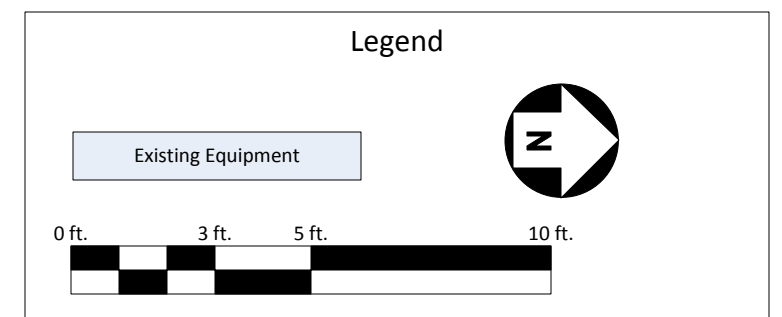
| |
|---|
| <p>Figure 5.7</p> <p>Side View</p> <p>Aluminum Management System</p> |
| <p>Issued: September 25, 2014</p> <p>Revised: May 6, 2015</p> |
| <p>S:\Secure\Tallahassee Permit Folder\2014 Modification\Side View 050615.pdf</p> |

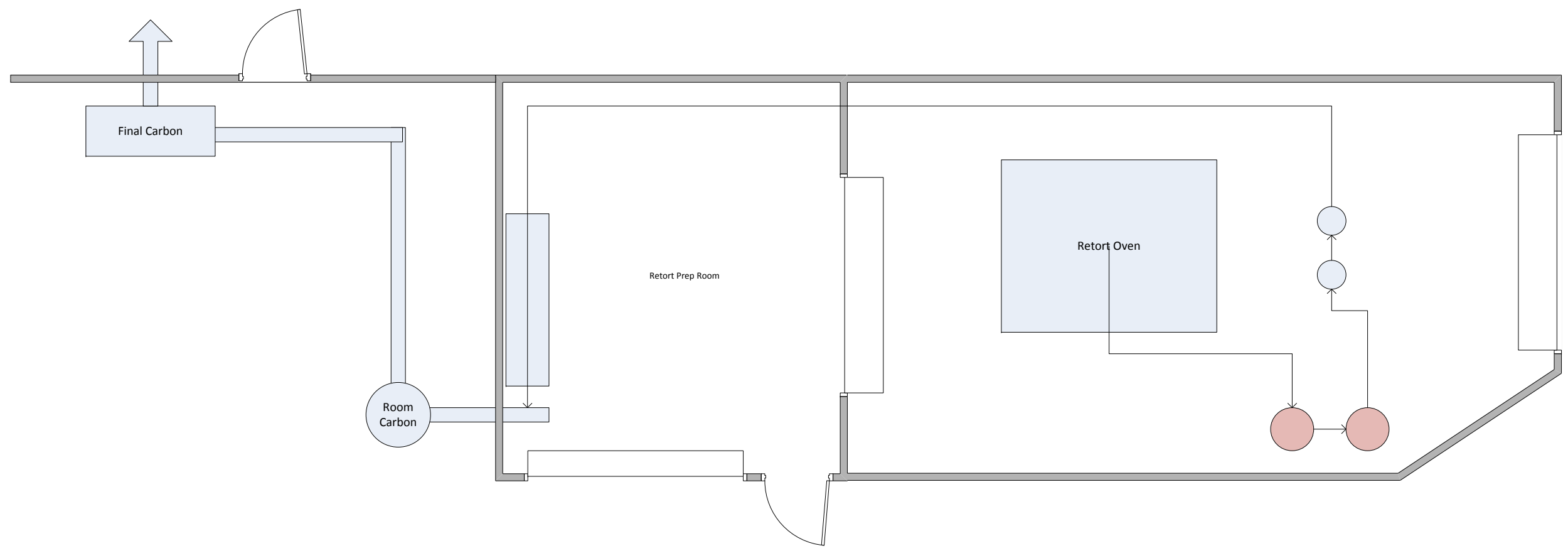


| |
|--|
| <p>Figure 5.8</p> <p>Top View</p> <p>Aluminum Management System</p> |
| <p>Issued: September 25, 2014</p> <p>Revised: May 6, 2015</p> |
| <p>S:\Secure\Tallahassee Permit Folder\2014 Modification\Top View 050615.pdf</p> |




| | | |
|---|-----------------------------------|----------------|
| S:\Secure\Shared\Tallahassee Permit Folder\2016 Renewal\Figure 5_9.pdf | Figure 5.9 HID Area Floor Plan | March 14, 2016 |
|---|-----------------------------------|----------------|








| | | |
|--|---|-----------------------|
| <p>S:\Secure\Shared\Tallahassee Permit Folder\2016 Renewal\Figure 5_10.pdf</p> | <p>Figure 5.10 Retort Area Floor Plan</p> | <p>March 14, 2016</p> |
|--|---|-----------------------|

Legend

 Carbon Units

 Heat Exchangers





0 ft. 3 ft. 5 ft. 10 ft.

Profile 644758

NON-HAZARDOUS SPECIAL WASTE
(BY PRODUCT LAMP GLASS)

PROPER U.S. DOT SHIPPING DESCRIPTION:

BY PRODUCT CLEAN GLASS

GENERATOR INFORMATION:
NAME: VEOLIA ES TECHNICAL SOLUTIONS, L.L.C.
ADDRESS: 342 MARPAN LANE
CITY, STATE, ZIP: TALLAHASSEE FL 32305
PHONE:
EPA ID#: FL0000207449
EPA WASTE NO: null
MANIFEST TRACKING NO.:
CONTAINER WEIGHT:
ACCUMULATION START DATE:
OUT OF SERVICE DATE:
CONTAINER NUMBER:

HANDLE WITH CARE

Figure 5.11
Sample Non-hazardous Waste Label
(actual label size 4"x6")

Profile 299885

HAZARDOUS WASTE
(MERCURY DEBRIS, PPE FOR MICROENCAPSULATION)

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST POLICE, OR PUBLIC SAFETY
AUTHORITY OR THE U.S. ENVIRONMENTAL PROTECTION
PROPER U.S. DOT SHIPPING DESCRIPTION:

RQ, UN3077 Hazardous Waste Solid, n.o.s.
(D009) 9 III (MERCURY DEBRIS)

GENERATOR INFORMATION:
NAME: VEOLIA ES TECHNICAL SOLUTIONS, L.L.C.
ADDRESS: 342 MARPAN LANE
CITY, STATE, ZIP: TALLAHASSEE FL 32305
PHONE:
EPA ID#: FL0000207449
EPA WASTE NO: D009
MANIFEST TRACKING NO.:
CONTAINER WEIGHT:
ACCUMULATION START DATE:
OUT OF SERVICE DATE:
CONTAINER NUMBER:

HANDLE WITH CARE

Figure 5.12
Sample Hazardous Waste Label
(actual label size 4"x6")

Profile 293044

UNIVERSAL WASTE
(DRY CELL NICAD BATTERIES)

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST POLICE, OR PUBLIC SAFETY
AUTHORITY OR THE U.S. ENVIRONMENTAL PROTECTION
PROPER U.S. DOT SHIPPING DESCRIPTION:

Batteries, dry, sealed, n.o.s.

GENERATOR INFORMATION:
NAME: VEOLIA ES TECHNICAL SOLUTIONS, L.L.C.
ADDRESS: 342 MARPAN LANE
CITY, STATE, ZIP: TALLAHASSEE FL 32305
PHONE:
EPA ID#: FL0000207449
EPA WASTE NO: N/R
MANIFEST TRACKING NO.:
CONTAINER WEIGHT:
ACCUMULATION START DATE:
OUT OF SERVICE DATE:
CONTAINER NUMBER:

HANDLE WITH CARE

Figure 5.13
Sample Universal Waste Label
(actual label size 4"x6")


| Mercury | |
|--|---|
| <p>DANGER!</p> <ul style="list-style-type: none">• May be corrosive to metals.• Fatal if swallowed.• Fatal if inhaled.• Suspected of damaging fertility or the unborn child.• Causes damage to organs if inhaled.• Causes damage to organs through prolonged or repeated exposure by inhalation. |  |
| <p>Keep only in original container. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe fumes, mists or vapors. Use only outdoors or in a well-ventilated area. Wear respiratory protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/clothing and eye/face protection. Absorb spillage to prevent material damage.</p> <p>IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. IF exposed or concerned: Get medical attention/advice. Get medical attention/advice if you feel unwell.</p> <p>Store in corrosive resistant container with a resistant inner liner. Store locked up. Store in a well-ventilated place. Keep container tightly closed. Dispose of contents/container in accordance with local regulation.</p> | |
| <p>Veolia ES Technical Solutions, L.L.C., 1275 Mineral Springs Drive, Port Washington, WI 53074 (262) 243-8900</p> | |

Figure 5.14
Sample Mercury Label
(actual label size 8"x5")

Attachment D-6 Contingency Plan

6.1 Introduction

The purpose of this document is to describe the contingency plan and emergency procedures for Veolia ES Technical Solutions, L.L.C. (Veolia) operations pursuant to 40 CFR Part 264, Subpart D. and Florida Administrative Code 62-730-180 (1)

6.2 Identification

Veolia's mercury reclamation and recovery facility is located at 342 Marpan Lane in Tallahassee Florida. A site layout is presented in Figure 6.1 which identifies the location of the building. Figure 6.2 is a floor plan with evacuation routes for the main building located at 342 Marpan Lane. Figure 6.3 is a floor plan with evacuation routes for the South building. A representative sample of Safety Data Sheets for the lamp types processed on-site and a Safety Data Sheet for elemental mercury are included in Appendix D-6-I to this plan.

6.3 System Overview

Mercury bearing lamps and mercury-containing devices are stored in the designated storage areas inside the building. Veolia has a mechanical processing system that is capable of processing fluorescent and high intensity discharge (HID) lamps that contain mercury. Mercury-containing devices such as thermometers, thermostats, blood pressure cuffs are processed by a combination of manual and mechanical processing. The entire process consists of receiving, staging, crushing, separating, and distillation to recover reusable mercury. The receiving process involves unloading, staging and inventorying product received. The staging process reflects setting up the lamps for crushing. The crushing process reduces the lamps into glass, aluminum end caps, and mercury bearing phosphor powder. The distillation process removes mercury from the phosphor powder. The recovered materials are stored on-site until sufficient quantities are collected and transported off site to an end user.

6.4 Documents Overview

This document describes emergency procedures and requirements for the Emergency Coordinator and Veolia employees. The personnel action requirements include emergency notification, emergency response, and evacuation procedures. This document includes a list of emergency equipment and proof of local authorities notification.

6.5 Purpose of Plan

6.5.1 Implementation of Plan

The provisions of this Contingency Plan will be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment (40 CFR 264.51(b)).

6.5.2 Amendment of Contingency Plan

The Contingency Plan will be reviewed and immediately amended, if necessary, whenever any of the following occur:

- The facility permit is revised.
- The plan fails in an emergency.
- The facility changes its design, construction, operation, maintenance, or other circumstances in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency.
- The list of Emergency Coordinators changes.
- The list of emergency equipment changes.

6.5.3 Reporting Procedures Emergency for Personnel

Aisle space is maintained at the facility in order to ensure the unobstructed movement of personnel, fire, and spill control equipment in an emergency. The provisions of this plan must be carried out immediately whenever there is a medical emergency, fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment. The Operations Manager is the designated Emergency Coordinator (EC).

In the event of a medical emergency, Veolia personnel shall notify the Emergency Coordinator and then the local authorities by calling **911**.

The Emergency Coordinator shall call in the report and include the following information:

1. Veolia ES Technical Solutions, L.L.C. – telephone number 850-877-8299
2. Address:
Veolia ES Technical Solutions, L.L.C.
342 Marpan Lane
Tallahassee, FL 32305
3. Mercury Reclamation/Recovery & Storage Areas:

Loading Dock
Office
Locker Room/Shower
Break Room
Distillation Room
Processing Room
Staging/Receiving Area
Storage Area

4. Type of incident: (medical, fire, explosion)
5. Missing personnel and suspected location.
6. Extent of injuries, if any.
7. Name of material and quantity if known.
8. Possible hazards to human health outside facility.

In the event of fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment, the Emergency Coordinator or his designee shall immediately perform the following activities:

9. Notify all on-duty personnel to evacuate the facility.
10. Activate internal facility alarm/communication system.
11. Identify the character, exact source, amount, and extent of any released material(s) by observation or review of facility records and manifests.
12. Assess possible hazards to human health or the environment that may result from the release, fire or explosion.
13. Notify appropriate State and Local agencies with designated response roles (if their help is needed) per section 6.10.

6.6 Emergency Procedures

6.6.1 Emergency Coordinator (EC) designation and Duties

Emergency Coordinator List

| Primary EC | Alternate EC | Alternate EC |
|--------------------------|---------------------|-----------------------|
| Scott Fulton | Randy Williams | Matthew Melott |
| 4169 Fred Hatfield Court | 94 Christian Loop | 24098 Lake Talquin Rd |
| Tallahassee, FL 32310 | Havana, FL 32333 | Tallahassee, FL 32310 |

C (850) 688-8252
O (850) 877-8299
H (850) 210-2376

C (850) 251-4930
O (850) 877-8299
H (850) 539-9732

C(850) 274-7842
O (850) 877-8299
H (850) 509-9187

Veolia uses an on call system to notify the Emergency Coordinator. The primary Emergency Coordinator (listed first) is responsible for assigning a designee per 40 CFR Part 264.55. The EC shall have the authority to commit the necessary resources to contain and respond to the emergency. The EC shall be responsible for government notification and implementing the emergency response procedures. In the event the primary EC is not available you should contact the alternate EC's listed above.

6.6.2 Emergency Response Contractor

Veolia uses a network of emergency response contractors throughout the United States for the purpose of responding to emergencies at Veolia facilities or customer sites. For the Tallahassee facility, Veolia has established a contract with the below listed company for the provision of hazardous materials emergency response and remediation activities.

SWS Environmental Services
Panama City Beach
1617 Moylan Road
Panama City Beach, Florida 32407
Phone: (850) 563-0822
24-Hour Emergency Response: (877) 742-4215

6.7 Emergency Response Procedures

The EC shall take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, reoccur, or spread to other locations which contain hazardous materials. Veolia personnel shall be at a minimum in LEVEL C personal protective equipment pursuant to CFR 29 Part 1910.120 Appendix B. The following procedures will be carried out.

6.7.1 Containment Procedure

Isolate unprocessed powder canisters from fire hazards located in distiller area.

Closure of any open containers of mercury containing manufactured articles and lamps.

6.7.2 Equipment Shut Down Procedures

In the event of a fire or explosion, the following steps shall be taken.

1. Press one of the emergency off switches on the fluorescent lamp processing equipment. The emergency off switches are located adjacent to the in feed conveyors and on the main control panel.
2. Turn off HID capsule crusher system located in crusher-separator room.
3. Evacuate all personnel from the building and gather at rally point.

6.7.3 Personnel Injury

1. Quickly evaluate the extent of the injury.
2. Call 911 for all injuries other than those of a minor nature.
3. Administer emergency first aid on injured person.
4. Assign a person to the facility entrance to direct emergency services.
5. Move injured person to safety if it is safe and will not further harm the affected person.

6.7.4 Fire or Explosion

The EC shall take all reasonable measures necessary to contain the emergency. The following steps shall be taken if appropriate.

1. Call 911 emergency services and notify the operator that Veolia Electronics Recycling has a Contingency Plan.
2. Evacuate all personnel from the area.
3. Assign a person to the facility entrance to direct emergency services.
4. If appropriate, execute the Containment Procedure.
5. If appropriate, execute the Equipment Shut down Procedure.
6. Assign a person to monitor the facility for mercury vapor.

6.7.5 Spill

There are two types of spills (i.e. liquid mercury and solids contaminated with mercury) that could occur at Veolia. Each type of spill requires a different cleanup procedure. Personnel shall wear safety glasses, gloves,

and shoes for all types of spills. Further protection may be required depending on the mercury vapor level and the size of the spill.

6.7.5.1 Liquid Mercury Spill Clean-Up Procedures: Routine Spills

A routine spill is defined as a small spill of less than one pound that occurs during normal work operations. A routine spill is further defined as one that is confined onsite and occurs near the distiller or liquid mercury storage containers and does not enter drains, storm water runoff outfalls, wells and/or soil.

1. Report spill to emergency coordinator.
2. Don personnel protective equipment gloves, protective clothing and respiratory protection appropriate to the nature of the spill.
3. Use Mercury Vapor Analyzer to monitor spill area to determine airborne mercury vapor levels. If the mercury vapor concentration exceeds 0.025 mg/m^3 , a respirator is required.
4. Assemble spill cleanup equipment near the spill site, use mercury vacuum, mercury sponges and/or mercury spill powder to adsorb or chemically amalgamate mercury.
5. Clean spill area as many times as necessary to remove visible mercury.
6. Place collected mercury into a metal storage container.
7. Use Mercury Analyzer to carefully monitor airborne mercury vapor levels especially close to the surface of the spill. Refrain from drawing mercury droplets into the instrument. Levels above 0.025 mg/m^3 require additional cleaning.
8. Decontaminate as necessary if airborne mercury levels near the spill surface are above background.
9. Use as a final clearance step, use mercury indicating swabs or mercury indicator powder on the cleaned surfaces and/or equipment to determine residual amounts and repeat cleaning steps as necessary to achieve background.
10. Place spill materials and contaminated equipment in hazardous waste containers and label for recovery or disposal.
11. Make record of spill incident and resolution.

6.7.5.2 Liquid Mercury Spill Clean-Up Procedures: Non-Routine Spills

Non routine and large spills require a similar response to routine spills, but usually require more personnel. Large spills take more time to assess and complete associated tasks. Large spills can be a larger threat to the environment if not handled immediately by qualified personnel. A non-routine spill is defined as a spill involving greater than one pound of mercury and/or where personal injury or outside contamination (I.e. soil, water, drains) occur as a part of the spill or as a result of the spill.

1. Report spill to onsite supervisor and determine spill extent.
2. Notify applicable government agencies per Section 4.0.
3. Assemble spill response equipment. Call outside contractor for help as necessary.
4. Use Mercury Vapor Analyzer to check airborne levels. Use airborne mercury data to determine extent of personnel protective equipment required for the incident. If airborne concentrations are unknown Veolia requires the use of a SCBA and high level (A, B) protective clothing to protect the skin.
5. Set up a safe staging area based on air tests and surface contamination.
6. Begin clean up after donning personnel protective equipment and setting up decontamination area, assigning roles and carefully defining objective(s).
7. Accomplish cleanup as necessary by following steps outlined in Routine Spills above.
8. Submit written reports to regulatory agencies per Section 6.10.

6.7.5.3 Solids Contaminated with Mercury Spill Clean-Up Procedures: Routine Spills

Routine spills of solids contaminated with mercury include spills of small amounts of broken lamps or debris contaminated with mercury is a concentration similar to that of broken lamps. Routine spills are further defined as ones that are confined onsite.

1. Report spill to emergency coordinator.
2. Don personnel protective equipment gloves, protective clothing and respiratory protection.

3. Assemble spill cleanup equipment near the spill site, use mercury vacuum, mercury sponges and/or mercury spill powder to adsorb or chemically amalgamate mercury.
4. Clean spill area to remove any visible signs of spilled material.
5. Place collected material into an appropriately marked and labeled storage container or place the material directly into the processing equipment.
6. Make record of spill incident and resolution.

6.7.5.4 Solids Contaminated with Mercury Spill Clean-Up Procedures:
Non- Routine Spills

Non routine and large spills require a similar response as routine spills, but usually require more personnel. Large spills take more time to assess and complete associated tasks. Large spills can be a larger threat to the environment if not handled immediately by qualified personnel. A non-routine spill is defined as a spill involving greater than one pound of mercury and/or where personal injury or outside contamination occur as a part of the spill or as a result of the spill.

1. Report spill to onsite supervisor and determine spill extent.
2. Notify applicable government agencies per Section 4.0.
3. Assemble spill response equipment. Call outside contractor for help as necessary.
4. Use Mercury Vapor Analyzer to check airborne levels. Use airborne mercury data to determine extent of personnel protective equipment required for the incident. If airborne concentrations are unknown Veolia requires the use of a SCBA and Level B protective clothing to protect the skin.
5. Set up a safe staging area based on air tests and surface contamination.
6. Begin clean up after donning personnel protective equipment and setting up decontamination area, assigning roles and carefully defining objective(s).
7. Accomplish cleanup as necessary by following steps outlined in Routine Spills above.

8. Verify clean-up through the use of direct reading instruments or sampling as appropriate for the media.
9. Submit written reports to regulatory agencies per Section 6.10.

6.7.5.5 Bomb Threat

1. The person receiving the bomb threat shall attempt to obtain as much information as possible from the caller.
2. The person receiving the bomb threat shall immediately notify the Emergency Coordinator.
3. Evacuate all personnel from the area (see evacuation procedures).
4. Lock exterior doors.
5. Call 911 from a separate location and follow their instructions.
6. Call building management company.

6.7.5.6 Civil Disturbance

1. Call 911 personnel and request appropriate assistance.
2. Notify the Emergency Coordinator.
3. Direct all personnel to a safe area.
4. Lock exterior doors if the disturbance is outside of the facility (see evacuation procedures).
5. Evacuate all personnel if the disturbance is inside the facility.
6. Lock as many doors as possible.

6.8 Emergency Equipment

Veolia shall have the following emergency equipment available and in working condition:

1. Fire – Portable fire extinguishers are located in the building (complying with local building codes). See Figures 6.2 and 6.3. They would be used to extinguish a fire if one should occur. An employee inspects each one monthly to determine that it is fully charged. An outside firm conducts annual inspections for each unit; each one is weighed and the hoses checked for wear.

2. **Mercury Vacuum-** Mercury vacuums are designed for the cleanup of mercury spills and have a air collection system that collects mercury vapor in a HEPA filter. Mercury vacuums are the only type of vacuum that should be used to clean up spills.
3. **Mercury Spill Kit**

There are two commercial kits located at the site is in a white box located in the distiller room. The other is in the Operations Managers office See Figure 6.2. The box is marked “Mercury Spill Control Station”. The spill kit contains absorbent powder, absorbent sponges, and a pump. Directions on how to use the equipment are located in the cover of the box. The spill kit is used to collect liquid mercury in the event of a spill. The Operations Manager ensures that it is complete.
4. **Respirators**

There are four full-face respirators with mercury vapor cartridges and HEPA filters available for use in an emergency. Respirators are used to protect employee health. They are inspected monthly. They are located in the in the maintenance area in the building to the south of the mercury recovery facility and labeled “For Emergency Use Only”.
5. **Protective Clothing – Tyvek**

Tyvek full-body coveralls provide short-term protection against hazards such as fluorescent lamp powder (i.e. dust) and mercury particulates. A supply of Tyvek suits are in the maintenance area in the building to the south of the mercury recovery facility and labeled “For Emergency Use Only”.
6. **Eye Wash Stations**

Two emergency eye wash stations are installed at the facility. Liquid mercury is considered to be corrosive if it is splashed into the eye. An eye wash is necessary to wash out eyes in the event of an emergency. They are located.

 - a. Immediately north of the restroom on the east end of the facility
 - b. Immediately south of the baler on the east wall at the south end of the facility
 - c. Inside the north door in the lower building (E-waste/battery). This unit also has a drench hose attachment for safety purposes.
7. **First Aid Kit**

A commercially sold first aid kit is maintained at the facility. The contents will be used in the event of an accident. The Operations Manager ensures that it is complete. It is located in the restroom of the main office. The facility is also equipped with a portable first aid bag which is kept in the Operations Manager office should a situation require use of a portable unit.
8. **Automated External Defibrillator (AED)**

The facility is equipped with one Automated External Defibrillator (AED) it is stored in the Operations Manager office on the east wall immediately after the entry door.

9. Mercury Vapor Detector

The Mercury Vapor Analyzer is available to monitor mercury vapor emissions in an emergency. The directions on how to operate the instrument are found in a file in the Supervisors office. The mercury detector is located in the Supply room in the north side of the building adjacent to the break room. The detector is used to monitor internal mercury vapor concentrations. The unit is annually calibrated by Arizona Instruments, the manufacturer.

10. Access to Communication

A telephone is available which facility personnel could use to call 911 and summon emergency assistance.

11. Access to Alarm

The telephone system is equipped with a paging system which will alert all facility personnel to evacuate the building. The emergency coordinators can activate the paging system from any telephone in the facility. Should the telephone system not be available, the facility maintains one (1) megaphone and one (1) airhorn. Both are located in the Operations Managers office.

6.9 Evacuation Procedures

Veolia employees shall evacuate the building via the nearest exit (see Figures 6.2 and 6.3). Upon evacuation, all personnel shall meet at the designated evacuation point which is located in the driveway by the telephone pole. The EC shall account for all personnel on duty.

The EC shall be available to help appropriate officials decide whether the local areas around the facility should be evacuated.

6.10 Notification Procedures

It is the responsibility of the Emergency Coordinator (EC) or designee to oversee all response actions and ensure that proper notifications are made. The EC shall notify all appropriate agencies following identification and assessment of the incident as described below.

1. Identification of Released Material

The EC shall immediately identify the character, exact source, amount, and extent of any released materials. The EC may do this by observation, review of facility records, or chemical analysis.

2. Assessment of Hazards

The EC shall evaluate possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment must consider both direct and indirect effects of the release, fire, or explosion; the effects of any toxic, irritating gases that are generated; and the effects of any hazardous surface water run-off from or chemical agents used to control fire and heat inducing explosions.

The EC shall report releases in the order presented below.

6.10.1 Local – City and County

By calling **911**, Leon County’s Division of Emergency Management will be contacted and informed of the situation.

6.10.2 State

Department of Environmental Protection

Veolia must comply with General Condition 16B of the Facility Permit. General Condition 16B states: “Notification of any non-compliance which may endanger health or the environment, including the release of any hazardous waste that may endanger public drinking water supplies, or the occurrence of a fire or explosion from the facility which could threaten the environment or human health outside the facility, **shall be verbally submitted to the Department within 24 hours and a written submission provided within 15 days.** The verbal submission within 24 hours shall contain the name, address, I.D. number, and telephone number of the facility and owner or operator, the name and quantity of materials involved, the extent of injuries (if any), an assessment of actual or potential hazardous, and the estimated quantity and disposition of recovered material. The written submission shall contain the following:

1. A description of and cause of the non-compliance; and
2. If not corrected, the anticipated time the non-compliance is expected to continue and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.”

6.10.3 Other State Requirements

The EC will immediately notify the Florida DEP 24 Hour emergency response at 850-413-9911 of any release of (a) hazardous substance(s) from the facility in a quantity equal to or exceeding the reportable quantity (RQ) in a 24-hour period. **The RQ for Mercury is one pound.**

The Telephone number for the District FDEP is 850-595-8300 ext 1100, and during normal business hours calls 850-595-8360 ext 1253. The EC will report the following information:

1. Name, address, and telephone number of person reporting.
2. Name, address, and telephone number of person responsible for the discharge or release, if known.
3. Date and time of the discharge or release.
4. Type or name of substance discharged or released.
5. Estimated amount of the discharge or release.
6. Location or address of the discharge or release.
7. Source and cause of the discharge or release.
8. Size and characteristics of area affected by the discharge or release.
9. Containment and cleanup actions taken to date.
10. Other persons or agencies contacted.

Within **fifteen (15) days** after the emergency situation, the facility shall submit a written report to the Florida DEP which described the situation. The report shall include the following information:

1. Name, address, and telephone number of the facility owner or operator.
2. Name, address, and main telephone number of the facility.
3. Date, time, and type of emergency situation (e.g. spill, fire, explosion).
4. Name and quantity of material(s) involved.
5. The extent of injuries (if any).
6. An assessment of actual or potential hazards to human health or the environment, where this is applicable.
7. Estimated quantity and disposition of recovered material that resulted from the incident.

6.10.4 Federal

The EC shall **immediately** notify the National Response Center (NRC) by using their 24-hour toll free number: 1-800-424-8802.

The person calling in the report shall include the following:

1. Name and telephone number of reporter.
2. Name and address of facility.
3. Time and type of incident.
4. Name and quantity of material(s) involved, to the extent known.
5. The extent of injuries (if any).
6. The possible hazards to human health or the environment outside the facility.

If the release is subject to SARA Title III requirements, then the emergency notice must be submitted which contains the following information:

1. The chemical name or identity of any substance involved in the release.
2. An indication of whether the substance is on the list of extremely hazardous substances.
3. An estimate of the quantity of any such substance that was released into the environment.
4. The time and duration of the release.
5. The medium or media into which the release occurred.
6. Any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals.
7. Proper precautions to take as a result of the release, including evacuation (unless such information is readily available to the community emergency coordinator pursuant to the emergency plan); and
8. The name and telephone number of the person(s) to be contacted for further information.

6.11 Local Notification Requirements

The following local authorities were sent a copy of the Contingency Plan via certified mail or package delivery service where a signature is obtained document receipt. Each party is aware of the operation and has been invited to tour the facility.

Leon County Division of Emergency Management
301 South Monroe Street
Leon County Courthouse
P-301
Tallahassee, FL 32301
850-488-5921

(The Division will forward copies of this plan to police and fire authorities.)

Emergency Services Manager
Tallahassee Memorial Regional Medical Center
1300 Miccosukee Road
Tallahassee, FL 32308
850-681-5592

Director of Critical Care
Capital Regional Medical Center
2626 Capital Medical Boulevard
Tallahassee, FL 32308
850-656-5170

6.12 Arrangements with Local Authorities

After receiving and reading this document, local authorities and select DEQ staff become familiar with the facility layout, the properties, materials handled at the facility, associated hazards, processing areas within the building, the evacuation point and types of injuries or illnesses that could result from fires, explosions, or releases at the facility. The Operations Manager personally called and invited local authorities to tour the facility and gain greater familiarity with the operations. Organizations identified in Section 6.11 were asked to review this plan and provide Veolia with a written response regarding any actions they may take responding to an emergency.

6.13 Mitigate Effects of Equipment Failure

Veolia management recognizes the importance of preventative maintenance. The lamp recycling system consists of two major components. The first is a crushing unit and the second is a distillation unit. Both units, and support equipment, have routine daily and/or weekly inspection and maintenance procedures. The support equipment is inspected and maintained per the suppliers recommendations by Veolia and/or qualified maintenance

companies. Common repair/spare parts are available on-site for immediate use. Veolia maintains maintenance records for all of our lamp recycling equipment.

6.13.1 Prevent Hazards During Unloading

Veolia's mercury reclamation facility has two dock doors with dock levelers. The dock levelers can be adjusted to accommodate different sized trucks. All containers are moved from the truck into the building using either a pallet jack or forklift. Wheel chocks are used to prevent the truck from moving away from the dock.

6.13.2 Personal Protective Clothing

OSHA 1910.120 Subpart I addresses personal protective equipment (PPE). When exposure to hazards can not be engineered completely out of normal operations or maintenance work, and when safe work practices can not provide sufficient additional protection, a further method of control is the use of protective clothing or equipment. The reason for wearing personal protective equipment is to protect employees from potential health hazards associated with the chemical Veolia works with. PPE such as respirators, safety glasses, safety shoes, gloves, and coveralls are provided to each employee.

Veolia supervisors and operations employees are trained on the proper selection, use, and maintenance of PPE. Employees are trained on the hazards present in the work place and why the equipment is necessary, how it benefits the employee, and the limitations of each type of PPE. Employees become familiar with and comfortable wearing PPE. Veolia provides all employees the required PPE at no charge to the employees. Typical PPE used by Veolia employees are: full-face respirators with mercury cartridges and HEPA filters; safety glasses; safety shoes; gloves; and Tyvek suits.

Employees are properly trained on how to don and doff the equipment, how to wear it properly, how to test for proper fit, and end of service life markings on respirator cartridges. Proper fit is essential if the respirator is to provide the intended protection. All employees required to wear a respirator is fit tested.

Veolia adheres to and complies with 29 CFR 1910.134(b) regarding a written respiratory protection program. The written respiratory plan addresses the following elements: inspection, maintenance, cleaning, storage, training, work place evaluation, fit testing, and medical certification.

6.14 Preventing Releases

Veolia's facility is designed, operated, and maintained in a manner that ensures protection of human health and the environment. Our facility's design provides for environmental protections. Our processing equipment (the crusher-separator and

distillation units) are enclosed in separate rooms for noise, dust, and mercury vapor control. The processing rooms are maintained under negative air-flow. The air stream from the crusher-separator first passes through a bag house and a HEPA filter to capture dust particles. The air stream then passes through sulfur impregnated carbon filters to capture mercury vapor from the processing equipment. Two carbon filters are also present for the distillation process.

Our technology captures approximately 99%, by weight, of all mercury which is processed by our lamp recycling technology. Consequently, we are able to significantly minimize mercury exposure to human and other environmental receptors.

On-site distillation of mercury phosphor powder eliminates the need to transport hazardous waste off-site. Our distiller separates the mercury from the powder and collects the elemental mercury in a liquid form. The extracted mercury is greater than 99% pure and is no longer classified as a waste. Liquid mercury will be shipped to Veolia approved facility in DOT approved flasks which are designed for transportation of mercury. By distilling on-site in a controlled environment, we have minimized exposure to human beings or any other receptors to a hazardous waste.

Veolia staff is very concerned about potential releases to the environment. We conduct daily facility and weekly hazardous waste storage area inspections of our facility and record them in a log book. We also test and maintain our communication and fire protection equipment to ensure proper operation at all times.

Veolia uses a portable Jerome Mercury Vapor Analyzer to monitor for mercury vapor within the facility. However, for the purpose of this plan the term Mercury Vapor Analyzer will be used to refer generically to any direct read mercury vapor meter with equivalent or greater sensitivity as the Jerome. Examples of other meters include the Ohio Lumex model RA 915 or Mercury Instruments model VM3000. We have selected multiple locations where we monitor for mercury vapor exposure. Monitoring is conducted every day the facility is operating.

Appendix D-6-I

Safety Data Sheets

| | | |
|--|----------------|-------------------------|
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PRODUCT SAFETY DATA SHEET
PSDS No. 1.1.5
COMPACT FLUORESCENT LAMPS



SYLVANIA brand Compact Fluorescent Lamps, manufactured by OSRAM SYLVANIA, are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

Family Name: Sylvania Compact Fluorescent Lamps (For general lighting applications)
Trade Names (as labeled): Sylvania DULUX EL® (Consists of lamp and ballast/adaptor as a unit)
Sylvania DULUX® (Pin-based lamp, no ballast/adaptor)
DULUX EL & DULUX are registered trademarks of OSRAM GmbH.
Manufacturer: OSRAM SYLVANIA
100 Endicott Street
Danvers, Massachusetts
1-800-544-4828

II. HAZARDOUS INGREDIENTS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. The following materials, unless specified otherwise, are part of the glass bulb portion of the DULUX EL unit and the entire DULUX unit. The % weight, unless specified otherwise, is relative to the glass bulb portion of the DULUX EL and the entire DULUX. If the glass bulb is broken, the following materials may be released:

| <u>Chemical Name</u> | <u>CAS Number</u> | <u>% by wt.</u> | <u>Exposure Limits in Air (mg/cubic m)</u> | |
|-----------------------------------|-------------------|-----------------|--|---------------------|
| | | | <u>ACGIH (TLV)</u> | <u>OSHA (PEL)</u> |
| Glass (Soda-Lime) | --- | 75-90 | 10.0 ⁽²⁾ | 15.0 ⁽²⁾ |
| (1, 4) Mercury | 7439-97-6 | <0.02 | 0.025 | 0.1 Ceiling |
| (1, 3) Lead Oxide | 1317-36-8 | 0.2-2.0 | 0.05 | 0.05 |
| Aluminum Oxide | 001-344-281 | 0-2.0 | 10.0 ⁽²⁾ | 15.0 ⁽²⁾ |
| (1, 4, 6) Lead Solder (as Pb) | 7439-92-1 | 0-0.4 | 0.05 | 0.05 |
| (5) Krypton-85 | 7439-90-9 | 0-<0.01 | --- | --- |
| Fluorescent Phosphor | --- | 0.5-3.0 | 10.0 ⁽²⁾ | 15.0 ⁽²⁾ |
| may contain: | | | | |
| (3) Barium Compounds (as Ba dust) | 7440-39-3 | 0-0.1 | 0.5 | 0.5 |
| (3) Manganese (as dust) | 7439-96-5 | 0-0.1 | 0.2 | 5.0 Ceiling |
| (3) Yttrium Oxide (as Y dust) | 7440-65-5 | 0-0.5 | 1.0 | 1.0 |

- (1) These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
- (2) Limits as nuisance particulate.
- (3) These elements are contained in the material as part of its chemical structure; the material is not a mixture.
- (4) The mercury and lead in this product are substances known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]
- (5) This radioactive isotope is only found in the glass-encapsulated starting switch mounted in the base of 2-pin DULUX lamps, and is *not* found in 4-pin DULUX or DULUX EL lamps.
- (6) This material is found only on the base of the DULUX EL ballast/adaptor unit and the % weight is relative to the entire lamp & ballast/adaptor unit.

III. PHYSICAL PROPERTIES

Not applicable to intact lamp.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible.

Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.

Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.

Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

V. HEALTH HAZARDS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards and/or NIOSH Pocket Guide to Chemical Hazards lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:

Mercury - Exposure to high concentrations of vapors for brief periods can cause acute symptoms such as pneumonitis, chest pains, shortness of breath, coughing, gingivitis, salivation and possibly stomatitis. May cause redness and irritation as a result of contact with skin and/or eyes.

Lead - Ingestion and inhalation of lead dust or fume must be avoided. Irritation of the eyes and respiratory tract may occur. Excessive lead absorption is toxic and may include symptoms such as anemia, weakness, abdominal pain, and kidney disease.

Phosphor - Phosphor dust is considered to be physiologically inert and as such, has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust.

Barium Compounds - Alkaline barium compounds, such as the hydroxide and carbonate, may cause local irritation to the eyes, nose, throat, and skin.

Glass - Glass dust is considered to be physiologically inert and as such, has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust. The ACGIH TLVs for particulates not otherwise classified are 10 mg/cubic meter for total dust and 3 mg/cubic meter for respirable dust.

Manganese - Inhalation of manganese dust may cause local irritation to the eyes, nose, and throat.

Yttrium - Studies of workers exposed to this material showed no evidence of chronic or systemic effects.

Aluminum Oxide (Alumina) - Alumina is a non-toxic material which is very low in free silica content. Sharp-edged particles can irritate the eyes, perhaps the skin, and definitely the mucous membranes of the respiratory tract.

Krypton-85 Contained in Glow Switch - The radiation emitted by Kr-85 is 99.6% beta which is completely absorbed by the glass envelope of the glow switch and 0.4% gamma which is not. This radiation is, however, 100 to 200 times less than that allowable for clocks and watches. In the unlikely event of the glow switch breaking, the traces of krypton-85 gas immediately disperses in the air. Krypton gas and its radioactive isotope are inert (they do not react chemically with other substances) and are not absorbed by the body.

V. HEALTH HAZARDS (Continued)

EMERGENCY AND FIRST AID PROCEDURES

Glass Cuts: Perform normal first aid procedures. Seek medical attention as required.

Inhalation: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention.

Ingestion: In the unlikely event of ingestion of a large quantity of material, seek medical attention.

Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention if irritation occurs.

Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None

VI. REACTIVITY DATA

Stability: Stable

Conditions to avoid: None for intact lamps.

Incompatibility (materials to avoid): None for intact lamps.

Hazardous Decomposition Products (including combustion products): None for intact lamps.

Hazardous Polymerization Products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF LAMPS

OSRAM SYLVANIA recommends that all mercury-containing lamps be recycled. For a list of lamp recyclers and to obtain state regulatory disposal information, log onto www.lamprecycle.org.

If lamps are broken, ventilate area where breakage occurred. Clean-up with a special mercury vacuum cleaner (not a standard vacuum cleaner) or other suitable means that avoid dust and mercury vapor generation. Take usual precautions for collection of broken glass. Clean-up requires special care due to mercury droplet proliferation. Place materials in closed containers to avoid generating dust.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations. Some states have specific disposal requirements for lamps containing mercury.

Lamps which pass the EPA's TCLP test are considered non-hazardous waste in most states. Always review your local and state regulations which can vary. Based upon the NEMA* Standards LL 2 (*Procedures for Pin-Based Compact Fluorescent Lamp Sample Preparation and the TCLP*) and LL 6 (*Procedures for Integral Electronic Compact Fluorescent Lamp Sample Preparation and the TCLP*) testing protocol, ECOLOGIC® lamps, marked "ECO," pass the TCLP test.

*NEMA (National Electrical Manufacturers Association) standard may be obtained from NEMA, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209.

VIII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.

Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.

Protective Clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.

Hygienic Practices: After handling broken lamps, wash thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

Although OSRAM SYLVANIA attempts to provide current and accurate information herein, it makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage or injury of any kind which may result from, or arise out of, the use of/or reliance on the information by any person.

Issue Date: August 15, 2012 Rev F

Supersedes: May18, 2011 Rev E

In case of questions, please call: OSRAM SYLVANIA Safety / Environmental Engineer at: (914) 427-5599

Philips Lighting Company

Lamp Material Data Sheet (LMDS)

LMDS #: TL8-13100A

Date: 12/31/2015

Product: Philips T8 Fluorescent Lamps – All Types

All ALTO, non-ALTO, Standard, HO, Circular, U-Bent and TuffGuard
All lengths, coatings, wattages

Page 1 of 2

Section 1. Manufacturer and Contact Information

Philips Lighting North America Corporation

200 Franklin Square Drive
Somerset, NJ 08873-4186

24 HR Emergency Phone Number: (800) 424-9300 CHEMTREC

Other Information Calls: (800) 555-0050 Philips Lighting Technical Information

Section 2. Hazardous Ingredients/Identity Information

These lamps contain the following materials:

Exposure Limits

| Material | (CAS #) | OSHA PEL mg/m ³ | ACGIH TLV mg/m ³ | PERCENTAGE by weight |
|-------------------------------------|--------------|-------------------------------|--------------------------------|-------------------------|
| Glass | (65997-17-3) | 15 | 10 | ~96.0% |
| Phosphor Powder As Nuisance Dust | | 15 | 10 | ~2.5% |
| Mercury | (7439-97-6) | 0.1 | 0.025 | ~0.01% |
| Polyethylene Terephthalate (PET) | (25038-59-9) | - | - | ~3.0% |

Phosphor powders are ceramic phosphors. There is no data for the ceramics as mixtures. PET sleeving is applied to TuffGuard versions of the lamps to retain materials in the event of lamp breakage.

Section 3. Physical Properties

Not applicable to an intact lamp. These items are light bulbs 1 inch in diameter and range from 6 to 96 inches in length.

Section 4. Fire and Explosion Hazards

Not applicable to an intact lamp. If subjected to extreme heat, the glass, and plastic (if present), components of the lamp may crack or melt and may emit toxic fumes. Use extinguishing media appropriate for combustibles in the area.

Section 5. Reactivity

Not applicable to an intact lamp.

Section 6. Health Hazards

Not applicable to an intact lamp. Breakage of the lamp may result in some exposure to the phosphor powder and to elemental mercury. No adverse effects are expected from occasional exposure to broken lamps, but as a matter of good practice, prolonged exposure should be avoided through the use of adequate ventilation during the disposal of large quantities of lamps.

Guidance on cleaning up a broken lamp can be obtained from <http://www2.epa.gov/cfl/cleaning-broken-cfl>.

Emergency and First Aid Procedures: Apply normal first aid for glass cuts if such should occur through lamp breakage.

Section 7. Lamp Disposal Procedures

Normal precautions should be taken for the collection of glass particles in the event a lamp is broken.

Waste Disposal Method: All fluorescent lamps contain some amount of mercury. When a fluorescent lamp is to be disposed, it is subject to the current EPA Toxicity Characteristic Leaching Procedure (TCLP) disposal criteria. This test is used to determine if an item can be managed as hazardous or non-hazardous waste.

Philips low-mercury ALTO fluorescent lamps are identifiable by their characteristic green end caps. Philips ALTO lamps are TCLP compliant and can be managed as non-hazardous waste. Philips will provide TCLP test data upon request.

Philips non-ALTO lamps (with silver end caps) are not TCLP compliant and should be managed as a hazardous waste under the EPA Universal Waste Rules for fluorescent lamps.

All disposal options should be evaluated with respect to federal, state, and local requirements. Before disposing of waste lamps, check with federal, state, and/or local officials for current guidelines and regulations. Philips encourages recycling of its products through qualified recycling facilities.

Section 8. Control Measures

Respiratory Protection: None. NIOSH-approved respirator should be used if large quantities of lamps are being broken for disposal.

Ventilation: Avoid inhalation of any airborne dust. Provide local exhaust when disposing of large quantities of lamps.

Hand and Eye Protection: Appropriate hand and eye protection should be worn when disposing of lamps and/or handling broken glass.

Section 9. Regulatory Information

As a product, these mercury-containing lamps, when shipped in the manufacturer's original packaging, are not regulated by air, truck, or ocean shipment. As a waste, these lamps may be regulated in various states and local communities. This safety data sheet does not constitute "knowledge of the waste" in certain jurisdictions.

This document supercedes previous document: LMDS TL8-13100 issued 07/10/2013.

PRODUCT SAFETY DATA SHEET
PSDS No. 1.2.6
MERCURY LAMPS (FOSHAN)



Sylvania brand Mercury Lamps, manufactured by OSRAM SYLVANIA Inc., are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

Trade Name (as labeled): Sylvania Mercury Lamps (For General Lighting)
(Mercury Vapor Lamps, High Pressure Mercury Lamps)

Manufacturer: OSRAM China Lighting LTD.
No. 1 North Industrial Road
Foshan, Guangdong, 52800

II. HAZARDOUS INGREDIENTS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. If a lamp is broken, the following materials may be released:

| Chemical Name | CAS Number | % by wt. | Exposure Limits in Air (mg/cubic m) | |
|----------------------------------|------------|------------|-------------------------------------|-------------|
| | | | ACGIH (TLV) | OSHA (PEL) |
| (1, 2) Lead Solder (as Pb) | 7439-92-1 | 0-<1.0 | 0.05 | 0.05 |
| (1, 2) Mercury | 7439-97-6 | 0.01-< 0.1 | 0.025 | 0.1 Ceiling |
| Quartz, Fused | 60676-86-0 | 5-15 | 0.1 Resp. Dust | 0.1 |
| (1, 2) Glass (Lead Borosilicate) | --- | 0-75 | 10 (3) | 15 (3) |
| (1, 2) (as Lead Oxide, 6%) | 1317-36-8 | --- | 0.05 | 0.05 |
| Glass (Borosilicate) | --- | 0-75 | 10 (3) | 15 (3) |
| Yttrium Vanadate | 13566-12-6 | 0-<0.5 | 1.0 | 1.0 |
| Aluminum Oxide | 1344-28-1 | 0-<0.03 | 10 (3) | 15 (3) |

- (1) These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
- (2) The mercury and lead in this product are substances known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]
- (3) Limits as nuisance particulate.

III. PHYSICAL PROPERTIES

Not Applicable to intact lamp.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible

Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.

Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.

Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

V. HEALTH HAZARDS

A. OPERATING LAMPS

Consult the OSRAM SYLVANIA Product Catalog or relevant technical data sheets for complete warnings, operating and installation guides for specific lamp types.

WARNING:

- **Mercury lamp arc-tubes operate at high pressure and high temperature and may unexpectedly rupture.**
- **If the outer jacket is broken and the lamp continues to operate, ultraviolet radiation which may cause skin and eye irritation with prolonged exposure will be emitted. Immediately shut power off and replace lamp.**
- **Mercury lamps must be operated only in suitably designed fixtures.**

B. LAMP MATERIALS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards and/or NIOSH Pocket Guide to Chemical Hazards lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:

Lead - Ingestion and inhalation of lead dust or fume must be avoided. Irritation of the eyes and respiratory tract may occur. Excessive lead absorption is toxic and may include symptoms such as anemia, weakness, abdominal pain, and kidney disease.

Mercury - Exposure to high concentrations of vapors for brief periods can cause acute symptoms such as pneumonitis, chest pains, shortness of breath, coughing, gingivitis, salivation and possibly stomatitis. May cause redness and irritation as a result of contact with skin and/or eyes.

Quartz, Fused - Fibrosis of the lungs causing shortness of breath and coughing has been associated with silica exposure.

Glass - Glass dust is considered to be physiologically inert and as such, has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust. The ACGIH TLVs for particulates not otherwise classified are 10 mg/cubic meter for total dust and 3 mg/cubic meter for respirable dust.

Yttrium Vanadate - Inhalation of vanadium compounds can cause irritation of the nose, throat, and respiratory tract. Eye contact and prolonged, repeated skin contact may also cause irritation. Studies of workers exposed to this material showed no evidence of chronic or systemic effects.

Aluminum Oxide (Alumina) - Alumina is a non-toxic material which is very low in free-silica content. Sharp-edged particles can irritate the eyes, perhaps the skin, and definitely the mucous membranes of the respiratory tract.

EMERGENCY AND FIRST AID PROCEDURES:

Glass Cuts: Normal first aid procedures. Seek medical attention as required.

Inhalation: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention.

Ingestion: Seek medical attention.

Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention if irritation occurs.

Contact, Eye: Wash eyes, including under eyelid, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None

VI. REACTIVITY DATA

Stability: Stable

Conditions to avoid: None for intact lamps.

Incompatibility (materials to avoid): None for intact lamps.

Hazardous Decomposition Products (including combustion products): None for intact lamps.

Hazardous Polymerization Products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF LAMPS

OSRAM SYLVANIA recommends that all mercury-containing lamps be recycled. For a list of lamp recyclers and to obtain state regulatory disposal information, log onto www.lamprecycle.org.

If lamps are broken, ventilate area where breakage occurred. Clean-up with a special mercury vacuum cleaner (not a standard vacuum cleaner) or other suitable means that avoid dust and mercury vapor generation. Take usual precautions for collection of broken glass. Clean-up requires special care due to mercury droplet proliferation. Place materials in closed containers to avoid generating dust.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations. Some states have specific disposal requirements for lamps containing mercury.

VIII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.

Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken. In the event an outer jacket is broken, the lamp should be shut off and replaced to avoid exposure to ultraviolet radiation.

Protective Clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.

Hygienic Practices: After handling broken lamps, wash thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

Although OSRAM SYLVANIA Products Inc. attempts to provide current and accurate information herein, it makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage or injury of any kind which may result from, or arise out of, the use of/or reliance on the information by any person.

Issue Date: 05/19/2011

Supersedes: --

In case of questions please call:

OSRAM SYLVANIA Inc.
Product Safety and Compliance Manager
(978) 750 2581

Philips Lighting Company

Lamp Material Data Sheet (LMDS)

LMDS #: HPS – 09100A

Product: Philips High Pressure Sodium Lamps (Ceramalux, SON, SDW)

Date: 12/31/2015

ALTO and non-ALTO – All Wattages

Page 1 of 2

Section 1. Manufacturer and Contact Information

Philips Lighting North America Corporation

200 Franklin Square Drive
Somerset, NJ 08873-4186

24 HR Emergency Phone Number: (800) 424-9300 CHEMTREC

Other Information Calls: (800) 555-0050 Philips Lighting Technical Information

Section 2. Hazardous Ingredients/Identity Information

These lamps contain the following materials:

| Material | (CAS #) | Exposure Limits in Air | | PERCENTAGE by weight |
|---|-------------|-------------------------------|--------------------------------|-------------------------|
| | | OSHA PEL mg/m ³ | ACGIH TLV mg/m ³ | |
| Inert Materials (metals, glass, ceramics) | | | | >98% |
| Barium | (7440-39-3) | 0.5 | 0.5 | <0.04% |
| Sodium | (7440-23-5) | 2.0 | 2.0 | <0.01% |
| Mercury | (7439-97-6) | 0.1 | 0.025 | <0.03% |

The Phosphor Powder materials are ceramic phosphors. The ceramics are Barium Aluminate and Yttrium Oxide. The PEL and TLV are given where available for the base materials. There is no data for the ceramics as mixtures.

Section 3. Physical Properties

Not applicable to an intact lamp. These items are light bulbs in various shapes, configurations, and designs. All contain a light emitting discharge tube (composed of polycrystalline alumina – a high temperature refractory material), a glass envelop (bulb) to house the discharge tube, and a threaded base for use in lamp sockets.

Section 4. Fire and Explosion Hazards

Not applicable to an intact lamp. Under extreme heat the outer glass envelope may melt or crack.

Section 5. Reactivity

Not applicable to an intact lamp.

Section 6. Health Hazards

Not applicable to an intact lamp. Breakage of the lamp may result in some exposure to the phosphor powder and to elemental mercury. No adverse effects are expected from occasional exposure to broken lamps, but as a matter of good practice, prolonged exposure should be avoided through the use of adequate ventilation during the disposal of large quantities of lamps.

Emergency and First Aid Procedures: Apply normal first aid for glass cuts if such should occur through lamp breakage.

Section 7. Lamp Disposal Procedures

Normal precautions should be taken for the collection of glass particles in the event a lamp is broken.

Waste Disposal Method: All high pressure sodium lamps contain some amount of mercury. When a high pressure sodium lamp is to be disposed, it is subject to the current EPA Toxicity Characteristic Leaching Procedure (TCLP) disposal criteria. This test is used to determine if an item can be managed as hazardous or non-hazardous waste.

Philips low-mercury ALTO high pressure sodium lamps are identifiable by their characteristic green logo or green dimple in the outer bulb. Philips ALTO lamps are TCLP compliant and can be managed as non-hazardous waste. Philips will provide TCLP test data upon request for its ALTO products.

Philips non-ALTO lamps (with black logo) are not TCLP compliant and should be managed as a hazardous waste under the EPA Universal Waste Rules for lamps.

All disposal options should be evaluated with respect to federal, state, and local requirements. Before disposing of waste lamps, check with federal, state, and/or local officials for current guidelines and regulations. Philips encourages recycling of its products through qualified lamp recycling facilities.

Section 8. Control Measures

Respiratory Protection: None. NIOSH-approved respirator should be used if large quantities of lamps are being broken for disposal.

Ventilation: Avoid inhalation of any airborne dust. Provide local exhaust when disposing of large quantities of lamps.

Hand and Eye Protection: Appropriate hand and eye protection should be worn when disposing of lamps and/or handling broken glass.

Section 9. Regulatory Information

As a product, these mercury-containing lamps, may be subject to domestic and international transportation regulations when shipped by air. As a waste, these lamps may be regulated in various states and local communities. This safety data sheet does not constitute "knowledge of the waste" in certain jurisdictions.

This document supercedes previous document: LMDS HPS-09100 issued 12/19/2012

PRODUCT SAFETY DATA SHEET
PSDS No. 1.1.7
ICETRON[®] FLUORESCENT LAMPS



Sylvania brand ICETRON[®] Lamps, manufactured by OSRAM SYLVANIA, are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are “articles.” The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

Trade Name (as labeled): Sylvania ICETRON[®] Fluorescent Lamps
Inductively Coupled Electrodeless System

Manufacturer: OSRAM SYLVANIA
100 Endicott Street
Danvers, MA 01923
(978) 777-1900

II. HAZARDOUS INGREDIENTS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. If the lamp is broken, the following materials may be released:

| <u>Chemical Name</u> | <u>CAS Number</u> | <u>% by wt.</u> | <u>Exposure Limits in Air (mg/cubic m)</u> | |
|------------------------------------|-------------------|-----------------|--|---------------------|
| | | | <u>ACGIH (TLV)</u> | <u>OSHA (PEL)</u> |
| Glass (Low-Expansion Borosilicate) | --- | 99 | 10.0 ⁽²⁾ | 15.0 ⁽²⁾ |
| Mercury ^(1,4) | 7439-97-6 | <0.01 | 0.025 | 0.1 Ceiling |
| Fluorescent Phosphor may contain: | --- | 0.60-0.65 | 10.0 ⁽²⁾ | 15.0 ⁽²⁾ |
| Aluminum ⁽³⁾ (as dust) | 7429-90-5 | <0.4 | 10.0 ⁽²⁾ | 15.0 ⁽²⁾ |
| Barium ⁽³⁾ (as dust) | 7440-39-3 | <0.1 | 0.5 | 0.5 |
| Cerium ⁽³⁾ (as dust) | 7440-45-1 | <0.3 | 10.0 ⁽²⁾ | 15.0 ⁽²⁾ |
| Europium ⁽³⁾ (as dust) | 7440-53-1 | <0.6 | 10.0 ⁽²⁾ | 15.0 ⁽²⁾ |
| Magnesium ⁽³⁾ (as dust) | 7439-95-4 | <0.4 | 10.0 ⁽²⁾ | 15.0 ⁽²⁾ |
| Terbium ⁽³⁾ (as dust) | 7440-27-9 | <0.3 | 10.0 ⁽²⁾ | 15.0 ⁽²⁾ |
| Yttrium ⁽³⁾ (as dust) | 7440-65-5 | <0.5 | 1.0 | 1.0 |

(1) This chemical is subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

(2) Limits as nuisance particulate.

(3) This element is contained in the material as part of its chemical structure; the material is not a mixture.

(4) The mercury in this product is a substance known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]

III. PHYSICAL PROPERTIES

Not applicable to intact lamp.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible.

Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.

Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.

Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

V. HEALTH HAZARDS

A. OPERATING LAMP SYSTEMS

Consult the OSRAM SYLVANIA Product Catalog or relevant technical data sheets for complete warnings, operating and installation guides for specific lamp types.

WARNING:

- **THESE LAMPS GENERATE ELECTRIC AND MAGNETIC FIELDS DURING OPERATION.**
- Special care should be taken by individuals using devices that are sensitive to electric and/or magnetic fields (e.g.: implanted cardiac pacemakers, computers, etc.)

B. LAMP MATERIALS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards and/or NIOSH Pocket Guide to Chemical Hazards lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:

Mercury - Exposure to high concentrations of vapors for brief periods can cause acute symptoms such as pneumonitis, chest pains, shortness of breath, coughing, gingivitis, salivation and possibly stomatitis. May cause redness and irritation as a result of contact with skin and/or eyes.

Glass - Glass dust is considered to be physiologically inert and as such, has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust. The ACGIH TLVs for particulates not otherwise classified are 10 mg/cubic meter for total dust and 3 mg/cubic meter for respirable dust.

Phosphor - Phosphor dust is considered to be physiologically inert and as such has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust.

Barium (soluble compounds) - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, skin irritation, upper respiratory system irritation, skin burns, gastroenteritis, muscle spasm, slow pulse, extrasystole, and hypokalemia.

Yttrium - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, pulmonary irritation, and possible liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Glass Cuts: Perform normal first aid procedures. Seek medical attention as required.

Inhalation: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention.

Ingestion: In the unlikely event of ingestion of a large quantity of material, seek medical attention.

EMERGENCY AND FIRST AID PROCEDURES (Continued)

Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention if irritation occurs.

Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None

VI. REACTIVITY DATA

Stability: Stable

Conditions to avoid: None for intact lamps.

Incompatibility (materials to avoid): None for intact lamps.

Hazardous Decomposition Products (including combustion products): None for intact lamps.

Hazardous Polymerization Products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF LAMPS

OSRAM SYLVANIA recommends that all mercury-containing lamps be recycled. For a list of lamp recyclers and to obtain state regulatory disposal information, log onto www.lamprecycle.org.

If lamps are broken, ventilate area where breakage occurred. Clean-up with a special mercury vacuum cleaner (not a standard vacuum cleaner) or other suitable means that avoid dust and mercury vapor generation. Take usual precautions for collection of broken glass. Clean-up requires special care due to mercury droplet proliferation. Place materials in closed containers to avoid generating dust.

The constituents of the ferrite core windings that are an integral part of this product are: teflon-insulated copper wire wound over an iron oxide core doped with manganese oxide and zinc oxide, all encased in an aluminum cover with a stainless steel spring (to hold it closed).

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations.

Some states have specific disposal requirements for lamps containing mercury.

VIII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.

Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.

Protective Clothing: OSHA specified cut and puncture-resistant gloves are recommended for dealing with broken lamps.

Hygienic Practices: After handling broken lamps, wash thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

Although OSRAM SYLVANIA attempts to provide current and accurate information herein, it makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage or injury of any kind which may result from, or arise out of, the use of/ or reliance on the information by any person.

Issue Date: August 16, 2012 Rev D

Supersedes: July 9, 2008, rev C

In case of questions, please call:

Product Safety Engineer
OSRAM SYLVANIA
(978) 777-1900

Lamp Material Data Sheet (LMDS)**LMDS #: MH-12000A****Product: Philips Metal Halide Lamps****Date:** 12/31/2015

MH, MHT, MP, MS Types - All wattages

Page 1 of 2

Section 1. Manufacturer and Contact Information**Philips Lighting North America Corporation**200 Franklin Square Drive
Somerset, NJ 08873-4186

24 HR Emergency Phone Number: (800) 424-9300 CHEMTREC

Other Information Calls: (800) 555-0050 Philips Lighting Technical Information

Section 2. Hazardous Ingredients/Identity Information

These lamps contain the following materials:

| Material | (CAS #) | Exposure Limits | | PERCENTAGE (by weight) |
|--------------------------------|-------------|----------------------------------|-----------------------------------|---------------------------|
| | | OSHA PEL (mg/m ³) | ACGIH TLV (mg/m ³) | |
| Inert Materials (glass, metal) | | | | ~98% |
| Mercury | (7439-97-6) | 0.1 | 0.025 | <0.03% |
| Sodium Iodide | (7681-82-5) | | | <0.02% |
| Yttrium Vanadate* | (7440-65-5) | 1.0 | 2.0 | ~0.5% |

* Coated outer bulbs only.

Possible exposure to non-inert materials will only result if both the outer bulb and the inner arc tube are broken.

Section 3. Physical Properties

Not applicable to an intact lamp. The outer bulb is borosilicate glass, the base is brass or nickel-plated brass, and the inner envelope (arc tube) is ceramic. Other chemical or physical characteristics are not applicable.

Section 4. Fire and Explosion Hazards

The outer glass bulb encloses an inner ceramic arc tube. There is a vacuum or low pressure fill within the outer bulb. If the lamp is dropped or struck, a possible implosion could result which might cause flying glass particles.

WARNING: The arc tubes of metal halide lamps are designed to operate at high pressures and temperatures (up to 1200°C). If the arc tube ruptures for any reason, the outer bulb may break and shards of extremely hot glass may be discharged into the surrounding environment, with the associated risk of property damage or personal injury.

Section 5. Reactivity

Incompatibility: If using a lamp support, ensure it is electrically isolated to avoid possible decomposition of the bulb glass.

Section 6. Health Hazards

Other than exposure to high operating temperatures, there are no health hazards associated with an intact lamp.

WARNING: These lamps can cause serious skin burns and eye inflammation from short wave ultraviolet radiation if the outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes when the envelope is broken unless adequate shielding or other safety precautions are used. Certain lamps that will automatically extinguish when the outer envelope is broken are available commercially.

The inner envelope is composed of a quartz material containing elemental mercury and small amounts of sodium and other iodides. In the event the inner envelope is broken, avoid inhalation of any vapors or skin contact with any of the fragments or contents.

Section 7. Lamp Disposal Procedures

Normal precautions should be taken for the collection of glass particles in the event a lamp is broken.

Waste Disposal Method: These lamps contain some amount of mercury. When a lamp is to be disposed, it is subject to the current EPA Toxicity Characteristic Leaching Procedure (TCLP) disposal criteria. This test is used to determine if an item can be managed as hazardous or non-hazardous waste. These lamps are not TCLP compliant and should be managed as a hazardous waste under the EPA Universal Waste Rules.

All disposal options should be evaluated with respect to federal, state, and local requirements. Before disposing of waste lamps, check with federal, state, and/or local officials for current guidelines and regulations. Philips encourages recycling of its products through qualified recycling facilities.

Section 8. Control Measures

Respiratory Protection: None while operating. NIOSH-approved respirator should be used if large quantities of lamps are being broken for disposal.

Ventilation: Avoid inhalation of any airborne dust. Provide local exhaust when disposing of large quantities of lamps.

Hand and Eye Protection: Appropriate hand and eye protection should be worn when disposing of lamps and/or handling broken glass.

Section 9. Regulatory Information

As an article, these mercury-containing lamps, when shipped in the manufacturer's original packaging, may be regulated for air, truck, or ocean shipment. As a waste, these lamps may be regulated in various states and local communities.

This document supercedes previous document: MH-12000 issued on 12/19/2012.

PRODUCT SAFETY DATA SHEET

PSDS No. 1.1

FLUORESCENT LAMPS



SYLVANIA brand Fluorescent Lamps, manufactured by OSRAM / OSRAM SYLVANIA, are exempted from the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) because they are "articles." The following information is provided by OSRAM SYLVANIA as a courtesy to its customers.

I. PRODUCT IDENTIFICATION

Trade Name: **SYLVANIA Fluorescent Lamps**

- This data sheet covers Sylvania linear "White" (Cool White, Warm White, Daylight, etc; 700, 800, 900 series triphosphor) standard, "Sylvania ECO" brand, and Safeline® ① linear, T12 & Octron Curvalume® (6" spacing), and T9 Circline fluorescent lamps for general lighting.
- This data sheet does **not** cover compact fluorescent②, Pentron③ (T5), plant, aquarium/vivarium, photocopy, germicidal, blacklight, or any colored or other special application fluorescent lamps.
 - ①Safeline lamps are encased in a Polyethylene Terephthalate (PET) heat shrinkable tubing manufactured by EncapSulite International Inc., Stafford, TX.
 - ②See PSDS No. 1.1.5 for Compact Fluorescent Lamps.
 - ③See PSDS No. 1.1.8 for Pentron Fluorescent Lamps.

Manufacturer: OSRAM SYLVANIA

100 Endicott Street
Danvers, MA 01923

Phone: (978) 777-1900

II. HAZARDOUS INGREDIENTS:

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT.

If the lamp is broken, the following materials may be released:

| Chemical Name | CAS Number | % by Wt. | Exposure Limits in Air (mg/M ³) | |
|--|-------------|------------|---|-------------------|
| | | | ACGIH (TLV) | OSHA (PEL) |
| Glass (soda-lime) | ---- | 75-95 | 10 ⁽²⁾ | 15 ⁽²⁾ |
| Mercury ^(1,4) | 7439-97-6 | 0.002-0.02 | 0.025 | 0.1 Ceiling |
| Aluminum Oxide | 001-344-281 | 0-2.0 | 10 ⁽²⁾ | 15 ⁽²⁾ |
| Fluorescent Phosphor and cathodes may contain: | ---- | 0.5-3.0 | 10 ⁽²⁾ | 15 ⁽²⁾ |
| Fluoride (as F) | ---- | 0-0.1 | 2.5 | 2.5 |
| Manganese ⁽³⁾ (as dust) | 7439-96-5 | 0-0.1 | 0.2 | 5.0 Ceiling |
| Tin ⁽³⁾ (as dust) | 7440-31-5 | 0-0.1 | 2.0 | 2.0 |
| Yttrium ⁽³⁾ (as dust) | 7440-65-5 | 0-0.5 | 1.0 | 1.0 |
| Barium ⁽³⁾ (as dust) | 7440-39-3 | <0.1 | 0.5 | 0.5 |
| Tungsten ⁽³⁾ (as dust) | 7440-33-7 | <0.1 | 1 | 15 ⁽²⁾ |
| Strontium ⁽³⁾ (as dust) | 7440-24-6 | 0-0.1 | 10 ⁽²⁾ | 15 ⁽²⁾ |
| Magnesium ⁽³⁾ (as dust) | 7439-95-4 | 0-0.1 | 10 ⁽²⁾ | 15 ⁽²⁾ |
| Calcium ⁽³⁾ (as dust) | ---- | 0-0.1 | 10 ⁽²⁾ | 15 ⁽²⁾ |
| Antimony ⁽³⁾ (as dust) | 7440-36-0 | 0-0.1 | 0.5 | 0.5 |
| Zinc ⁽³⁾ (as dust) | 7440-66-6 | 0-0.1 | 10 ⁽²⁾ | 15 ⁽²⁾ |
| Europium ⁽³⁾ (as dust) | 7440-53-1 | 0-0.1 | 10 ⁽²⁾ | 15 ⁽²⁾ |
| Cerium ⁽³⁾ (as dust) | 7440-45-1 | 0-0.1 | 10 ⁽²⁾ | 15 ⁽²⁾ |
| Lanthanum ⁽³⁾ (as dust) | 7439-91-0 | 0-0.1 | 10 ⁽²⁾ | 15 ⁽²⁾ |
| Terbium ⁽³⁾ (as dust) | 7440-27-9 | 0-0.1 | 10 ⁽²⁾ | 15 ⁽²⁾ |
| Aluminum ⁽³⁾ (as dust) | 7429-90-5 | 0-0.1 | 10 ⁽²⁾ | 15 ⁽²⁾ |
| 6" Curvalume® U-shaped Lamps contain a center support strap consisting of all, or a portion of the following: | ---- | ~02.9 | Within permissible exposure limits | |
| Carbonic Acid, Polymer with 4,4'-(1-methylethylidene) bis (2,6-dibromophenol) and 4,4'-(1-methylethylidene) bis [phenol] | 32844-27-2 | | | |
| Fiber Glass | 1333-86-4 | | | |
| Titanium Dioxide | 13463-67-7 | | | |

- These chemicals are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
- Limits as nuisance particulate.
- These elements are contained in the material as part of its chemical structure; the material is not a mixture.
- The mercury in this product is a substance known to the state of California to cause reproductive toxicity if ingested. [California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).]

III. PHYSICAL PROPERTIES : Not applicable to intact lamp.

IV. FIRE & EXPLOSION HAZARDS

Flammability: Non-combustible.

Fire Extinguishing Materials: Use extinguishing agents suitable for surrounding fire.

Special Firefighting Procedure: Use a self-contained breathing apparatus to prevent inhalation of dust and/or fumes that may be generated from broken lamps during firefighting activities.

Unusual Fire and Explosion Hazards: When exposed to high temperature, toxic fumes may be released from broken lamps.

V. HEALTH HAZARDS

THERE ARE NO KNOWN HEALTH HAZARDS FROM EXPOSURE TO LAMPS THAT ARE INTACT. No adverse effects are expected from occasional exposure to broken lamps. As a matter of good practice, avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation. The major hazard from broken lamps is the possibility of sustaining glass cuts.

NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards and/or NIOSH Pocket Guide to Chemical Hazards lists the following effects of overexposure to the chemicals/materials tabulated below when they are inhaled, ingested, or contacted with skin or eye:

Mercury - Contact, inhalation, or ingestion may cause one or more of the following symptoms: eye irritation, skin irritation, cough, chest pain, dyspnea, bronchitis, pneumonitis, tremor, insomnia, irritability, indecision, headache, fatigue, weakness, stomatitis, salivation, GI tract disturbance, anorexia, weight loss, and proteinuria.

Glass - Glass dust is considered to physiologically inert and as such has an OSHA exposure limit of 15 mg/M³ for total dust and 5 mg/M³ for respirable dust. The ACGIH TLVs for particulates not otherwise classified are 10 mg/M³ for total dust and 3 mg/M³ for respirable dust.

Tin - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, skin irritation, and respiratory system irritation.

Manganese - Contact, ingestion, or inhalation may cause one or more of the following symptoms: Parkinson's, asthenia, insomnia, mental confusion, metal fume fever, dry throat, cough, chest tightness, dyspnea, rales, flu-like fever, low-back pain, vomiting, malaise, fatigue, and kidney damage.

Fluoride - Fluoride-containing dust may cause irritation of the eyes and respiratory tract. Swallowing fluoride may cause a salty or soapy taste, vomiting, abdominal pain, diarrhea, shortness of breath, difficulty in speaking, thirst, weakness of the pulse, disturbed color vision, muscular weakness, convulsions, loss of consciousness, and death. Kidney injury and bleeding from the stomach may occur. Repeated exposure to fluoride may cause excessive calcification of the bone and calcification of ligaments of the ribs, pelvis, and spinal column. Stiffness and limitation of motion may result. Repeated or prolonged exposure of the skin to fluoride-containing dust may cause a skin rash.

Aluminum Oxide (Alumina) - Alumina is a non-toxic material. Sharp-edged particles can irritate the eyes, skin, and respiratory system.

Phosphor - Phosphor dust is considered to be physiologically inert and as such has an OSHA exposure limit of 15 mg/cubic meter for total dust and 5 mg/cubic meter for respirable dust.

Yttrium - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, pulmonary irritation, and possible liver damage.

Barium (soluble compounds) - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, skin irritation, upper respiratory system irritation, skin burns, gastroenteritis, muscle spasm, slow pulse, extrasystole, and hypokalemia.

Tungsten - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, respiratory system irritation, diffuse pulmonary fibrosis, loss of appetite, nausea, cough, and blood changes.

Antimony - Contact, ingestion, or inhalation may cause one or more of the following symptoms: eye irritation, skin irritation, nose irritation, throat irritation, mouth irritation, cough, dizziness, headache, nausea, vomiting, diarrhea, stomach cramps, insomnia, anorexia, and unable to smell properly.

V. HEALTH HAZARDS (Continued)

EMERGENCY AND FIRST AID PROCEDURES

Glass Cuts: Perform normal first aid procedures. Seek medical attention as required.

Inhalation: If discomfort, irritation or symptoms of pulmonary involvement develop, remove from exposure and seek medical attention.

Ingestion: In the unlikely event of ingestion of a large quantity of material, seek medical attention.

Contact, Skin: Thoroughly wash affected area with mild soap or detergent and water and prevent further contact. Seek medical attention if irritation occurs.

Contact, Eye: Wash eyes, including under eyelids, immediately with copious amounts of water for 15 minutes. Seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None

VI. REACTIVITY DATA

Stability: Stable

Conditions to avoid: None for intact lamps.

Incompatibility (materials to avoid): None for intact lamps.

Hazardous Decomposition Products (including combustion products): None for intact lamps.

Hazardous Polymerization Products: Will not occur.

VII. PROCEDURES FOR DISPOSAL OF LAMPS

OSRAM SYLVANIA recommends that all mercury-containing lamps be recycled. For a list of lamp recyclers and to obtain state regulatory disposal information, log onto www.lamprecycle.org.

If lamps are broken, ventilate area where breakage occurred. Clean-up with a special mercury vacuum cleaner (not a standard vacuum cleaner) or other suitable means that avoids dust and mercury vapor generation. Take usual precautions for collection of broken glass. Clean-up requires special care due to mercury droplet proliferation. Place materials in closed containers to avoid generating dust.

It is the responsibility of the waste generator to ensure proper classification and disposal of waste products. To that end, TCLP tests should be conducted on all waste products, including this one, to determine the ultimate disposition in accordance with applicable federal, state and local regulations. Some states have specific disposal requirements for lamps containing mercury.

Lamps which pass the EPA's TCLP test are considered non-hazardous waste in most states. Always review your local and state regulations which can vary. Based upon the NEMA* Standard LL 1 (*Procedures for Linear Fluorescent Lamp Sample Preparation and the TCLP*) testing protocol, ECOLOGIC® lamps, marked "ECO," pass the TCLP test.

*NEMA (National Electrical Manufacturers Association) standard may be obtained from NEMA, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209.

VIII. SPECIAL HANDLING INFORMATION - FOR BROKEN LAMPS

Ventilation: Use adequate general and local exhaust ventilation to maintain exposure levels below the PEL or TLV limits. If such ventilation is unavailable, use respirators as specified below.

Respiratory Protection: Use appropriate NIOSH approved respirator if airborne dust concentrations exceed the pertinent PEL or TLV limits. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

Eye Protection: OSHA specified safety glasses, goggles or face shield are recommended if lamps are being broken.

Protective Clothing: OSHA specified cut and puncture resistant gloves are recommended for dealing with broken lamps.

Hygienic Practices: After handling broken lamps, wash hands and face thoroughly before eating, smoking or handling tobacco products, applying cosmetics, or using toilet facilities.

Although OSRAM SYLVANIA Inc. attempts to provide current and accurate information herein, it makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage or injury of any kind which may result from, or arise out of, the use of or reliance on the information by any person.

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Supersedes: April 26, 2011

Rev G. (Osram SYLVANIA name/logo edits)

In case of questions, please call:
OSRAM SYLVANIA Inc.
Product Safety Engineer
(978) 777-1900

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SECTION 1. IDENTIFICATION

Product identifier used on the label

: **Mercury**

Product Code(s) : Not available.

Recommended use of the chemical and restrictions on use

: Raw material.

Chemical family : Pure product with impurities.

Name, address, and telephone number of the manufacturer:

Refer to Supplier

Manufacturer's Telephone # : Refer to supplier

Name, address, and telephone number of the supplier:

Veolia Environmental Services Technical Solutions, LLC

700 East Butterfield Road, Suite 201
Lombard, IL, USA
60148

Supplier's Telephone # : (630) 218-1500(Monday - Friday, 8:00 AM - 5:00 PM, Central Time)

24 Hr. Emergency Tel # : (877) 818-0087

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

white-Metallic silver liquid. Odorless.

Most important hazards This material is classified as hazardous under OSHA regulations (29CFR 1910.1200) (Hazcom 2012). Hazardous classification

Corrosive to metals -Category 1

Acute toxicity -Category 2 -Oral

Acute toxicity -Category 1 -Inhalation

Toxic to reproduction -Category 2

Specific target organ toxicity - single exposure -Category 1

Specific target organ toxicity - repeated exposure -Category 1

WHMIS information: This product is a WHMIS Controlled Product. It meets one or more of the criteria for a controlled product provided in Part IV of the Canadian Controlled Products Regulations (CPR). WHMIS Classification:

Class D1A (Materials Causing Immediate and Serious Toxic Effects, Very Toxic Material);

Class D2A (Materials Causing Other Toxic Effects, Very Toxic Material);

Class E (Corrosive Material).

Label elements

The following label information is applicable only to the United States according to OSHA Regulations (29 CFR 1910.1200) (Hazcom 2012):

Signal Word

DANGER!

Hazard statement(s)

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May be corrosive to metals.
Fatal if swallowed.
Fatal if inhaled.
Suspected of damaging fertility or the unborn child.
Causes damage to organs if inhaled.
Causes damage to organs through prolonged or repeated exposure by inhalation.

Precautionary statement(s)

Keep only in original container. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe fumes, mists or vapours. Use only outdoors or in a well-ventilated area. Wear respiratory protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/clothing and eye/face protection.

Absorb spillage to prevent material damage.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor/physician.
IF exposed or concerned: Get medical attention/advice.
Get medical attention/advice if you feel unwell.

Store in corrosive resistant container with a resistant inner liner.
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.

Dispose of contents/container in accordance with local regulation.



The following label information is applicable only to Canada according to the Canadian Controlled Products Regulations (CPR/WHMIS):

DANGER! May be corrosive to metals. **POISON!** Fatal if inhaled. Fatal if swallowed. Could result in pulmonary edema (fluid accumulation). Causes damage to the nervous system through prolonged or repeated exposure if inhaled. Repeated or prolonged exposure may result in kidney effects.

PRECAUTIONS: Use only in well-ventilated areas. Wear chemically resistant protective equipment during handling. Do not ingest. Do not breathe fumes, mists or vapours. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Keep containers tightly closed when not in use. Store in a cool, dry, well ventilated area. Corrosive materials should be stored in a separate safety storage cabinet or room.

FIRST AID: If swallowed, call a poison control centre or doctor immediately. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person. For skin contact, remove contaminated clothing and flush affected area with lukewarm (not hot) water. If irritation persists, seek prompt medical attention. For eye contact, flush with running water for at least 15 minutes. Seek immediate medical attention/advice. If inhaled, move to fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing stopped, begin artificial respiration.

Refer To Material Safety Data Sheet for further information.



Other hazards

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Burning produces obnoxious and toxic fumes.

Environmental precautions :Very toxic to aquatic life with long lasting effects. Avoid release to the environment. See ECOLOGICAL INFORMATION, Section 12.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

| <u>Chemical name</u> | <u>CAS #</u> | <u>Concentration</u> |
|----------------------|--------------|----------------------|
| Mercury | 7439-97-6 | 95.0 - 100.0 |

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

- Ingestion* : Call a physician or poison control centre immediately. Do not induce vomiting. Never give anything by mouth to an unconscious person.
- Inhalation* : Wear appropriate protective equipment. Immediately remove person to fresh air. Seek immediate medical attention/advice. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only.
- Skin contact* : Remove/Take off immediately all contaminated clothing. Wash exposed area thoroughly with soap and water for at least 15 minutes. Seek immediate medical attention/advice.
- Eye contact* : Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Most important symptoms and effects, both acute and delayed

- : May cause fetotoxic and teratogenic effects according to animal studies. Repeated or prolonged exposure may result in kidney effects. Causes damage to the nervous system through prolonged or repeated exposure if inhaled.

Indication of any immediate medical attention and special treatment needed

- : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

- Suitable extinguishing media* : Use media suitable to the surrounding fire such as water fog or fine spray, alcohol foams, carbon dioxide and dry chemical.

- Unsuitable extinguishing media* : Do not direct water at the heated metal .The corrosivity of this product may increase with the addition of water.

Special hazards arising from the substance or mixture / Conditions of flammability

- : Mercury metal does not burn and does not support combustion.

Flammability classification (OSHA 29 CFR 1910.106)

- : Non-flammable.

Explosion Data: Sensitivity to Mechanical Impact / Static Discharge:

- : Not expected to be sensitive to mechanical impact or static discharge.

Hazardous combustion products

- : Metal oxides

Special protective equipment and precautions for firefighters

- Protective equipment for fire-fighters* : Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

Special fire-fighting procedures

- : Move containers from fire area if safe to do so. Shield personnel to protect from venting or rupturing containers. Water spray may be useful in cooling equipment exposed to heat and flame.

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SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

- : All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Keep all other personnel upwind and away from the spill/release. Restrict access to area until completion of clean-up. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.

- Environmental precautions**
- : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. If necessary, dike well ahead of the spill to prevent runoff into drains, sewers, or any natural waterway or drinking supply.

Methods and material for containment and cleaning up

- : Ventilate area of release. Do not touch or walk through spilled material. Prevent product from entering drains, sewers, waterways and soil. Stop the spill at source if it is safe to do so. Vacuum or sweep up spilled material using a method that does not generate airborne dust. Pick up and transfer to properly labelled containers. Contact the proper local authorities.

Special spill response procedures

- : If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8002).
US CERCLA Reportable quantity (RQ): Mercury (1 lb / 0.454 kg).

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

- : Before handling, it is very important that engineering controls are operating, and that protective equipment requirements and personal hygiene measures are being followed. People working with this chemical should be properly trained regarding its hazards and its safe use. Process enclosure may also be necessary. Use in a well-ventilated area. Wear suitable protective equipment during handling. Do not inhale. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Keep away from extreme heat and flame. Keep away from oxidizing agents. Keep containers closed when not in use. Empty containers retain residue (liquid and/or vapour) and can be dangerous.

- Conditions for safe storage**
- : Store in a cool, dry, well-ventilated area away from sources of heat, ignition and sunlight. Inspect periodically for damage or leaks. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Store in corrosion-resistant containers. Unsuitable materials for containers Aluminum; Copper.

- Incompatible materials**
- : Strong oxidizing agents; Acetylene; Ammonia; Metals; azides.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

| <u>Chemical Name</u> | <u>ACGIH TLV</u> | | <u>OSHA PEL</u> | |
|----------------------|--------------------------------|-------------|--|-------------|
| | <u>TWA</u> | <u>STEL</u> | <u>PEL</u> | <u>STEL</u> |
| Mercury | 0.025 mg/m ³ (skin) | N/Av | 0.05 mg/m ³ (vapor) (skin) (final rule limit) | N/Av |

Exposure controls

Ventilation and engineering measures

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- | | |
|---------------------------------------|---|
| Respiratory protection | : Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits. |
| | : If the TLV is exceeded, a NIOSH/MSHA-approved respirator is advised. A self contained breathing apparatus should be used in emergency situations or instances where exposure levels are not known. Advice should be sought from respiratory protection specialists. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02. |
| Skin protection | : Impervious gloves must be worn when using this product. Advice should be sought from glove suppliers. |
| Eye / face protection | : Chemical splash goggles must be worn when handling this material. |
| Other protective equipment | : Depending on conditions of use, an impervious apron should be worn. Where extensive exposure to product is possible, use resistant coveralls, apron and boots to prevent contact. An eyewash station and safety shower should be made available in the immediate working area. |
| General hygiene considerations | : Do not breathe dust/fume/gas/mist/vapours/spray. Avoid contact with eyes, skin and clothing. Wash hands thoroughly after using this product, and before eating, drinking or smoking. Remove and wash contaminated clothing before re-use. |

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- | | |
|--|-------------------------------|
| Appearance | : Silver-white, liquid metal. |
| Odour | : Odourless. |
| Odour threshold | : N/Av |
| pH | : N/Av |
| Melting/Freezing point | : - 38.9°C (- 38°F) |
| Initial boiling point and boiling range | : 357.2°C (675°F) |
| Flash point | : N/Av |
| Flashpoint (Method) | : N/Av |
| Evaporation rate (BuAe = 1) | : 4.0 |
| Flammability (solid, gas) | : N/Av |
| Lower flammable limit (% by vol.) | : N/Av |
| Upper flammable limit (% by vol.) | : N/Av |
| Oxidizing properties | : None known. |
| Explosive properties | : N/Av |
| Vapour pressure | : 0.0012 |
| Vapour density | : 7.0 |
| Relative density / Specific gravity | : 13.55 |
| Solubility in water | : Insoluble. |
| Other solubility(ies) | : N/Av |
| Partition coefficient: n-octanol/water or Coefficient of water/oil distribution | : N/Av |
| Auto-ignition temperature | : N/Av |
| Decomposition temperature | : N/Av |
| Viscosity | : 1.55 cp @ 20°C (68°F) |
| Volatiles (% by weight) | : N/Av |
| Volatile organic Compounds (VOC's) | : N/Av |

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Absolute pressure of container

: N/Ap

Flame projection length

: N/Ap

Other physical/chemical comments

: No additional information.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not normally reactive.

Chemical stability : Stable under the recommended storage and handling conditions prescribed.

Possibility of hazardous reactions

: Hazardous polymerization will not occur.

Conditions to avoid

: Avoid heat and open flame. Avoid contact with incompatible materials. Do not use in areas without adequate ventilation.

Incompatible materials

: Strong oxidizing agents; Acetylene; Ammonia; Metals; azides.

Hazardous decomposition products

: None known, refer to hazardous combustion products in Section 5.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Routes of entry inhalation

: YES

Routes of entry skin & eye

: YES

Routes of entry Ingestion

: YES

Routes of exposure skin absorption

: YES

Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation

: Inhalation of fumes may result in metal fume fever, a flu-like illness. Symptoms of metal fume fever may include fever, fatigue, vomiting, muscle aches and shortness of breath. Fatal if inhaled. Exposure to high concentrations of mercury for brief periods can cause pneumonitis and shortness of breath. Symptoms of mercury poisoning are headache, weakness of memory, loss of appetite, nausea, shortness of breath and exhaustion. Inhalation may provoke the following symptoms: Tremors; Weakness; Increased pulse rate; Breathing difficulties. Could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed. May result in unconsciousness and possibly death. Kidney injury may occur.

Sign and symptoms ingestion

: Effects due to ingestion may include: Tremors; Fatigue. May cause liver effects.

Sign and symptoms skin

: Not an irritant. May be absorbed and cause symptoms similar to those for inhalation.

Sign and symptoms eyes

: May cause redness and itching or burning sensation.

Potential Chronic Health Effects

: Contains material which can cause nervous system damage. Can cause kidney damage. Chronic exposure through any route can produce nervous system damage. May cause muscle tremors, personality and behavior changes, memory loss, metallic taste, loosening of the teeth, digestive disorders, skin rashes, brain damage and kidney damage.

Mutagenicity

: Not expected to be mutagenic in humans.

Carcinogenicity

: No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.

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Reproductive effects & Teratogenicity

: May cause fetotoxic (toxic to the fetus during the latter stages of pregnancy, often through the placenta) and teratogenic effects (causing malformations of the fetus), based on animal information.

Sensitization to material

: May cause an allergic skin reaction (e.g. hives, rash) in some hypersensitive individuals. No data available to indicate product or components may be respiratory sensitizers.

Specific target organ effects

: This material is classified as hazardous under OSHA regulations (29CFR 1910.1200) (Hazcom 2012). Classification :
Specific target organ toxicity - single exposure -Category 1
Causes damage to organs if inhaled. (Lungs ;Nervous system ;Digestive system ;Kidney)

Specific target organ toxicity - repeated exposure -Category 1
May cause damage to organs through prolonged or repeated exposure. (Nervous system.; Kidney)

Irritancy

: Not an irritant.

Medical conditions aggravated by overexposure

: Pre-existing skin, eye, respiratory and central nervous system disorders.

Synergistic materials

: None known or reported by the manufacturer.

Toxicological data

: See below for toxicological data on the substance.

| <u>Chemical name</u> | <u>LC₅₀(4hr)</u> | <u>LD₅₀</u> | |
|----------------------|-----------------------------|------------------------|-------------------------|
| | <u>inh. rat</u> | <u>(Oral, rat)</u> | <u>(Rabbit, dermal)</u> |
| Mercury | >0.0133mg/L (vapour) | >9.2mg/kg | N/Av |

Other important toxicological hazards

: May accumulate in body tissues.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

: The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters. This product contains marine pollutants. The product contains the following substances which are hazardous for the environment: Mercury.

Ecotoxicity data:

| <u>Ingredients</u> | <u>CAS No</u> | <u>Toxicity to Fish</u> | | |
|--------------------|---------------|-------------------------|----------------------------|-----------------|
| | | <u>LC50 / 96h</u> | <u>NOEC / 21 day</u> | <u>M Factor</u> |
| Mercury | 7439-97-6 | 0.16mg/L (common carp) | 0.001 mg/L/14d(Zebra fish) | 100 |

| <u>Ingredients</u> | <u>CAS No</u> | <u>Toxicity to Daphnia</u> | | |
|--------------------|---------------|---------------------------------------|---------------------------------------|-----------------|
| | | <u>EC50 / 48h</u> | <u>NOEC / 21 day</u> | <u>M Factor</u> |
| Mercury | 7439-97-6 | 0.0015mg/L Daphnia magna (Water flea) | 0.0017mg/L Daphnia magna (Water flea) | 100 |

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| Ingredients | CAS No | Toxicity to Algae | | |
|-------------|-----------|-------------------------|-------------------|----------|
| | | EC50 / 96h or 72h | NOEC / 96h or 72h | M Factor |
| Mercury | 7439-97-6 | 0.061mg/L (Green algae) | N/Av | 10 |

Persistence and degradability

: Mercury is not considered to be readily biodegradable.

Bioaccumulation potential

: May bioaccumulate. Bioconcentration factors (BCF's) for Mercury are high (e.g. BCF in algae is > 10,000).

Mobility in soil

: No data is available on the product itself.

Other Adverse Environmental effects

: No data is available on the product itself.

SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal

: Handle waste according to recommendations in Section 7. Empty containers retain residue (liquid and/or vapour) and can be dangerous.



Methods of Disposal

: Dispose in accordance with all applicable federal, state, provincial and local regulations. Contact your local, state, provincial or federal environmental agency for specific rules.

RCRA

: If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.

SECTION 14. TRANSPORTATION INFORMATION

| Regulatory Information | UN Number | UN proper shipping name | Transport hazard class(es) | Packing Group | Label |
|----------------------------------|--|-------------------------|----------------------------|---------------|---|
| TDG | UN2809 | MERCURY | 8 | III |  |
| TDG Additional information | May be shipped as Limited Quantity when transported in containers no larger than 5.0 kg; in packages not exceeding 30 kg gross mass. Under the TDGR, refer to Section 1.17 for additional exemption information, if shipping under this exemption. | | | | |
| 49CFR/DOT | UN2809 | Mercury | 8 | III |  |
| 49CFR/DOT Additional information | Refer to 173.164 for special packaging information. US CERCLA Reportable quantity (RQ): Mercury (1 lb / 0.454 kg) Contains material that may be harmful in the environment. See ECOLOGICAL INFORMATION, Section 12. | | | | |

Special precautions for user

: Appropriate advice on safety must accompany the package. Keep away from heat and open flames. - No smoking.

Environmental hazards

: This product contains marine pollutants. See ECOLOGICAL INFORMATION, Section 12.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

: This information is not available.

SECTION 15 - REGULATORY INFORMATION

US Federal Information:

Components listed below are present on the following U.S. Federal chemical lists:

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| <u>Ingredients</u> | CAS # | TSCA Inventory | CERCLA Reportable Quantity(RQ) (40 CFR 117.302): | SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355: | SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical | |
|--------------------|-----------|----------------|--|--|---|--------------------------|
| | | | | | Toxic Chemical | de minimus Concentration |
| Mercury | 7439-97-6 | Yes | 1 lb/ 0.454 kg | N/Av | Yes | 0.1% |

SARA TITLE III: Sec. 311 and 312, MSDS Requirements, 40 CFR 370 Hazard Classes: Immediate (Acute) health hazard; Chronic Health Hazard. Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

| <u>Ingredients</u> | CAS # | California Proposition 65 | | State "Right to Know" Lists | | | | | |
|--------------------|-----------|---------------------------|---------------------------|-----------------------------|-----|-----|-----|-----|-----|
| | | Listed | Type of Toxicity | CA | MA | MN | NJ | PA | RI |
| Mercury | 7439-97-6 | No | ental toxicity, initial d | Yes | Yes | Yes | Yes | Yes | Yes |

This product contains a chemical known to the State of California to cause cancer and/or reproductive harm. This product contains: Mercury.

Other U.S. State "Right to Know" Lists: The following chemicals are specifically listed by individual States: Mercury (CA, MA, MN, NJ, PA, RI).

Canadian Information:

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

WHMIS information: Refer to Section 2 for a WHMIS Classification for this product.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

International Information:

Components listed below are present on the following International Inventory list:

| <u>Ingredients</u> | CAS # | European EINECs | Australia AICS | Philippines PICCS | Japan ENCS | Korea KECI/KECL | China IECSC | NewZealand IOC |
|--------------------|-----------|-----------------|----------------|-------------------|------------|-----------------|-------------|----------------|
| Mercury | 7439-97-6 | 231-106-7 | Present | Present | Not listed | KE-23117 | Present | HSR003014 |

SECTION 16. OTHER INFORMATION

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Legend

: ACGIH: American Conference of Governmental Industrial Hygienists
CA: California
CAS: Chemical Abstract Services
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR: Code of Federal Regulations
DOT: Department of Transportation
EPA: Environmental Protection Agency
HMIS: Hazardous Materials Identification System
HSDB: Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer
Inh: Inhalation
IUCLID: International Uniform Chemical Information Database
LC: Lethal Concentration
LD: Lethal Dose
MA: Massachusetts
MN: Minnesota
MSHA: Mine Safety and Health Administration
N/Ap: Not Applicable
N/Av: Not Available
NFPA: National Fire Protection Association
NIOSH: National Institute of Occupational Safety and Health
NJ: New Jersey
NOEC: No observable effect concentration
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PA: Pennsylvania
PEL: Permissible exposure limit
RCRA: Resource Conservation and Recovery Act
RI: Rhode Island
RTECS: Registry of Toxic Effects of Chemical Substances
SARA: Superfund Amendments and Reauthorization Act
STEL: Short Term Exposure Limit
TDG: Canadian Transportation of Dangerous Goods Act & Regulations
TLV: Threshold Limit Values
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Identification System

References

- : 1. ACGIH, Threshold Limit Values and Biological Exposure Indices for 2012.
2. International Agency for Research on Cancer Monographs, searched 2013.
3. Canadian Centre for Occupational Health and Safety, CCIInfoWeb databases (Chempendium, HSDB and RTECs).
4. Material Safety Data Sheet from manufacturer.
5. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2012.
6. European Chemicals Agency, Registered Substances Database, 2012.

Preparation Date (mm/dd/yyyy)

: 09/11/2013

Reviewed Date SDS (dd/mm/yyyy)

: 11/09/2013

Revision No.

: 2

Revision Information

: (M)SDS sections updated ;All sections modified.

Other special considerations for handling

: Provide adequate information, instruction and training for operators.

HMIS Rating

: * - Chronic hazard 0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe

Health: *3 Flammability: 0 Reactivity: 0

NFPA Rating

0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe

: Health: 2 Flammability: 0 Instability: 0 Special Hazards: None.

Mercury

SDS Revision Date (mm/dd/yyyy): 09/11/2013

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SAFETY DATA SHEET

| | |
|---|--|
| <p><u>Prepared for:</u></p> <p>Veolia ES Technical Solutions, L.L.C. 700 East Butterfield Road, Suite 201 Lombard, IL, U.S.A., 60148 Telephone: (630) 218 1500 Direct all enquiries to: VEOLIA.</p> |  |
| <p><u>Prepared by:</u></p> <p>ICC The Compliance Center Inc. Telephone: (888) 442-9628 (U.S.): (888) 977-4834 (Canada) http://www.thecompliancecenter.com</p> |  |

DISCLAIMER

This Material Safety Data Sheet was prepared by ICC The Compliance Center Inc. using information provided by / obtained from Veolia ES Technical Solutions, L.L.C. and CCOHS' Web Information Service. The information in the Material Safety Data Sheet is offered for your consideration and guidance when exposed to this product. ICC The Compliance Center Inc and Veolia ES Technical Solutions, L.L.C. expressly disclaim all expressed or implied warranties and assume no responsibilities for the accuracy or completeness of the data contained herein. The data in this MSDS does not apply to use with any other product or in any other process.

This Material Safety Data Sheet may not be changed, or altered in any way without the expressed knowledge and permission of ICC The Compliance Center Inc. and Veolia ES Technical Solutions, L.L.C.

END OF DOCUMENT

Recycled Lamp Glass

N/Av

SDS Revision Date (mm/dd/yyyy): 09/20/2013

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SAFETY DATA SHEET

SECTION 1. IDENTIFICATION

Product identifier used on the label

: **Recycled Lamp Glass**

Product Code(s) : Not available.

Recommended use of the chemical and restrictions on use

: Not available.

Chemical family : Glass oxides

Name, address, and telephone number of the manufacturer:

Refer to Supplier

Manufacturer's Telephone # : Refer to supplier

Name, address, and telephone number of the supplier:

Veolia Environmental Services Technical Solutions, LLC

700 East Butterfield Road, Suite 201
Lombard, IL, USA
60148

Supplier's Telephone # : (630) 218-1500(Monday - Friday, 8:00 AM - 5:00 PM, Central Time)

24 Hr. Emergency Tel # : (877) 818-0087

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Fine, white to off-white granules. Practically odourless.

Most important hazards This material is classified as hazardous under OSHA regulations (29CFR 1910.1200) (Hazcom 2012). Hazardous classification :

Carcinogenicity -Category 2

Specific target organ toxicity - repeated exposure -Category 1

WHMIS information: This product is a WHMIS Controlled Product. It meets one or more of the criteria for a controlled product provided in Part IV of the Canadian Controlled Products Regulations (CPR).

WHMIS classification:

Class D2A (Materials Causing Other Toxic Effects, Very Toxic Material)

Label elements

The following label information is applicable only to the United States according to OSHA Regulations (29 CFR 1910.1200) (Hazcom 2012):

Signal Word

DANGER!

Hazard statement(s)

Suspected of causing cancer.

Causes damage to the lungs through prolonged or repeated exposure if inhaled.

Precautionary statement(s)

Recycled Lamp Glass

N/Av

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SAFETY DATA SHEET

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/clothing and eye/face protection.
Do not breathe dust and fume.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.

IF exposed or concerned: Get medical attention/advice.
Get medical attention/advice if you feel unwell.

Store locked up.

Dispose of contents/container in accordance with local regulation.



The following label information is applicable only to Canada according to the Canadian Controlled Products Regulations (CPR/WHMIS):

DANGER! Suspected of causing cancer. Causes fibrosis and lung tumours in laboratory animals. Causes damage to the respiratory system and lungs through prolonged or repeated exposure. May cause mild skin irritation.

PRECAUTIONS: Use only in well-ventilated areas. Wear chemically resistant protective equipment during handling. Do not breathe dust. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Keep containers tightly closed when not in use. Store in a cool, dry, well ventilated area.

FIRST AID: For all cases, obtain medical attention immediately. If inhaled, move to fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing stopped, begin artificial respiration. For skin contact, wash with soap and water while removing contaminated clothing. For eye contact, immediately flush eyes thoroughly with running water for at least 20 to 30 minutes. If ingested, do not induce vomiting. Rinse mouth thoroughly with water.

Refer To Material Safety Data Sheet for further information.



Other hazards

Burning produces obnoxious and toxic fumes.

Environmental precautions :Avoid release to the environment. See ECOLOGICAL INFORMATION, Section 12.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

| <u>Chemical name</u> | <u>CAS #</u> | <u>Concentration</u> |
|----------------------|--------------|----------------------|
| Glass | 65997-17-3 | 95.0 - 100.0 |

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

- | | | |
|-------------------|---|---|
| <i>Ingestion</i> | : | Never give anything by mouth to an unconscious person. Rinse mouth thoroughly with water. Seek immediate medical attention/advice. |
| <i>Inhalation</i> | : | Immediately remove person to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Seek immediate medical attention/advice. |

Recycled Lamp Glass

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SAFETY DATA SHEET

- Skin contact* : Remove/Take off immediately all contaminated clothing. Flush skin thoroughly with running water for at least 15 to 20 minutes. Do not rub area of contact. If irritation or symptoms develop, seek medical attention.
- Eye contact* : Flush immediately with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Seek immediate medical attention/advice.

Most important symptoms and effects, both acute and delayed

- : May cause cancer by inhalation. Causes fibrosis and lung tumours in laboratory animals. Causes damage to the lungs through prolonged or repeated exposure if inhaled.

Indication of any immediate medical attention and special treatment needed

- : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

- : Use media suitable to the surrounding fire such as water fog or fine spray, alcohol foams, carbon dioxide and dry chemical.

Unsuitable extinguishing media

- : None known.

Special hazards arising from the substance or mixture / Conditions of flammability

- : Non-flammable.

Flammability classification (OSHA 29 CFR 1910.106)

- : N/Ap

Explosion Data: Sensitivity to Mechanical Impact / Static Discharge:

- : Not expected to be sensitive to mechanical impact or static discharge.

Hazardous combustion products

- : silicon oxides

Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters

- : Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

Special fire-fighting procedures

- : Immediately evacuate personnel to safe areas. Fight fires from a safe distance. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

- : Ensure clean-up is conducted by trained personnel only. Keep all other personnel upwind and away from the spill/release. All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.

Environmental precautions

- : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. For large spills, dike the area to prevent spreading.

Methods and material for containment and cleaning up

- : Ventilate area of release. Stop the spill at source if it is safe to do so. Remove all sources of ignition. Avoid creating dust. Vacuum or sweep up spilled material using a method that does not generate airborne dust. Notify the appropriate authorities as required.

Special spill response procedures

- : In case of a transportation accident, in the United States contact CHEMTREC at 1-800-424-9300 or International at 1-703-527-3887. If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8002).
US CERCLA Reportable quantity (RQ): None.

Recycled Lamp Glass

N/Av

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SAFETY DATA SHEET

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

- : Use in a well-ventilated area. Wear suitable protective equipment during handling. Do not ingest. Avoid breathing dust. Avoid contact with skin, eyes and clothing. Keep away from heat, sparks, and open flames. Avoid contact with incompatible materials. Wash thoroughly after handling.

Conditions for safe storage

- : Store in a cool, dry, well-ventilated area. Store away from incompatible materials. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. No smoking in the area.

Incompatible materials

- : Strong oxidizing agents, Hydrogen fluoride.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

| <u>Chemical Name</u> | <u>ACGIH TLV</u> | | <u>OSHA PEL</u> | |
|----------------------|--|-------------|--|-------------|
| | <u>TWA</u> | <u>STEL</u> | <u>PEL</u> | <u>STEL</u> |
| Glass | 10mg/m ³ (total dust) 3mg/m ³ (respirable dust) | N/Av | 15mg/m ³ (total dust) 5mg/m ³ (respirable dust) | N/Av |

There is no established exposure limits for this product. The above exposure limits are provided for safety reasons.

Exposure controls

Ventilation and engineering measures

- : Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits.

Respiratory protection

- : If the TLV is exceeded, a NIOSH/MSHA-approved respirator is advised. A self contained breathing apparatus should be used in emergency situations or instances where exposure levels are not known. Advice should be sought from respiratory protection specialists. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02.

Skin protection

- : Impervious gloves must be worn when using this product. Advice should be sought from glove suppliers.

Eye / face protection

- : Chemical splash goggles are recommended to prevent dusts from entering the eyes.

Other protective equipment

- : Wear resistant clothing and boots. An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.

General hygiene considerations

- : Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust. Avoid contact with skin, eyes and clothing. Do not ingest. Do not eat, drink, smoke or use cosmetics while working with this product. Upon completion of work, wash hands before eating, drinking, smoking or use of toilet facilities. Remove and wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance** : Fine, white to off-white granules.
- Odour** : Practically odorless.
- Odour threshold** : N/Av
- pH** : N/Av
- Melting/Freezing point** : 726°C (1340°F)

Recycled Lamp Glass

N/Av

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Initial boiling point and boiling range

: N/Av

Flash point : Non-flammable.

Flashpoint (Method) : N/Av

Evaporation rate (BuAe = 1) : N/Av

Flammability (solid, gas) : N/Av

Lower flammable limit (% by vol.) : N/Av

Upper flammable limit (% by vol.) : N/Av

Oxidizing properties : None known.

Explosive properties : N/Av

Vapour pressure : N/Av

Vapour density : N/Av

Relative density / Specific gravity : 1.0 - 1.5

Solubility in water : Insoluble.

Other solubility(ies) : N/Av

Partition coefficient: n-octanol/water or Coefficient of water/oil distribution

: N/Av

Auto-ignition temperature : N/Av

Decomposition temperature : N/Av

Viscosity : N/Av

Volatiles (% by weight) : N/Av

Volatile organic Compounds (VOC's) : N/Av

Absolute pressure of container : N/Av

Flame projection length : N/Av

Other physical/chemical comments : No additional information.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not normally reactive.

Chemical stability : Stable under the recommended storage and handling conditions prescribed.

Possibility of hazardous reactions : Hazardous polymerization will not occur.

Conditions to avoid : Avoid heat and open flame.

Incompatible materials : Strong oxidizing agents, Hydrogen fluoride.

Hazardous decomposition products : None known, refer to hazardous combustion products in Section 5.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Routes of entry inhalation : YES

Routes of entry skin & eye : YES

Routes of entry Ingestion : YES

Recycled Lamp Glass

N/Av

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SAFETY DATA SHEET

Routes of exposure skin absorption

: YES

Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation

: If dusts are formed, inhalation may cause adverse lung effects. Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.

Sign and symptoms ingestion

: May be harmful if swallowed. Ingestion may cause severe irritation to the mouth, throat and stomach.

Sign and symptoms skin

: May cause mild skin irritation. Symptoms may include redness, itching and swelling.

Sign and symptoms eyes

: May cause mild eye irritation. Symptoms will include pain, redness and tearing.

Potential Chronic Health Effects

: Causes damage to the lungs through prolonged or repeated exposure if inhaled. Causes fibrosis and lung tumours in laboratory animals.

Mutagenicity

: Not expected to be mutagenic in humans.

Carcinogenicity

: Contains Glass, oxide, chemicals, a form of synthetic vitreous fibers. Synthetic vitreous fibres - special purpose glass fibres are considered carcinogenic by IARC (Group 2B) and the ACGIH (Category A3).

Reproductive effects & Teratogenicity

: Not expected to cause reproductive effects.

Senitization to material

: Not expected to be a skin or respiratory sensitizer.

Specific target organ effects

: This material is classified as hazardous under OSHA regulations (29CFR 1910.1200) (Hazcom 2012). Classification :
Specific target organ toxicity - repeated exposure Category 1
Causes damage to the lungs through prolonged or repeated exposure if inhaled.

Irritancy

: May cause eye, skin and respiratory tract irritation.

Medical conditions aggravated by overexposure

: Pre-existing skin, eye and respiratory disorders.

Synergistic materials

: None known or reported by the manufacturer.

Toxicological data

: See below for toxicological data on the substance.

| Chemical name | LC ₅₀ (4hr) | LD ₅₀ | |
|---------------|------------------------|------------------|------------------|
| | inh, rat | (Oral, rat) | (Rabbit, dermal) |
| Glass | N/Av | N/Av | N/Av |

Other important toxicological hazards

: None known or reported by the manufacturer.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

: The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.

See the following tables for the substance ecotoxicity data.

Recycled Lamp Glass

N/Av

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Ecotoxicity data:

| <u>Ingredients</u> | CAS No | Toxicity to Fish | | |
|--------------------|------------|------------------------|---------------|----------|
| | | LC50 / 96h | NOEC / 21 day | M Factor |
| Glass | 65997-17-3 | >1000mg/L (Zebra fish) | N/Av | |

| <u>Ingredients</u> | CAS No | Toxicity to Daphnia | | |
|--------------------|------------|---------------------|---|----------|
| | | EC50 / 48h | NOEC / 21 day | M Factor |
| Glass | 65997-17-3 | N/Av | 1000mg/L/72hrDaphnia magna (Water flea) | |

| <u>Ingredients</u> | CAS No | Toxicity to Algae | | |
|--------------------|------------|------------------------------|-------------------|----------|
| | | EC50 / 96h or 72h | NOEC / 96h or 72h | M Factor |
| Glass | 65997-17-3 | >1000mg/L/72hr (Green algae) | N/Av | |

Persistence and degradability

: No data is available on the product itself.

Bioaccumulation potential

: No data is available on the product itself.

Mobility in soil

: No data is available on the product itself.

Other Adverse Environmental effects

: No data is available on the product itself.

SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal

: Handle waste according to recommendations in Section 7.



Methods of Disposal

: Reuse or recycling should be given priority over disposal. If the material is unsuitable for recycling or reclamation, dispose of in accordance with federal, provincial and local hazardous waste laws. Contact your local, state or federal environmental agency for specific rules.

RCRA

: If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.

SECTION 14. TRANSPORTATION INFORMATION

| Regulatory Information | UN Number | UN proper shipping name | Transport hazard class(es) | Packing Group | Label |
|----------------------------|-----------|-------------------------|----------------------------|---------------|---|
| TDG | None | Not regulated. | Not regulated | none |  |
| TDG Additional information | None. | | | | |
| TDG | None | Not regulated. | Not regulated | none |  |

Recycled Lamp Glass

N/Av

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SAFETY DATA SHEET

| | |
|-----------------------------------|-------|
| TDG Additional information | None. |
|-----------------------------------|-------|

Special precautions for user : Appropriate advice on safety must accompany the package. Keep away from heat and open flames. - No smoking.

Environmental hazards : This substance does not meet the criteria for an environmentally hazardous substance according to the IMDG Code. See ECOLOGICAL INFORMATION, Section 12.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

: This information is not available.

SECTION 15 - REGULATORY INFORMATION

US Federal Information:

Components listed below are present on the following U.S. Federal chemical lists:

| <u>Ingredients</u> | CAS # | TSCA Inventory | CERCLA Reportable Quantity(RQ) (40 CFR 117.302): | SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355: | SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical | de minimus Concentration |
|--------------------|------------|----------------|--|--|---|--------------------------|
| Glass | 65997-17-3 | Yes | N/Ap | N/Av | No | N/Ap |

SARA TITLE III: Sec. 311 and 312, MSDS Requirements, 40 CFR 370 Hazard Classes:

Immediate (Acute) health hazard; Chronic Health Hazard.

Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

| <u>Ingredients</u> | CAS # | California Proposition 65 | | State "Right to Know" Lists | | | | | |
|--------------------|------------|---------------------------|------------------|-----------------------------|----|-----|----|----|----|
| | | Listed | Type of Toxicity | CA | MA | MN | NJ | PA | RI |
| Glass | 65997-17-3 | No | N/Ap | No | No | Yes | No | No | No |

Canadian Information:

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

Canadian WHMIS Classification: This product is a WHMIS Controlled Product. It meets one or more of the criteria for a controlled product provided in Part IV of the Canadian Controlled Products Regulations (CPR). Refer to Section 2 for a WHMIS Classification for this product.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

International Information:

Components listed below are present on the following International Inventory list:

Recycled Lamp Glass

N/Av

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| Ingredients | CAS # | European EINECs | Australia AICS | Philippines PICCS | Japan ENCS | Korea KECI/KECL | China IECSC | NewZealand IOC |
|-------------|------------|-----------------|----------------|-------------------|------------|-----------------|-------------|----------------|
| Glass | 65997-17-3 | 266-046-0 | Present | Present | (1)-189 | KE-17630 | Present | Not listed |

SECTION 16. OTHER INFORMATION

Legend

- : ACGIH: American Conference of Governmental Industrial Hygienists
- CA: California
- CAS: Chemical Abstract Services
- CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
- DOT: Department of Transportation
- HSDB: Hazardous Substances Data Bank
- IARC: International Agency for Research on Cancer
- Inh: Inhalation
- LC: Lethal Concentration
- LD: Lethal Dose
- MA: Massachusetts
- MN: Minnesota
- MSHA: Mine Safety and Health Administration
- N/Av: Not Applicable
- N/Av: Not Available
- NIOSH: National Institute of Occupational Safety and Health
- NJ: New Jersey
- NTP: National Toxicology Program
- OSHA: Occupational Safety and Health Administration
- PA: Pennsylvania
- PEL: Permissible exposure limit
- RCRA: Resource Conservation and Recovery Act
- RI: Rhode Island
- RTECS: Registry of Toxic Effects of Chemical Substances
- SARA: Superfund Amendments and Reauthorization Act
- STEL: Short Term Exposure Limit
- TCC: Tagliabue Closed Cup
- TDG: Canadian Transportation of Dangerous Goods Act & Regulations
- TLV: Threshold Limit Values
- TWA: Time Weighted Average
- TSCA: Toxic Substance Control Act
- WHMIS: Workplace Hazardous Materials Identification System

References

- : 1. ACGIH, Threshold Limit Values and Biological Exposure Indices for 2012.
- 2. International Agency for Research on Cancer Monographs, searched 2013.
- 3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases (Chempendium, HSDB and RTECs).
- 4. Material Safety Data Sheet from manufacturer.
- 5. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2012.
- 6. European Chemicals Agency, Registered Substances Database, 2012.

Preparation Date (mm/dd/yyyy)

: 09/19/2013

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: 20/09/2013

Revision No.

: 2

Revision Information

: (M)SDS sections updated ;All sections modified.

Other special considerations for handling

: Provide adequate information, instruction and training for operators.

Recycled Lamp Glass

N/Av

SDS Revision Date (mm/dd/yyyy): 09/20/2013

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| | | | | | | | |
|--------------------|---|--------------------|-----------------|----------------|-----------------------|-------------|------------|
| HMIS Rating | : | * - Chronic hazard | 0 - Minimal | 1 - Slight | 2 - Moderate | 3 - Serious | 4 - Severe |
| | | Health: *1 | Flammability: 0 | Reactivity: 0 | | | |
| NFPA Rating | : | 0 - Minimal | 1 - Slight | 2 - Moderate | 3 - Serious | 4 - Severe | |
| | | Health: 1 | Flammability: 0 | Instability: 0 | Special Hazards: None | | |

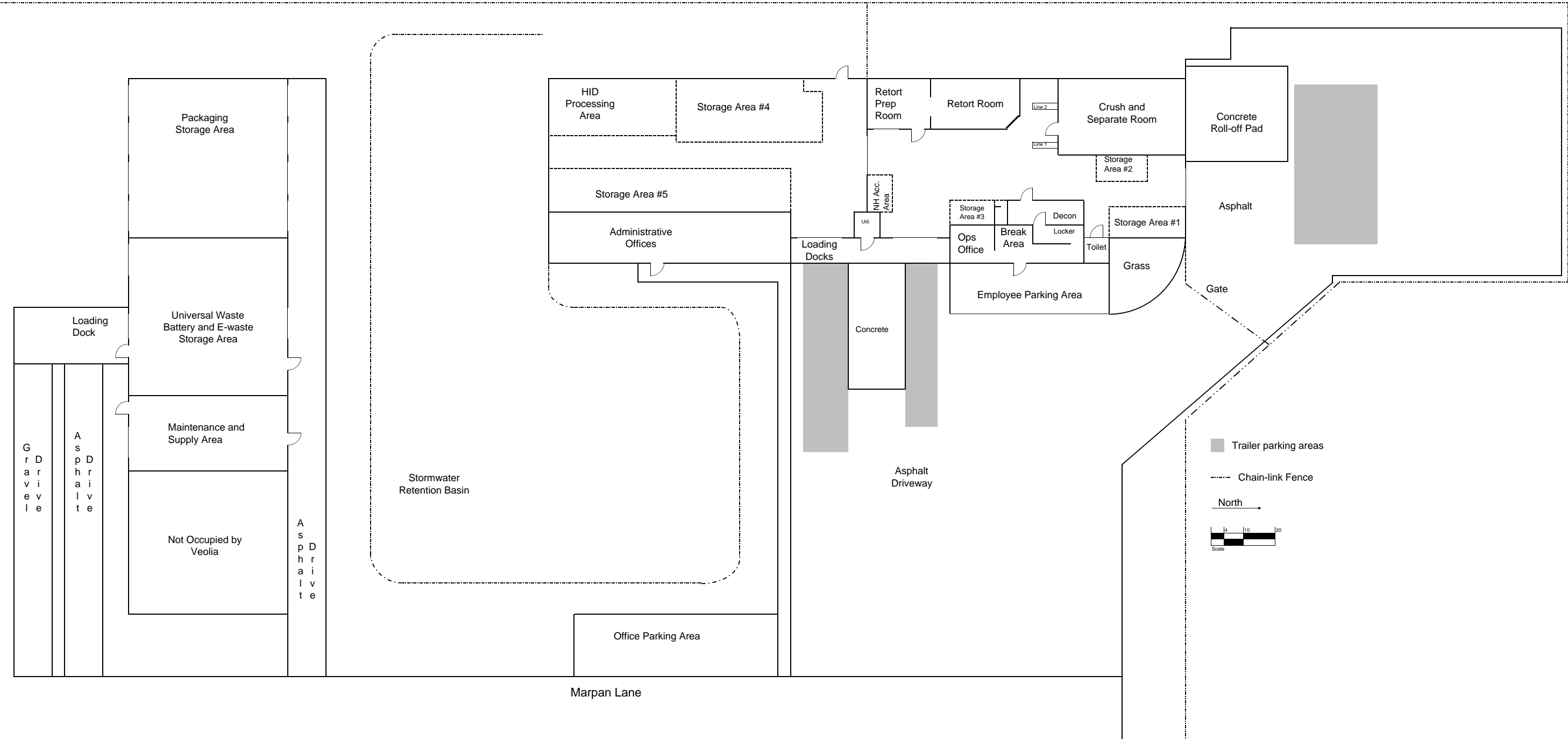
| | |
|---|--|
| Prepared for: Veolia ES Technical Solutions, L.L.C. 700 East Butterfield Road, Suite 201 Lombard, IL, USA 60148 Tel: (630) 218-1500 Please direct all enquiries to VEOLIA. |  |
| Prepared by: ICC The Compliance Center Inc. Telephone: (888) 442-9628 (U.S.); (888) 977-4834 (Canada) http://www.thecompliancecenter.com |  |

DISCLAIMER

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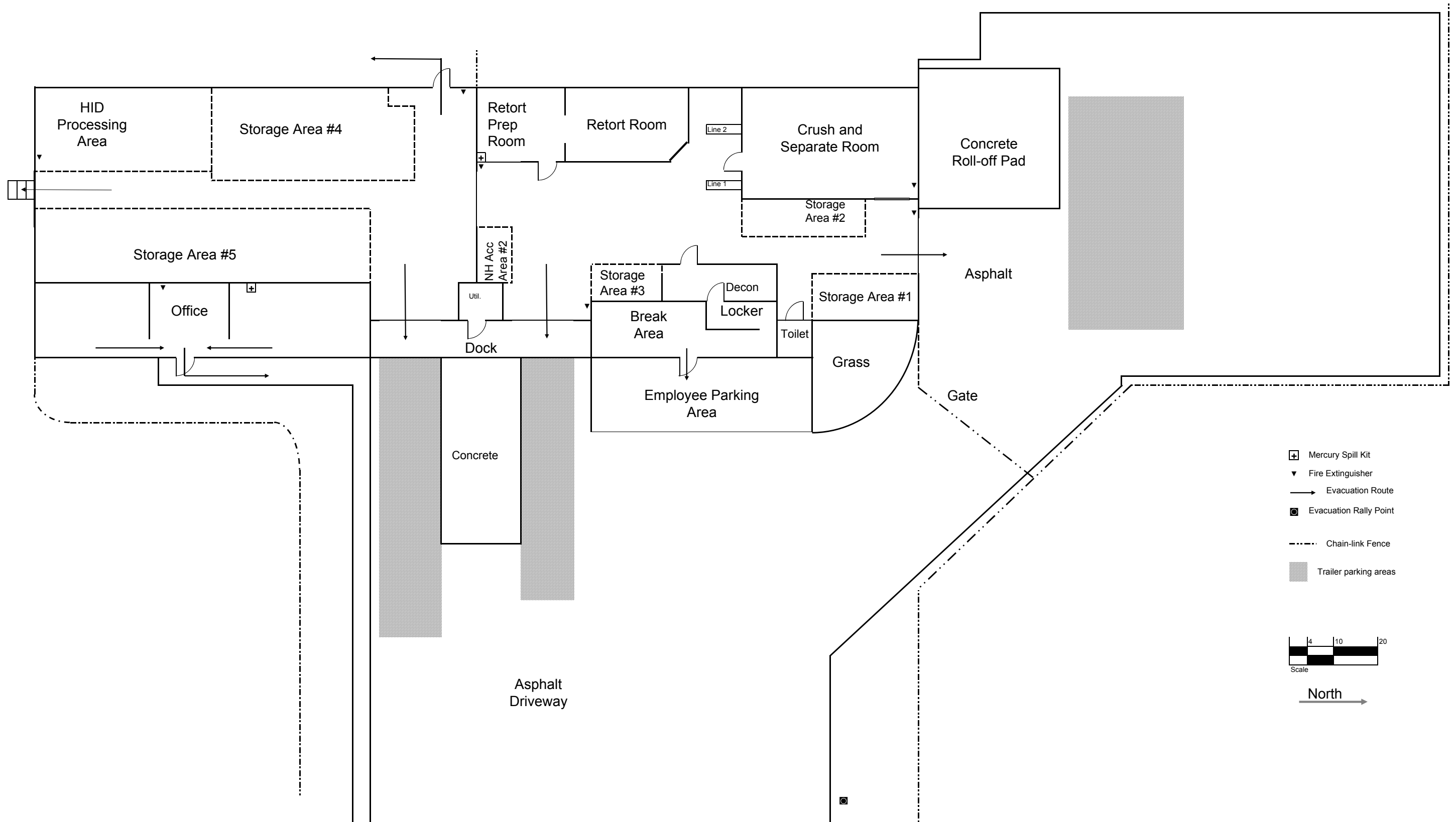
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Site Plan
Figure 6.1

Veolia ES Technical Solutions, L.L.C.
342 Marpan Lane
Tallahassee, FL 32305

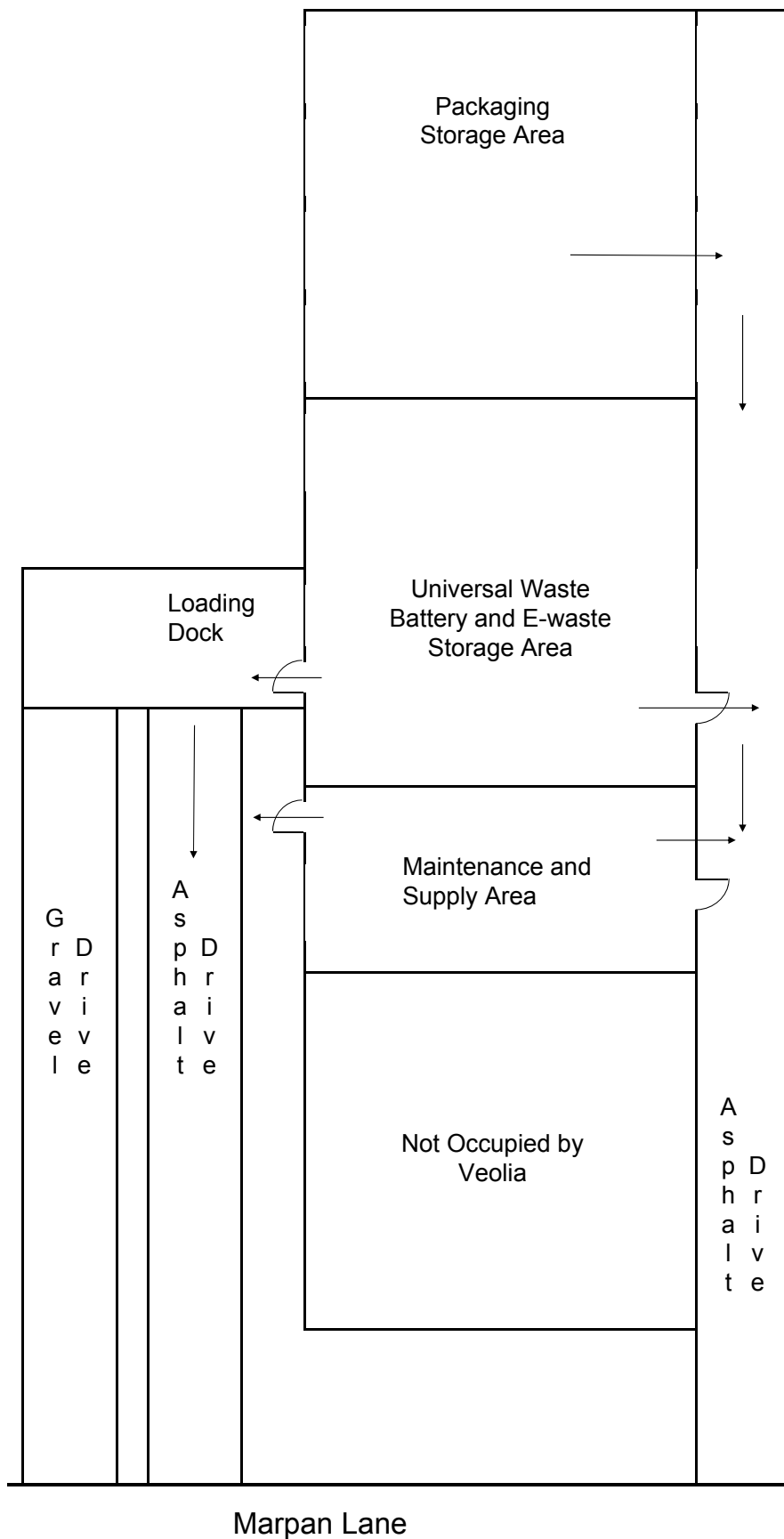
Revision Date: 3/11/2016



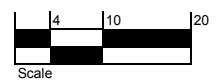
Evacuation Routes
342 Marpan Lane
Figure 6.2

Veolia ES Technical Solutions
342 Marpan Lane
Tallahassee, FL 32305

Revised: March 15, 2016



▼ Fire Extinguisher
→ Evacuation Route



North →

Evacuation Routes
South Building
Figure 6.3

Veolia ES Technical Solutions
342 Marpan Lane
Tallahassee, FL 32305

Revised March 15, 2016

Attachment D-7

Worker Health and Safety Program

7.1 Purpose

Veolia ES Technical Solutions, L.L.C. (Veolia) is a safety-oriented environmental company that specializes in the recovery of mercury and mercury related materials from fluorescent lamps and mercury bearing devices. The nature and diversity of this business presents unique situations not normally encountered in typical workplace environments which may routinely expose Veolia employees to potentially hazardous conditions. Veolia has developed the following **Health, Safety and Training Plan** which details specific procedures to be followed and, to be used as a training guide by all Veolia employees, thus ensuring continual maintenance of their health and welfare.

7.2 Company Safety Policy

Veolia's employees are its most valuable resource. Loss of the skills of a valued employee, however temporary, can adversely impact our ability to provide quality service. It is paramount that our employees know of management's commitment and policy to develop and maintain a safe and healthy work site for all Veolia employees, contractors and the general public.

This shall be accomplished through the application of the following policies and procedures outlined in this manual. **During any Veolia activity, safety shall take precedence over more expedient unsafe operations.**

Veolia requires strict compliance with this Health, Safety & Training Plan. Failure on the part of any employee to comply with this plan may result in disciplinary action and possible termination of employment. In addition, all subcontractors visiting the facility shall be expected to abide by the provisions of the Veolia Health and Safety Policy.

This manual provides guidance and advises employees on how to interpret particular requirements.

This written program supersedes all previous Veolia Health and Safety programs and shall not be altered or deviated from without formal revision or amendments by the Environmental Health and Safety Manager. This manual will be reviewed and updated as situations and services change.

7.3 Organization and Responsibilities

The Veolia Health and Safety Program, with all of its related elements, are administered by the Environmental Health and Safety Manager. All plans, procedures, equipment requirements, training, personnel and site monitoring, and program audits are directed by the Environmental Health and Safety Manager. Any employee that discovers an unsafe

condition has the authority to stop the unsafe operation until full compliance with the program is met.

The following information more clearly defines each team member's role in the Health and Safety Program:

7.3.1 Environmental Health and Safety Manager

Environmental Health and Safety Manager

1. Manages the overall medical monitoring and surveillance program
2. Audits written plans and the administration of health and the safety program
3. Develops and directs monitoring programs for ambient air and personnel exposure
4. Assures compliance with the OSHA Hazard Communication Standard and other OSHA regulations
5. Develops and maintains health and safety standard operating procedures and policies
6. Provides guidance on the selection of proper health and safety equipment and clothing
7. Provides guidance on site-specific health and safety plans and issues
8. Provides guidance for accident investigations
9. Develops specialized health and safety plans for unique project requirements

7.3.2 Operations Manager and Supervisors

The Operations Manager and facility supervisors will assist the Environmental Health and Safety Manager with the implementation of the Health and Safety Program. Specifically the Operations Manager and Operations Supervisors will:

1. Assists with accident investigation and injury/illness record keeping in the event of an occupational accident
2. Conduct periodic safety audits within the respective office and in the operational portion of the facility
3. Administers the facility's Hazard Communication Program
4. Organizes Veolia's safety meetings
5. Assists with the preparation and review of the facility's air monitoring log
6. Responsible for reporting information and providing ideas and feedback to the Environmental Health and Safety Manager
7. Ensure that all employees have been properly informed regarding safety policies and proper safety procedures

8. Ensure that all necessary training and medical surveillance has been provided prior to the employee's initial work assignment
9. Providing all necessary safety equipment to the employees
10. Supervise the safety performances of the staff to ensure that the required work practices are employed
11. Arranging appropriate medical attention for employees in the event of an injury
12. Promptly reporting to the Environmental Health and Safety Manager and the occurrence of any work-related injury or illness
13. Ensure that safety procedures have been prepared and reviewed for all appropriate personnel

7.3.3 Operations Employees

Ultimately, the responsibility for safety at Veolia rests with the employees themselves. They are responsible for:

1. Following all Veolia safety policies and procedures
2. Utilizing all safety equipment in the proper manner
3. Promptly reporting all unsafe situations to their supervisor
4. Promptly reporting all work-related injuries and illnesses, to their supervisor
5. Promptly seeking appropriate medical attention when injured on the job

7.3.4 Environmental Health and Safety Councils

Purpose: Veolia's internal policies require any facility with greater than 10 full time employees to establish an Environmental Health and Safety Council (EHS Council). If a facility has less than 10 full time employees the entire work force is the EHS Council.

The scope of the EHS Council will be the involvement of employees directly in the safety effort and monitoring the on-going implementation of the safety program.

1. The EHS Council will be comprised of the Environmental Health and Safety Manager, the Operations Manager, and appropriate employee representatives.
2. The council will meet on a periodic basis, and meetings will follow an established agenda. The meetings should be devoted primarily to the following:
 - a. Reviewing all accidents that have occurred since the previous meeting, along with corrective measures that have been implemented or scheduled.
 - b. Reviewing status of corrective actions generated by inspection reports.

- c. Discussion of unsafe work practices/procedures and hazardous conditions that have been observed by committee members.
 - d. Promotional and educational activities.
3. The council will conduct an assessment of a selected activity, including where available, use of checklists, and evaluate any safety related conditions which may be apparent.
 4. The EHS Council will assign a secretary to the committee, who in turn will be responsible for recording and distributing meeting minutes.
 5. The chairman will chair the meetings; assign council responsibilities, and report council activities and recommendations.

7.4 Interrelated Safety Programs

The overall Veolia Safety Program consists of several interrelated components. These individual programs, together with their separate written policies and procedures are generally outlined in this manual, and comprise the entire comprehensive company health, safety & training program. A Job Safety Assessment (JSA) has been completed for all tasks performed by Veolia employees. The JSA describes the hazards associated with each task and the physical and the training requirements for each task. Copies of the Job Safety Assessments have been included as Appendix D-7-II to this Attachment. Below is an overview of the health and safety programs implemented at the facility:

7.4.1 VEOLIA HAZARD COMMUNICATION PROGRAM

Veolia's Hazard Communication (HAZCOM) Program is established in compliance with 29 CFR 1910.1200. Commonly referred to as the "Employee Right to Know" standard, it is designed to inform and educate all Veolia employees regarding the hazardous chemicals to which they may be exposed at the facility.

Regulations require that Veolia meet the following specific requirements:

1. A written HAZCOM Program manual which outlines the policy, responsibilities, and all other aspects of the program. **A bound copy of the written plan is retained at the facility.**
2. Maintain a complete chemical inventory of all hazardous chemicals used at the facility. The Operations Manager will maintain the facility's inventory within one section of the written plan.
3. Maintain a binder/folder containing Material Safety Data Sheets (MSDS) for each of the chemicals listed in the facility's inventory. The Operations Manager will maintain an up to date MSDS inventory.
4. Label all hazardous chemical containers. Veolia will utilize the National Fire Protection Association (NFPA) or Hazardous Material Information System (HMIS) system for labeling of all chemicals that are not maintained within their original

container. The Operations Manager is responsible for ensuring that the chemicals are properly labeled either from the distributor or by Veolia personnel.

5. Provide Chemical Hazard Awareness Education Training which will be provided to all new and existing employees under the direction of the Operations Manager. This training is to be provided prior to initial assignment to a job function that involves potential exposure to hazardous chemicals. Each employee will receive training information and safety data specifically concerning mercury, from the Operations Manager.

7.4.2 VEOLIA MEDICAL SURVEILLANCE PROGRAM

A comprehensive medical surveillance program has been developed for all Veolia operational personnel. Veolia has developed this program to help ensure the continuing welfare of each employee exposed to potentially hazardous situations. Specifically, the program is designed to determine the ability to safely wear personal protective equipment, to determine the extent of exposure to hazardous chemicals and to identify any medical conditions which could prevent an employee from safely performing their job functions. All facets of the program have been designed to comply with medical monitoring requirements of §§ 29 CFR 1910.95, 1910.120 and 1910.134.

Participation in the program is currently mandatory for all operational personnel subject to the above referenced regulations.

These employees shall receive baseline, annual, and where determined, exit examinations. If exam results indicate an employee may have received an elevated exposure they will be excluded from activities or on-site conditions with potential for exposure. Likewise, if results indicate a person's inability to safely work under specific physical conditions or to wear specific protective equipment, then that individual will not be placed in elevated exposure situations. In the event of a facility accident, failure of personal protective equipment, or evidence that an exceedance of permissible exposure limits has occurred, an incident specific evaluation may be performed on the employee. The Veolia Medical Surveillance Program is administered through a licensed Occupational Health Physician. Veolia may at any time alter the frequency of testing based on the recommendations of the occupational physician; however, the interval between tests will not exceed the regulatory requirements.

7.4.3 Recordkeeping

Results of all tests will be maintained in confidence at the office of Veolia's Occupational Medical Provider. Medical clearance forms will be available to Veolia at all times through the use of an internet based system maintained by Veolia's Occupational Medical Provider. Corporate health and safety staff will confer with Veolia's Environmental Health and Safety Manager and the Operations Manager, and the applicable health physician if discrepancies are noted.

7.5 Health and Safety Training

In order to ensure that all personnel on-site are aware of the hazards associated with the materials processed at the facility and what measures are necessary in the event of an emergency, Veolia has developed a comprehensive training program. The program includes jobs descriptions for each position within the facility, a listing of employees currently assigned to those jobs, and the required training for employees. A copy of the current employee listing, job descriptions and required training is contained in Appendix D-7-I.1, Employee Training Documents. The employee list is subject to change without notice, with the exception of key personnel. Key personnel includes the Operations Manager and Emergency Coordinators.

7.5.1 New Employee Safety Orientation

Upon initial hire and prior to job assignment, each new Veolia employee shall receive health and safety orientation training pertaining to his or her particular duties. At a minimum, this shall include a complete review of all policies and procedures outlined in this training plan. This review shall be conducted under the direction of the Operations Manager. Upon completion of safety orientation, the Operations Manager will document such on a Training Sign-in Sheet / Attendance Form. A sample Training Sign-in Sheet / Attendance Form is included in Appendix D-7-I. A copy of this form, or a similar form containing the same basic information, will be kept on file in each active employee's training records which are maintained in the Operations Managers office. Once terminated, employee records are maintained in accordance with OSHA regulations or for a period of three years, whichever is greater. The orientation forms will be periodically reviewed.

Prior to an initial job assignment, the new employee shall be issued all necessary safety equipment and personal protective equipment and shall be given specific instruction on its proper use. Respiratory protective equipment shall conform to the general guidelines outlined in Veolia's *Respiratory Protection Plan*. Employee orientation shall follow the procedures outlined within the written plan. Employees shall be fit tested prior to use of a selected respirator. Employees are provided with personal protective equipment (PPE) at no cost to the employee. PPE requirements are determined by the area of the facility that an employee works in. The minimum level of PPE required for personnel performing material handling duties or recycling activities is level D PPE which includes a work uniform or Tyvek disposable outer garment, steel toed work boots and safety glasses.

Upon initial job assignment, the new employee shall work under the direct supervision of experienced personnel for a period of not less than three (3) days. This time frame may be shortened if it is determined that the individual has worked under similar circumstances in previous job situations.

7.5.2 Hazard Communication Training

Each new Veolia employee must successfully participate in Veolia's Hazard Communication training as required by OSHA 29 CFR 1910.1200. Orientation will be performed under the direction of the Operations Manager. At a minimum, each employee shall receive a briefing on Veolia's written plan (its location and availability), use of Material Safety Data Sheets (or other methods of data delivery), each employee's rights under the federal and state standards, Veolia's use of in-house labels, hazards on non-routine tasks, and specific information concerning the hazards associated with mercury and its related compounds. Employees are encouraged to consult Veolia's Hazard Communication Written Plan for further details.

7.7.3 Hazardous Waste Handler Training

Because of the unique situations and challenges which Veolia employees may encounter when working at this site, a specialized hazardous waste training program has been developed. This training is designed in compliance with Title 40 Code of Federal Regulations: Part 265.16. A training outline is contained in AppendixD-7-I. The hazardous waste handlers training program is designed to provide the employee with an understanding of the Resource Conservation and Recovery Act and the various aspects of the hazardous waste generator's requirements outlined therein.

7.5.4 29 CFR 1910.120 Hazardous Waste Operation's Training Course

The basis of the overall program is an initial 24-hour comprehensive health and safety course. All Veolia employees exposed to facility conditions will successfully complete this 24-hour program comprised of classroom and hands on training within 6 months of employment. All training will be renewed on an annual basis.

During interim work periods, new employees who have not completed the HAZWOPER awareness training program must not be allowed to work unsupervised. All employee training documents shall be retained for a minimum of seven years with the Operations Manager.

The 24-hour training course must contain or address, at a minimum, the following topics:

1. Basic Toxicology
2. Hazard Communication Program and Hazard Recognition
3. Respiratory Protection
4. Protective Clothing
5. Hearing Conservation
6. Restricted Work Zones
7. Decontamination
8. Instrumentation and Air monitoring

9. Safety Plans
10. Emergency Procedures/Contingency Plan
11. Hazardous Waste Rules and Container Management Standards
12. Medical Surveillance
13. Temperature Stress

7.5.5 Additional Training

Veolia employees trained in the HAZWOPER courses are required to participate in an annual 8-hour refresher course which provides an overview of material presented in the baseline course.

All employees designated as an Emergency Coordinator for the facility will also receive training on Incident Command and their duties as Emergency Coordinator.

7.6 Emergency Procedures

There is always a possibility that Veolia personnel may unexpectedly encounter an emergency situation when working in the facility. The following procedures have been developed to address these situations.

A site-specific emergency plan in the form of the Facility Contingency Plan, as contained in Section 6, has been established for use at the facility. This plan includes information such as basic emergency response procedures, evacuation routes, names and phone numbers of local emergency agencies, emergency decontamination procedures, and emergency reporting protocols. All emergency information will be readily available to all facility personnel as described in the Contingency Plan.

In the event of any emergency, the following general procedures should be initiated.

A) Stop Work Immediately

- Personnel should remove themselves from the hazard or suspected hazard area.

B) Notify the Emergency Coordinator (EC)

- Personnel should immediately inform their supervisor regarding the situation who will then relay the information to the EC or notify the EC directly.

C) Contact the Environmental Health and Safety Manager

- Be prepared to give all details of the situation and instructions on how the Environmental Health and Safety Manager can contact those involved at the site.

Following these actions, personnel will be given proper direction on how to proceed. Remember, if there is any doubt about the safety of Veolia employees in a particular circumstance, initiate this course of action immediately and without hesitation. Detailed

emergency evacuation procedures and reporting requirements for an unexpected event are contained in the Facility Contingency Plan.

7.6.1 Personnel Injuries

Because of Veolia's frequent involvement in handling containers which contain broken glass, which may in kind be impacted with mercury or mercury containing compounds, there is an ongoing potential for accidents and injuries to occur. In such circumstances, specific procedures must be followed to:

- Ensure that proper medical attention is received, and
- Ensure that steps are taken to prevent reoccurrence.

7.6.1.1 Medical Assistance

The first priority when an employee is injured is to make sure that prompt and appropriate medical attention is received. One of the first considerations that will be employed by any attending employee who renders assistance to an injured worker will be identifying the need for decontamination of that worker prior to rendering first aid or transporting them to a hospital. For anything more than minor first aid situations, the employee should be sent for medical examination.

7.6.1.2 Accident Investigation

Accident investigations, performed in a timely manner, help identify the causes of an incident and help prevent or control reoccurrences.

Prompt and proper accident investigations help eliminate causal factors that could potentially result in future injury, property damage, and lost production. It is the Operations Manager's responsibility to initiate an accident investigation which at a minimum requires completion of a written accident investigation report. It is essential that a copy of this written report be sent to the Environmental Health and Safety Manager in a timely manner. In the event of serious injuries, the Environmental Health and Safety Manager may assist with the investigation.

7.6.1.3 Notification of On the Job Injury(s)

1. It is the **injured employee's responsibility** to notify his or her supervisor as soon as possible regarding an injury. The supervisor should be notified of all injuries, **no matter how minor**. If any injury occurs in the facility, the event should be recorded on an employee's first report of injury form.

2. **If the incident results in a lost-time injury or any type of chemical exposure, the supervisor must immediately contact the Environmental Health and Safety Manager.**

3. In the event of an occupationally related death, the supervisor must **immediately** contact the Environmental Health and Safety Manager. The Environmental Health and Safety Manager is required by law to notify the State Department of Labor and the regional OSHA office within 8 hours.

7.6.1.4 Recordkeeping

Proper paperwork follow up to any occupational injury or illness is mandated by OSHA for any facility with ten or more employees. Veolia employs these activities in order to document the frequency of injury.

1. In order to follow a prudent management plan, Veolia will require that within 24 hours following any injury, it will be the Operations Manager's responsibility to ensure that the injured employee properly completes a "First Report of Injury" form and that the form is forwarded to the Environmental Health and Safety Manager. If only partial information is available, the Operations Manager must submit the partially completed report within 24 hours and follow up with additional information as it becomes available.

7.6.2 PROPERTY DAMAGE ACCIDENTS

7.6.2.1 Accident Investigation

It is the Operations Manager's responsibility to initiate an investigation into the cause of any on-the-job vehicle accident and will follow the Veolia ES Technical Solutions corporate safety procedures.

7.6.2.2 Notifications

1. It is the responsibility of any employee involved in a property damage accident to notify his or her supervisor as soon as possible regarding the accident.
2. If the accident adversely impacts the safety of facility operations, the supervisor must immediately contact the Environmental Health and Safety Manager.
3. Any incident that is investigated will be followed up with a written report. Reports will be forwarded to the Environmental Health and Safety Manager and a copy will be retained by the Operations Manager.

7.7 Job Safety Assessments

7.7.1 Introduction

Every activity, no matter how trivial, poses some risk of injury or other on-site emergency. In order to be prepared for these emergencies, the need for a job safety assessment must be considered in order to evaluate safe work practices.

Job safety assessments help train and inform employees of what hazards they could be exposed to, when that exposure is likely to occur, and how to protect themselves from the hazards.

Not all activities present an equal number of hazards or risks and as such, different levels of safety should be considered for use. Each aspect of a job safety assessment, as well as the situations to which they apply, are described below. Please note that these job safety assessment formats may need to be modified to fit the particular characteristics of an on-site activity. A copy of the current job safety assessments is included in Appendix D-7-I to this Attachment. These documents are reviewed on a periodic basis and will be updated to reflect current conditions.

7.7.2 General Warehouse Laborer

The general warehouse laborer job safety assessment was developed to address the hazards associated with material handling activities and the general hazards of working within the facility.

7.7.3 Lamp Processing Equipment Operator

In addition to the basic tasks of the general warehouse laborer, this job safety assessment includes an assessment of the hazards associated with operating the lamp processing equipment. As such, it includes provisions for employees whose exposure to mercury requires the use of respiratory protection.

7.7.4 Retort Operator

In addition to the basic tasks of the general warehouse laborer, this job safety assessment includes an assessment of the hazards associated with operating the retort equipment and working with significant quantities of elemental mercury. As such, it includes provisions for employees whose exposure to mercury requires the use of respiratory protection.

7.8 Respiratory Protection

Veolia has developed a written respiratory protection program, included as Appendix D-7-III to this Attachment, to outline requirements, information, and guidance on the proper selection, training, use, and care of respiratory protective devices. The provisions of this program apply to all operations where exposure to airborne mercury or mercury related compounds which cannot be eliminated or reduced by engineering or administrative controls and where *permissible exposure levels* (PEL) may be exceeded.

7.9 Personal Protective Equipment (PPE)

To ensure complete personal protection from physical and chemical aspects of the mercury compounds, Veolia employees are required to wear protective equipment in various situations. The PPE required for each task is contained in the Job Safety Assessments contained in Appendix D-7-II to this Attachment.

7.10 Hearing Protection

Previous studies performed by Veolia at the facility indicate that occupational noise levels exceed 80 decibels (dB). As a result, Veolia's employees have been enrolled within an Occupational Noise Exposure Control Program which includes training in the effects of excessive noise levels, protection from high noise levels and the care and use of sound suppressing equipment, . Personnel conducting work in area(s) identified with high noise (greater than 85dB) will be provided hearing protection for their personal use.

High noise areas are monitored during production activities and documented. Annual audiograms shall be performed in conjunction with the medical monitoring program. Suspected continuous exposure to areas with elevated sound levels will be measured with a noise dosimeter by Veolia.

7.11 Foot Protection

Veolia has developed a comprehensive Safety Footwear Program for all of its operations. Below is a summary of the requirements of that program.

Facility personnel will wear ANSI approved protective footwear in the following situations:

1. All truck loading and unloading activities or any task which contains debris or other foot hazards.
2. Around any pallet or lamp “cart” moving operation
3. Around any heavy equipment operation
4. When handling any size or style of lamp

The use of safety footwear in other situations must be determined by the Environmental Health and Safety Manager based upon the potential for foot injury.

7.12 Head Protection

Veolia employees working in areas where there is a potential for head injury or scalp contact due to impact, or from falling lamps, are required to wear protective coverings. Hard Hat/Head protection is not mandatory. The need for hard hats in other situations must be determined by the Environmental Health and Safety Manager based upon the potential for head injury.

7.13 Eye and Face Protection

Eye and face protection is **mandatory** for Veolia employees when machines or operations present potential eye or face injury from physical, or chemical agents. This area has been determined by the Environmental Health and Safety Manager to be the entire production floor. All eye and face protection must at a minimum meet ANSI Specification Z87.1. Normal prescription eyewear or sunglasses **are not** acceptable for protection against impact. **All** protective eyewear must have side shields. The main cause of eye injury or threat of injury comes from exposure to airborne dusts or flying glass particles.

7.14 Air Monitoring

7.14.1 Ambient Air Monitoring

In an effort to assess potential employee exposure, determine appropriate levels of protective equipment, and establish specific work zones, Veolia will perform ambient air monitoring near all lamp recovery activities and in other hazardous situations. Veolia’s Operations Manager will utilize a mercury vapor monitoring instrument for monitoring the mercury vapor levels within the facility on a daily basis. A map indicating the location of the sampling points is included as Figure 7.1. All data is entered onto a log sheet and tracked as part of the facility operating record.

7.14.2 Vapors and Gases

A mercury vapor monitoring instrument shall be used to conduct general on-site surveys for the presence of airborne mercury or mercury related compounds. Table 7.1 contains a sample of recently completed air monitoring.

Unlike combustible gases, toxic gases and vapors are variable and dependent upon the permissible exposure limit (PEL) of the substance. The action levels for mercury vapors will be determined prior to project start up and reported in milligrams per cubic meter of air. For additional or more specific information concerning the exposure limitations or associated health effects from mercury exposure, reference Veolia's Hazard Communication Written Plan.

7.14.3 Personal Monitoring

In order to precisely determine an employee's 8-hour time-weighted average exposure to a specific chemical, personal air monitoring may be conducted under the direction of the Environmental Health and Safety Manager. Results from employee exposure monitoring are compared to published permissible exposure limits in order to determine regulatory compliance and the degree of health risk to the worker(s).

Workers to be monitored will be selected based upon their work activity and potential for exposure. Generally, personnel working in the highest risk situations will be monitored. The sampling procedure for personal air monitoring is unique from direct reading methods described previously. Veolia will also reinforce the concentration readings from the mercury vapor monitoring instrument by periodically testing Veolia employees' mercury levels via urine and blood testing. These samples will be evaluated for mercury and the results will be reviewed by the occupational physician. Test results will be forwarded to each employee, with the original lab results maintained on file at the Occupational Health providers office.

7.14.4 Instrument Calibration

All ambient and personal air sampling devices must be calibrated according to manufacturer recommended procedures. The mercury vapor monitoring instrument will be regenerated in accordance with manufacturer recommendations or more frequently if needed. All instrument quality check activities will be documented.

7.15 Decontamination

To prevent the transfer of mercury into clean areas, Veolia has developed and implemented contamination reduction and decontamination procedures. These procedures are incorporated, reviewed and in effect before any lamp enters a recovery area and shall continue throughout operational activity. The initial procedures may be modified as conditions dictate.

The principal decontamination media used for the facility and equipment decontamination will be a product from Acton Technologies Inc. called “**HgX**” or a similar product demonstrated to have the same ability to decontaminate mercury. This material is a powder that typically is mixed into a solution and sprayed onto surfaces. The HgX material is a soluble sulfide containing powder which converts the mercury and mercury compounds into the stable mineral *cinnabar*.

7.15.1 Personal Decontamination

Veolia provides disposable PPE, work uniforms and safety footwear or boot covers to all employees working within the facility. Disposable boot covers and PPE is removed and placed into designated containers prior to employees leaving designated work zones. Work uniforms and safety footwear must be removed and placed into designated storage areas at the end of each shift. Veolia employees are prohibited from wearing contaminated work uniforms or safety footwear off company property.

Shower and wash facilities are also provided for employees to use at the end of a shift or when leaving a work zone as appropriate.

7.15.2 Emergency Decontamination

In the event of an on-site medical emergency a decision must be made regarding decontamination if the injury occurs in an area of chemical contamination. There is a possibility that decontamination procedures may aggravate or cause more serious health effects.

For minor medical problems or injuries, the normal decontamination procedures should be followed.

If prompt life-saving first aid and medical treatment is required, decontamination procedures may have to be omitted. The emergency coordinator will determine the appropriate actions to in this event.

7.15.3 Equipment Decontamination

Equipment may require decontamination in certain circumstances. Such equipment will be decontaminated by spraying down or wiping down the impacted areas with HgX solution. Wipe tests may be utilized to measure decontamination effectiveness, if deemed necessary.

7.15.4 Disposal of Contaminated Material

All materials and equipment used for decontamination must be disposed of properly. Disposable PPE and supplies will be secured in drums or other containers, properly labeled, and disposed of based on a chemical analysis of the material. Decontaminated equipment will be classified as non-hazardous. In some cases it may be more cost

effective to consider a piece of equipment contaminated and dispose of it as opposed to decontaminating it.

7.16 Temperature Stress

Veolia personnel may frequently be required to perform production operations in the facility which does not have air conditioning; this increases the potential for exposure to temperature extremes. The use of required PPE can compound the effects to temperature exposure. Because of the potential seriousness of this problem, the means to recognize, evaluate, and control this specific hazard must be addressed. Veolia training program covers Temperature stress awareness for both cold and heat.

Table 7.1 Air Sampling Data, December 2015

| Sampling Point | Description | 12/1/15 10:30 | 12/2/15 11:00 | 12/3/15 11:30 | 12/4/15 10:00 | 12/4/15 10:00 | 12/7/15 10:00 | 12/8/15 10:00 | 12/9/15 14:30 | 12/10/15 13:30 | 12/11/15 9:00 | 12/14/15 14:30 | 12/15/15 14:30 | 12/16/15 14:30 | 12/17/15 14:30 | 12/18/15 15:30 | 12/21/15 15:00 | 12/22/15 14:30 | 12/23/15 14:30 | 12/24/15 11:30 | 12/28/15 11:30 | 12/29/15 12:30 | 12/30/15 14:00 | 12/31/15 14:00 |
|----------------|-----------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 1 | Admin Office | 0.004 | 0.000 | 0.005 | 0.019 | 0.014 | 0.008 | 0.006 | 0.003 | 0.009 | 0.006 | 0.008 | 0.012 | 0.014 | 0.011 | 0.007 | 0.002 | 0.010 | 0.006 | 0.007 | 0.003 | 0.003 | 0.005 | 0.006 |
| 2 | Break/Locker Room | 0.005 | 0.006 | 0.008 | 0.017 | 0.017 | 0.014 | 0.010 | 0.006 | 0.011 | 0.009 | 0.021 | 0.017 | 0.013 | 0.012 | 0.011 | 0.009 | 0.011 | 0.010 | 0.009 | 0.007 | 0.004 | 0.004 | 0.009 |
| 3 | Storage Area #1 | 0.007 | 0.017 | 0.003 | 0.004 | 0.004 | 0.015 | 0.014 | 0.004 | 0.023 | 0.013 | 0.013 | 0.029 | 0.022 | 0.019 | 0.021 | 0.006 | 0.017 | 0.023 | 0.019 | 0.012 | 0.009 | 0.011 | 0.016 |
| 4 | Lamp Staging Area | 0.009 | 0.020 | 0.004 | 0.006 | 0.006 | 0.010 | 0.009 | 0.000 | 0.010 | 0.013 | 0.016 | 0.021 | 0.021 | 0.018 | 0.015 | 0.004 | 0.015 | 0.012 | 0.004 | 0.004 | 0.004 | 0.007 | 0.011 |
| 5 | HID Processing Area | 0.013 | 0.017 | 0.013 | 0.005 | 0.005 | 0.004 | 0.005 | 0.005 | 0.012 | 0.009 | 0.003 | 0.022 | 0.017 | 0.012 | 0.017 | 0.004 | 0.010 | 0.014 | 0.012 | 0.000 | 0.009 | 0.012 | 0.004 |
| 6 | Storage Area #5 | 0.015 | 0.020 | 0.012 | 0.004 | 0.004 | 0.006 | 0.006 | 0.006 | . | 0.000 | 0.012 | 0.020 | 0.023 | 0.017 | 0.012 | 0.005 | 0.014 | 0.008 | 0.007 | 0.011 | 0.002 | 0.006 | 0.009 |
| 7 | Storage Area #4 | 0.009 | 0.021 | 0.019 | 0.015 | 0.000 | 0.000 | 0.005 | 0.005 | 0.003 | 0.010 | 0.014 | 0.014 | 0.017 | 0.024 | 0.018 | 0.018 | 0.006 | 0.017 | 0.006 | 0.009 | 0.006 | 0.004 | 0.008 |
| 8 | Loading Dock Door #1 | 0.000 | 0.013 | 0.000 | 0.000 | 0.000 | 0.005 | 0.006 | 0.000 | 0.003 | 0.000 | 0.016 | 0.018 | 0.018 | 0.014 | 0.003 | 0.000 | 0.009 | 0.006 | 0.004 | 0.002 | 0.004 | 0.005 | 0.004 |
| 9 | Loading Dock Door #2 | 0.005 | 0.007 | 0.003 | 0.003 | 0.003 | 0.007 | 0.007 | 0.000 | 0.000 | 0.004 | 0.012 | 0.021 | 0.020 | 0.017 | 0.009 | 0.000 | 0.017 | 0.004 | 0.006 | 0.006 | 0.007 | 0.012 | 0.007 |
| 10 | Mercury Disassembly Room | 0.149 | 0.159 | nop | nop | nop | nop | nop | 0.087 | 0.097 | 0.020 | nop | 0.023 | 0.024 | 0.043 | 0.055 | 0.087 | 0.067 | 0.082 | 0.072 | 0.041 | 0.037 | 0.049 | 0.052 |
| 11 | Lamp Feed Station | 0.014 | 0.075 | 0.008 | 0.010 | 0.010 | 0.015 | 0.012 | 0.000 | 0.020 | 0.007 | 0.021 | 0.026 | 0.023 | 0.021 | 0.016 | 0.005 | 0.021 | 0.014 | 0.004 | 0.011 | 0.010 | 0.007 | 0.015 |
| 12 | C/S Between Carbon Filters | 0.028 | 0.021 | nop | nop | nop | nop | nop | 0.022 | 0.010 | 0.008 | nop | 0.025 | 0.019 | 0.017 | 0.012 | 0.011 | nop | nop | nop | nop | 0.017 | 0.011 | 0.014 |
| 13 | C/S After 2nd Carbon | 0.006 | 0.009 | nop | nop | nop | nop | nop | 0.004 | 0.009 | 0.000 | nop | 0.003 | 0.002 | 0.011 | 0.014 | 0.014 | nop | nop | nop | nop | 0.011 | 0.014 | 0.012 |
| 14 | Distiller Between Carbon Filters* | nop | nop | nop | nop | nop | nop | nop | 0.097 | 0.060 | 0.026 | nop | 0.057 | 0.061 | 0.079 | 0.071 | 0.082 | 0.091 | 0.098 | 0.085 | 0.068 | 0.049 | 0.068 | 0.065 |
| 15 | Retort Room Air Sys Between Carb | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 16 | Retort Room Air Sys after Carbon | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 17 | HID Machine between Carbon Filte | 0.021 | 0.022 | 0.015 | 0.009 | 0.009 | 0.006 | 0.007 | 0.011 | 0.011 | 0.009 | 0.010 | 0.021 | 0.008 | 0.009 | 0.007 | 0.015 | 0.021 | 0.011 | 0.022 | 0.014 | 0.009 | 0.011 | 0.016 |
| 18 | HID Machine after Carbon Filters | 0.015 | 0.018 | 0.007 | 0.007 | 0.007 | 0.004 | 0.004 | 0.005 | 0.012 | 0.016 | 0.016 | 0.011 | 0.012 | 0.012 | 0.012 | 0.022 | 0.012 | 0.014 | 0.017 | 0.007 | 0.006 | 0.007 | 0.012 |

nop – Not Operating, no sampling data available
* Distiller discharges to retort room carbon filter system. Not an air emission point.

Appendix D-7-I

Employee Training Documents

| | | |
|---|----------------|-------------------------|
| U:\ESTLHRI\Secure\Shared\Tallahassee Permit Folder\2016 Renewal\Attachment D-7 Written Health and Safety Program March 2016.doc | Appendix D-7-I | Revised: March 22, 2016 |
|---|----------------|-------------------------|

TRAINING PROGRAM

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| 2.0 OUTLINE OF TRAINING PROGRAM | 2-2 |
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LIST OF ATTACHMENTS

Job Descriptions

Corporate Safety Program and Hazard Communication Program

Training Matrix

1.0 INTRODUCTION

The policies, procedures, and practices of Veolia ES Technical Solutions, L.L.C. (Veolia) related to employee training have been designed in accordance with the requirements of 40 CFR 270.14(b) (12), 40 CFR 122.25(a) (12), 40 CFR 264.16, and A.A.C. R18-8-264.16. The training described in this section also complies with Occupational Safety and Health Act (OSHA) requirements specified in 29 CFR 1910.120.

Training of personnel is completed to instruct and refresh employees on performing operations that maintain facility compliance. The program is directed by the Operations Manager and includes training on handling procedures, Contingency Plan implementation, and emergency response. The level of training is dependent on the job title and area of responsibility relative to hazardous waste management.

The primary objectives of the training program are as follows:

- To make employees aware of the potential hazards they may encounter.

- To provide the knowledge and skill training necessary to protect employee health and safety, and the environment.

- To make workers aware of the purpose, and the limitations of process and safety equipment.

- To ensure that workers can respond to emergencies.

2.0 OUTLINE OF TRAINING PROGRAM

2.1 JOB TITLES AND DUTIES

A list of job titles and employees is maintained onsite by the Operations Manager. Job descriptions for each position are listed Attachment I-1, herein.

2.2 TRAINING COURSE FREQUENCY AND OUTLINES

Employees receive the initial training within 6 months after the date of their employment or assignment to a new position at the facility as required by 40 CFR 264.16(b). Facility personnel participate in an annual review of the initial training and regular training sessions, so that they may be informed of changes in facility processes, procedures, emergency equipment, or emergency response procedures as required by 40 CFR 264.16(c).

The policy, procedures and practices related to employee training have been designed to meet the requirements of RCRA as well as the Occupational Safety and Health Act (OSHA). The training program includes information on the training content, frequency, and techniques, and emphasizes training related to emergency response.

2.2.1 Training Topics

Veolia employees are required to attend a formal training program that is managed by the Operations Manager. This program includes the following main topics, which are detailed out in the table on the following page.

- OSHA 24-Hour Training
- OSHA First Responder Training
- Hazard Communication Training
- General Safety Awareness Training

FORMAL TRAINING PROGRAM

| OSHA 24-Hour Training | OSHA First Responder Training ¹ |
|---|---|
| <ul style="list-style-type: none"> Responsibilities for health and safety on a site Chemical, physical, and biological hazards Mercury toxicology Use of personal protective equipment Work practices Safe engineering controls Medical surveillance Site safety and health plans/emergency response plans Spill containment Hazard monitoring State and Federal Regulations | <ul style="list-style-type: none"> Hazards of mercury Understanding of the potential outcomes associated with an emergency Recognition of presence of a hazardous substances Understanding of the role of a first responder in Veolia's Contingency Plan Ability to realize the need for additional resources to contact the appropriate personnel at Veolia Basic hazard and risk assessment techniques. Selection and use proper personal protective equipment. An understanding of the basic hazardous materials terms. Basic control, containment and/or confinement operations within the capabilities of Veolia. Implement basic decontamination procedures. Veolia standard operating procedures. |
| Hazard Communication Training ¹ | General Safety Awareness Training ¹ |
| <ul style="list-style-type: none"> General provisions of the Hazard Communication Standard Hazardous chemical information (Mercury emphasized) How to read Material Safety Data Sheets Routes of entry of chemicals Personal Protective Equipment including respiratory protection Hazardous waste management practices and procedures Emergency response procedures | <ul style="list-style-type: none"> Management safety policy including safety meetings Walking and work surfaces Lifting and back safety General Personal hygiene Hearing protection Machines and machine guards Portable equipment Lockout and /tagout procedures Electrical safety Posters and signage Fire protection |

1. These topics are included in the 24 Hour program or may be presented individually.

2.2.2 Annual Refresher Training

All employees receive an 8-hour annual refresher training covering the following topics:

Annual 8-Hour Refresher:

- Responsibilities for health and safety on a site
- Chemical, physical, and biological hazards
- Mercury toxicology and Medical Monitoring
- Use of Personal Protective Equipment
- Site safety and health plans/emergency response plans
- Spill containment
- Hazard monitoring
- Regulations

2.2.3 Course Materials

Course materials will be developed by the course instructor and appropriate for the audience to be trained. Course materials may include hand-outs, audio-visual aids such as video tapes or *Power point* presentations, and samples of actual equipment.

2.2.4 Relevance of Training to Job Position

Job-specific training is best handled for the average employee by training sessions and on-the-job training administered and supervised by competent management personnel. The specific training required for each position is provided on each job description.

2.3 TRAINING DIRECTOR

The Operations Manager is responsible for oversight of the employee training program.

2.4 TRAINING FOR EMERGENCY RESPONSE

Veolia's training program meets the minimum requirements of RCRA emergency response training as follows (40 CFR 264.16(a) (3) :

Procedures for using, inspecting, repairing, and replacing emergency and monitoring equipment – relevant information about emergency equipment is presented in the Hazard Communication training.

Key parameters for cut-off systems – this is not applicable to the Veolia facility.

Communications and alarms systems – information on the use of the communications and alarm system is presented in Hazard Communication training.

Responses to fires and explosions, as well as other types of emergencies, are described in the Contingency Plan. Personnel are trained in the proper response and use of equipment, relative to their hazardous waste responsibilities

Response to groundwater contamination incidents - this is not applicable to the Veolia facility.

Site evacuation procedures - site evacuation procedures are described in the Contingency Plan. Personnel are trained in evacuation routes and assembly areas.

Shut-down of operations – procedures for shutting down facility operations are included in Hazard Communication training.

3.0 IMPLEMENTATION OF TRAINING PROGRAM

Experienced employees complete training as an annual review. New employees complete initial training within 6 months of the date of assignment/employment. Employees are not allowed to work in the facility in unsupervised positions until they have completed the training requirements.

Veolia documents compliance with prescribed training standards by maintaining detailed personnel training records. As required by 40 CFR 264.16(d), Veolia maintains the following documents and records:

A list of the job titles for each position at Veolia related to hazardous waste management, and the name of the employee filling each job (40 CFR 264.16(d)(1))

A written job description for each position. The description includes the requisite skill, education, or other qualifications, and duties of employees assigned to each position. (40 CFR 264.16(d)(2))

A written description of the type and amount of introductory and follow-up training given to each employee. (40 CFR 264.16(d)(3))

Records documenting that the required training or job experience has been given to or completed by facility personnel. (40 CFR 264.16(d)(4))

Veolia maintains a training matrix (Attachment I-4, herein) that lists employee job titles and required initial and continuing training. Training records are kept until closure of the facility. Training records of former employees are retained. Personnel training records may accompany personnel transferred within the company.

ATTACHMENTS

JOB DESCRIPTIONS

1. Operations Manager

The Operations Manager is responsible for implementing management practices, reviewing current and future operations and facility design with respect to hazardous waste regulations, coordinating with senior staff (Advisors) on appropriate operational practices, recordkeeping, and reporting. The Operations Manager directs the Operations supervisor on operational and employee related issues.

Minimum requirements:

Working knowledge of RCRA/TSCA/DOT/OSHA regulations

Knowledge of Emergency Response Procedures

Knowledge of facility operations and equipment

2. Operations Supervisor

The Operations Supervisor is responsible for overseeing the operations of 10-20 production personnel. This includes ensuring that all production workers are operating equipment safely and they are utilizing and wearing appropriate personal protective equipment while working. The Operations Supervisor is also responsible for inspecting all incoming hazardous material shipments in order to identify any potential discrepancies in waste type or quantity between the manifest and the actual material received.

Minimum requirements:

Working knowledge of RCRA/TSCA/OSHA regulations

Knowledge of DOT Hazardous Materials Regulations

Knowledge of facility operations and equipment

Knowledge of Emergency Response Procedures

3. Environmental Health & Safety Manager

The Environmental Health & Safety Manager is responsible for ensuring compliance with all federal and state regulations governing the operations of Veolia Systems. This includes compliance with applicable environmental, safety, and DOT regulations. In addition, is responsible for training employees on applicable environmental and safety regulations.

Minimum Requirements

Working knowledge of RCRA/TSCA/OSHA regulations

Working knowledge of DOT hazardous materials regulations

Working knowledge of applicable environmental regulations relating to hazardous materials and Hazardous Waste Regulations

Knowledge of state by state regulations concerning classification and transportation of mercury-containing lamps and devices

4. Production Worker (Fluorescent Lamp Processing)

Lamp processing production workers are responsible for all operations associated with the lamp recycling line. This includes assisting in receiving and weighing in-bound lamps; transferring lamps from receiving containers to special lamp processing bins; manually feeding lamps into the lamp crusher; and general housekeeping and maintenance of the processing area.

Minimum requirements:

Knowledge of Emergency Response Procedures

Knowledge of facility operations and equipment

General Safety Work rules and practices

5. Production Worker (Mercury Devices and Mercury Retort)

Production workers operating in the mercury retort room are specially trained to operate on this line. The production worker dismantles the mercury device into the smallest mercury-containing unit by employing various tools used to sever or break apart the device, depending on the nature of the material. Retort workers segregate the device into recyclable and miscellaneous waste products for disposal.

Minimum Requirements:

Knowledge of Emergency Response Procedures

Knowledge of facility operations and equipment

Ability to classify recyclable and non-recyclable materials

TRAINING MATRIX

| Job Title | Applicable Training | | | | | |
|---------------------------------------|---------------------|----------|----------------------|-----------------|-----------------|---------------|
| | Train-the-Trainer | Hazwoper | Hazard Communication | Forklift Driver | First Responder | Motor Carrier |
| Operations Manager | | ✓ | ✓ | | ✓ | ✓ |
| Operations Supervisor | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Environmental Health & Safety Manager | ✓ | | | | | |
| Production Worker (lamps) | | ✓ | ✓ | ✓ | ✓ | |
| Production Worker (retort) | | ✓ | ✓ | ✓ | ✓ | |
| General Labor | | | ✓ | ✓ | | |

Training Documentation Forms

Veolia documents all training that is conducted by having the employee sign the training attendance form. Completed training is maintained in a training file as evidence that an individual has satisfactorily completed training on a specific training topic. A sample of a training sign in sheet is attached.

Veolia ES Technical Solutions, LLC
Electronics Recycling Division
Training Sign-in Sheet

Topics: Safety Meeting

Date:

Time:

Duration:

Training conducted by:

| NAME (print) | JOB TITLE | SIGNATURE |
|--------------|-----------|-----------|
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Employee List



| Name | Login | Job |
|-------------------|-------|--------------------------------|
| Austin, Darryl | | TS-Material Handler I |
| Bauldree, Terry | | TS-Material Handler I |
| Clark, Shavis | | TS-Material Handler I |
| Coleman, Seddrick | | TS-Material Handler I |
| Fulton, Scott | | TS-Operations Supervisor I |
| Gavin, Jarion | | TS-Material Handler II |
| Lyda, Chriss | | TS-Driver OTR |
| Mathis, Tracy | | TS-Driver |
| Melott, Matthew | | TS-Operations Manager II |
| Murray, Khaliq | | TS-Shipping/receiving Technici |
| Shingles, Darryl | | TS-Material Handler I |
| Testa, Angelina | | TS-Administrative Assistant I |
| Whitman, Joseph | | TS-Driver |
| Williams, Randy | | TS-Operations Supervisor I |
| Wilson, Vincent | | TS-Material Handler I |

| Training Program Summary | |
|---|---|
| OSHA 24-Hour Training | OSHA First Responder Training ¹ |
| <ul style="list-style-type: none"> Responsibilities for health and safety on a site Chemical, physical, and biological hazards Mercury toxicology Use of personal protective equipment Work practices Safe engineering controls Medical surveillance Site safety and health plans/emergency response plans Spill containment Hazard monitoring State and Federal Regulations | <ul style="list-style-type: none"> Hazards of mercury Understanding of the potential outcomes associated with an emergency Recognition of presence of a hazardous substances Understanding of the role of a first responder in Veolia's Contingency Plan Ability to realize the need for additional resources to contact the appropriate personnel at Veolia Basic hazard and risk assessment techniques. Selection and use proper personal protective equipment. An understanding of the basic hazardous materials terms. Basic control, containment and/or confinement operations within the capabilities of Veolia. Implement basic decontamination procedures. Veolia standard operating procedures. |
| Hazard Communication Training ¹ | General Safety Awareness Training ¹ |
| <ul style="list-style-type: none"> General provisions of the Hazard Communication Standard Hazardous chemical information (Mercury emphasized) How to read Material Safety Data Sheets Routes of entry of chemicals Personal Protective Equipment including respiratory protection Hazardous waste management practices and procedures Emergency response procedures | <ul style="list-style-type: none"> Management safety policy including safety meetings Walking and work surfaces Lifting and back safety General Personal hygiene Hearing protection Machines and machine guards Portable equipment Lockout and /tagout procedures Electrical safety Posters and signage Fire protection |

1. These topics are included in the 24 Hour program or may be presented individually.

Appendix D-7-II

Job Safety Assessments

| | | |
|---|-----------------|-------------------------|
| U:\ESTLHRI\Secure\Shared\Tallahassee Permit Folder\2016 Renewal\Attachment D-7 Written Health and Safety Program March 2016.doc | Appendix D-7-II | Revised: March 22, 2016 |
|---|-----------------|-------------------------|

JOB SAFETY ANALYSIS (JSA-TLH-005)

Position/Title: Forklift Operator Department/Area: Throughout Facility Date: 03/22/2016

Job: Employee operates LPG forklift and transports material to various locations Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots with earplugs, gloves, and hearing protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|--------------------------------|---|---|
| 1. | Material movement | Chemical exposure Falling objects Forklift/Pedestrian incident Collision with stationary objects | Appropriate PPE for area of operation. (Full - face respirator with mercury indicator HEPA cartridges). Follow proper safe forklift operating procedures as per OSHA training. Ensure all attachments are secured to forklift. Ensure all straps/slings/chains and attachments are in good condition through frequent operator inspection and site PM program. Establish controlled work zone if necessary. |
| 2. | Driving forklift into trailers | Incident caused by transfer of forklift momentum to un-chocked trailer | Follow safe operations of forklift and ensure that the trailer is secure and chocked prior to driving into vehicle. Ensure trailer jacks are engaged. |
| 3. | Unloading trailer | Pinching point injury | Ensure proper handling of material and use proper material handling equipment. |
| 4. | Lifting | Back/shoulder strain | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk-twisting. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-007)

Position/Title: Maintenance Department/Area: Throughout Facility Date: 03/22/2016

Job: Employee performs routine preventative maintenance throughout facility Page 1 of 2

Minimum PPE: Fire Resistant work uniform, safety glasses with side shields, and steel toe boots with gloves, and hearing protection.

Various cutting instruments are permissible for use including, self-retracting utility knives, straight knives, and chisels.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|--|--|--|
| 1. | Preventative maintenance/repair | Incidental chemical exposure (mercury/PCBs/acid/ alkaline/oxidizer) Noise Exposure Falling objects | Appropriate PPE for area of operation, including respiratory protection, chemical resistant coveralls, and chemical resistant gloves, and hard hat if needed. |
| 2. | Lifting | Back or shoulder strain | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk-twisting. |
| 3. | Welding, cutting, brazing, grinding, soldering, etc. | Burns, glare, etc. Slag/molten metal Sparks Fire | PPE Requirements: 1. Welding-Welding helmet, thermal gloves, work uniform, burn apron/jacket, steel toe boots. 2. Soldering/brazing -Safety glasses, thermal gloves, steel toe boots, work uniform. 3. Grinding- Safety glasses, face shield, thermal gloves, steel toe boots, work uniform. 4. Torch cutting-Safety glasses, welding shield #3 shading minimum, steel toe boots, thermal gloves, work uniform, burn apron/jacket. Follow proper Hot Work procedures. Follow proper welding/cutting techniques. |
| 4. | Mechanical equipment maintenance | Release of stored energy | Use proper lockout/tagout procedures. |
| 5. | Electrical equipment maintenance | Possibility of electrical shock when working on motors, panels, switches | Use proper lockout/tagout procedures. |
| | | | |

| | | | |
|-----|--------------------------------------|---|---|
| 6. | Hydraulic equipment maintenance | Release of stored energy | Use proper lockout/tagout procedures. |
| 7. | Knife cutting | Cuts and lacerations | Practice proper cutting techniques. |
| 8. | Hand tool operation | Cuts and lacerations | Practice proper tool operation techniques. Frequent equipment inspections. |
| 9. | Fixed equipment operation | Cuts, lacerations and crushing | Follow equipment specific safety precautions. Machine guards and proper operational procedures. Frequent equipment inspections. |
| 10. | Elevated surfaces | Falling | Use fall protection equipment or OSHA approved lifting devices for >4 feet. Observe safe ladder usage practices. Use the buddy system. Inspect all equipment and work area thoroughly. Establish controlled work zone. Use work area access permits as required |
| 11. | Work involving maintenance chemicals | Chemical exposure Fire | Safety glasses and face shield or goggles. Appropriate chemical coverall and gloves for task and chemical of concern. Observe proper grounding/bonding techniques when handling combustible/flammable liquids. Avoid ignition sources. Follow proper emergency response procedures. Use non-sparking equipment when applicable. Store flammable and combustible maintenance chemicals in approved storage cabinets. |
| 12. | Chemical pump repair | Chemical exposure (mercury/PCBs/acid/alkaline/oxidizer) | Safety glasses and face shield or goggles. Appropriate chemical coverall and gloves for task and chemical of concern. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-008)

Position/Title: **Fire Watch** Department/Area: Throughout Facility Date: 03/22/2016

Job: **Employee performs fire watch duties as stipulated in Hot Work Program**

Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots, gloves and hearing protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|---------------------------------------|--|--|
| 1. | Propane/Oxy torch cutting | Chemical exposure & metal fumes Falling objects Fire | Full - face respirator with mercury indicator HEPA cartridge. Appropriate chemical coverall and gloves for task and chemical of concern. Follow proper Hot Work and emergency response procedures. |
| 2. | All other defined Hot Work activities | Falling objects Fire | Appropriate chemical coverall and gloves for task and chemical of concern. Follow proper Hot Work and emergency response procedures. |
| 3. | Lifting | Back/shoulder strain | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk twisting. |
| 4. | Material movement | <i>See JSA for Forklift Operator</i> | Ensure all straps/slings/chains and attachments are in good condition through frequent operator inspection. Establish controlled work zone if needed. |
| 5. | Walking/Standing | Struck by forklift | Pay close attention to surroundings to avoid being struck by forklift. All forklifts required to have visual and audible back-up alarms. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-006)

Position/Title: Forklift Operator Department/Area: Throughout Facility Date: 03/22/2016

Job: Employee changes out propane tanks Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots and gloves.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|---------------------------|-----------------------------|--|
| 1. | Turn off Forklift | Potential ignition source | Safety glasses and protective gloves. Follow area PPE requirements. Shut valve and turn off Forklift, bleed off pressure if necessary. Avoid ignition sources. |
| 2. | Unsecure tank on Forklift | Pinching point injury | Ensure proper handling of tank and avoid pinch points. Make sure empty cylinder valve is closed. Avoid ignition sources |
| 3. | Remove empty tank | Back/shoulder strain | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk-twisting. Avoid ignition sources |
| 4. | Replace with full tank | Chemical exposure Fire | Observe proper tank change out per training. Report leaks and releases. Avoid ignition sources. Follow proper emergency response procedures. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-010)

Position/Title: Sample Collector Department/Area: Throughout Facility Date: 03/22/2016

Job: Employee collects solid and/or liquid samples from various processes Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots, gloves and hearing protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|------------------------------------|---|--|
| 1. | Collects sample using sample tools | Chemical exposure (Mercury, lead, PCB) | Safety glasses and nitrile gloves. Full - face respirator with mercury indicator HEPA cartridges and hearing protection. |
| 2. | Lifting | Back/shoulder strain | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk twisting. |
| 3. | Walking/Standing | Struck by forklift | Pay close attention to surroundings to avoid being struck by forklift. All forklifts required to have visual and audible back-up alarms. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-009)

Position/Title: Lamp Machine Operator Department/Area: Operations Building Date: 03/22/2016

Job: Employee stages and feeds standard fluorescent lamps into recycling machine Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots, hearing protection, gloves, full face respirator with mercury indicator HEPA cartridge.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|-------------------------|---|---|
| 1. | Handling/Lifting Lamps | Back/shoulder strain Broken glass Falling objects | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk-twisting. Cut-resistant gloves and sleeves. |
| 2. | Opening Lamp Containers | Cuts and lacerations | Use proper cutting techniques. |
| 3. | Walking/Standing | Struck by forklift | Pay close attention to surroundings to avoid being struck by forklift. All forklifts required to have visual and audible back-up alarms. |
| 4. | Feeding Lamps | Augers Crushers Pinch points | Follow Equipment Specific Safety Precautions. Never remove a machine guard or safety interlock. Use proper feeding technique. Never reach into machine when machine is running. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-011)

Position/Title: **HID Lamp Machine Operator** Department/Area: Operations Building Date: 03/22/2016

Job: **Employee stages and feeds HID lamps into recycling machine** Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots, hearing protection and full face respirator with mercury indicator HEPA cartridge.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|-------------------------|---|---|
| 1. | Handling/Lifting Lamps | Back/shoulder strain Broken glass Falling objects | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk-twisting. Cut-resistant gloves and sleeves. |
| 2. | Opening Lamp Containers | Cuts and lacerations | Use proper cutting techniques. |
| 3. | Walking/Standing | Struck by forklift | Pay close attention to surroundings to avoid being struck by forklift. All forklifts required to have visual and audible back-up alarms. |
| 4. | Feeding Lamps | Augers Crushers Pinch points | Follow Equipment Specific Safety Precautions. Never remove a machine guard or safety interlock. Use proper feeding technique. Never reach into machine when machine is running. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-004)

Position/Title: **Baler Operator**

Department/Area: **Operations Building**

Date: **03/22/2016**

Job: **Employee loads cardboard into baler and operates cardboard baler**

Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots and hearing protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|---------------------------|-----------------------------|--|
| 1. | Lifting | Back/shoulder strain | Apply proper lifting techniques and avoid trunk-twisting. |
| 2. | Box and cardboard cutting | Cuts and lacerations | Use cut-resistant gloves and proper cutting techniques. |
| 3. | Walking/Standing | Struck by forklift | Pay close attention to surroundings to avoid being struck by forklift. All forklifts required to have visual and audible back-up alarms. |
| 4. | Baler operation | Crushing Pinching point | Follow Equipment Specific Safety Precautions. Never remove a machine guard or safety interlock. Never reach into machine when baling. Follow Equipment Specific Safety Precautions. Equipment specific training is required. |
| 5. | Bale banding | Cuts and lacerations | Use proper band loading techniques. Frequent equipment inspections. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-013)

Position/Title: Retort Oven Operator Department/Area: Operations Building (Retort Room) Date: 03/22/2016

Job: Employee loads/ unloads material into retort trays and operates oven

Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots, gloves and hearing protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|---------------------------------|--|---|
| 1. | Entry into Retort Room | Chemical exposure (mercury & phosphor powder) Noise exposure Falling objects | Full face respirator with mercury indicator HEPA cartridges, and hearing protection. |
| 2. | Retort operations loading trays | Pinch points Dust exposure Broken glass | Tychem or similar suit, elastic sleeves/ankles; properly sealed hearing protection, and cut-resistant gloves. Observe caution and practice proper techniques when opening/closing oven doors. |
| 3. | Lifting | Back/shoulder strain | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk-twisting. |
| 4. | Unloading retort oven | Heat or burn Pinch points | Observe caution and practice proper techniques when handling potentially hot objects and when opening/closing oven doors. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-012)*Position/Title: MCMA Disassembly Technician**Department/Area: Main Operations Building
(Disassembly)**Date: 03/22/2016**Job: Employee disassembles mercury-containing manufactured articles**Page 1 of 1*

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boot, gloves, and hearing protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|----------------------------------|--|---|
| 1. | Entry into Disassembly Room | Chemical exposure (mercury & phosphor powder) Noise exposure Falling objects | Full face respirator with mercury indicator HEPA cartridges and hearing protection. |
| 2. | Material disassembly | Exposure to elemental Mercury | Tychem suit, elastic sleeves/ankles; properly sealed, hearing protection, and cut-resistant gloves. |
| 3. | Lifting | Back/shoulder strain | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk-twisting. |
| 4. | Cutting | Cuts and lacerations | Use proper cutting techniques. |
| 5. | Hand tool operation | Cuts and lacerations | Practice proper tool operation techniques. Frequent equipment inspections. |
| 6. | Removing product from containers | Possible broken items in container Needles/sharps | Inspect container contents thoroughly prior to removing contents. Use cut resistant gloves. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-003)

Position/Title: Material Receiver Department/Area: Main Operations Building Date: 03/22/2016

Job: Employee unloads and receives materials into facility Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots, gloves and hearing protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|------------------------------------|--------------------------------------|--|
| 1. | Material receiving | Chemical exposure Falling objects | Appropriate chemical coverall and gloves for task and chemical of concern. |
| 2. | Material handling/lifting lamps | Back/shoulder strain | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk twisting |
| 3. | Walking/Standing | Struck by forklift | Pay close attention to surroundings to avoid being struck by forklift. All forklifts required to have visual and audible back-up alarms. |
| 4. | Knife cutting | Cuts and lacerations | Use cut-resistant gloves and proper techniques. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-003)

Position/Title: Material Receiver Department/Area: Main Operations Building Date: 03/22/2016

Job: Employee opens drums and inspects contents (QA/QC) Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots, gloves, and hearing protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|--|--|---|
| 1. | Opening containers | Chemical exposure | Appropriate respiratory protection as needed, and gloves for task and chemical of concern. |
| 2. | Material handling/ lifting lamps | Back/shoulder strain | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk twisting |
| 3. | Walking/Standing | Struck by forklift | Pay close attention to surroundings to avoid being struck by forklift. All forklifts required to have visual and audible back-up alarms. |
| 4. | Removing/inspecting materials in containers | Possible broken items in container that can cause cuts Potential needle sharps Potential chemical exposure | Inspect container contents thoroughly prior to removing contents. Use cut resistant gloves. Appropriate respiratory protection, gloves for task and chemical of concern. |
| 5. | Hand tool operation | Cuts and lacerations | Practice proper tool operation techniques. Frequent equipment inspections. |
| 6. | Knife cutting | Cuts and lacerations | Use cut-resistant gloves and proper techniques. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-015)

Position/Title: Battery Sorter Department/Area: South Building Date: 03/22/2016

Job: Employee sorts, labels, and repackages batteries Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots, gloves and hearing protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|----------------------------------|---|---|
| 1. | Material handling | Chemical exposure (acid/alkaline/ lead/nickel/cadmium) Falling objects | Standard work uniform. |
| 2. | Lifting | Back or shoulder strain | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk-twisting. |
| 3. | Material sorting | Strain due to repetitive trunk bending | Take breaks to stretch out back muscles and walk around to avoid stiffness. Bring work to a level that minimizes bending at the trunk. |
| 4. | Forklift Traffic | Struck by forklift | Pay close attention to surroundings to avoid being struck by forklift. All forklifts required to have visual and audible back-up alarms. |
| 5. | Knife cutting | Cuts and lacerations | Use cut-resistant gloves and proper techniques. |
| 6. | Battery handling | Fire/reaction | Observe proper segregation and terminal protection practices. Follow proper emergency response procedures. |
| 7. | Removing product from containers | Possible broken items in drum that can cause cuts. Potential needles or sharps. | Inspect container contents thoroughly prior to removing contents. All drums and pails of product are to be dumped on the sorting table for better visibility of product. Do not reach into drums or pails, use scoop of how to pull material out. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-014)

Position/Title: Electronic Waste Sorter Department/Area: South Building Date: 03/22/2016

Job: Employee sorts, labels, and repackages various electronic equipment Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots, gloves and hearing protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|---------------------|--|--|
| 1. | Material handling | Potential indirect chemical exposure Sharp objects Falling objects | Standard work uniform |
| 2. | Lifting | Back or shoulder strain | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk-twisting. |
| 3. | Material sorting | Strain due to repetitive trunk bending | Take breaks to stretch out back muscles and walk around to avoid stiffness. Bring work to a level that minimizes bending at the trunk. |
| 4. | Forklift Traffic | Struck by forklift | Pay close attention to surroundings to avoid being struck by forklift. All forklifts required to have visual and audible back-up alarms. |
| 5. | Knife cutting | Cuts and lacerations | Use cut-resistant gloves and proper techniques. |
| 6. | Hand tool operation | Cuts and lacerations | Cut-resistant gloves. Practice proper tool operation techniques. Frequent equipment inspections. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-002)*Position/Title:* **General Warehouse Operations***Department/Area:* **Main Operations Building/ South Building***Date:* 03/22/2016*Job:* **Employee sorts, de packs, repacks pre-processes material***Page* 1 *of* 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe shoes with metatarsal protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|--------------------------|--|---|
| 1. | Lifting | Back/shoulder strain | Apply proper lifting techniques, use 2 person lift or lifting equipment for materials over 50 pounds. Avoid trunk twisting. |
| 2. | Walking/Standing | Struck by forklift | Pay close attention to surroundings to avoid being struck by forklift. All forklifts required to have visual and audible back-up alarms. |
| 3. | Walking working surfaces | Slip, Trip, Fall, and Injury | Make sure work table is at proper height, follow good housekeeping practices, pick up spilled items promptly |
| 4. | Hand tool operation | Cuts and lacerations, struck by object | Cut-resistant gloves. Practice proper tool operation techniques. Frequent equipment inspections. Use of face shield when pre-processing any material. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-001)*Position/Title:* **General Warehouse***Department/Area:* **Main Operations Building and South Building***Date:* **03/22/2016***Job:* Employee cleans work area on a periodic basis*Page* 1 *of* 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots, gloves, and hearing protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|----------------------------|---|--|
| 1. | Cleaning Floors | Broken glass Computer parts Loose batteries | Appropriate PPE for work area. Use only approved tools and cleaners |
| 2. | Cleaning shelves and walls | Dust Slip, trip, fall Elevated work areas Electrical Hazards | Use cut resistant gloves Use fall protection and proper elevated work procedures as needed. |
| 3. | Walking/Standing | Struck by forklift | Pay close attention to surroundings to avoid being struck by forklift. All forklifts required to have visual and audible back-up alarms. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

JOB SAFETY ANALYSIS (JSA-TLH-016)

Position/Title: South Building Employees Department/Area: Battery/ Computer/ Electronics Date: 03/22/2016

Job: Employee cleans work area on a periodic basis

Page 1 of 1

Minimum PPE: Work uniform, safety glasses with side shields, steel toe boots, gloves, and hearing protection.

Only self-retracting utility knives are permissible for general cutting use in all production areas.

Eating, drinking, chewing gum, smoking, use of tobacco products, and wearing jewelry in any production areas prohibited.

| TASK/STEP NUMBER | TASK OR STEP | POTENTIAL HAZARD IDENTIFIED | RECOMMENDED CONTROL MEASURE OR PPE |
|------------------|----------------------------|---|--|
| 1. | Cleaning Floors | Broken glass Computer parts Loose batteries | Appropriate PPE for work area. Use only approved tools and cleaners |
| 2. | Cleaning shelves and walls | Dust Slip, trip, fall Elevated work areas Electrical Hazards | Use cut resistant gloves Use fall protection and proper elevated work procedures as needed. |
| 3. | Walking/Standing | Struck by forklift | Pay close attention to surroundings to avoid being struck by forklift. All forklifts required to have visual and audible back-up alarms. |

Prepared by: Wayne Bulsiewicz, EHS and Randy Williams Operations Supervisor

Approved by: Matthew Melott Operations Manager

Employee Signature

Appendix D-7-III

Respiratory Protection Program

| | | |
|---|------------------|-------------------------|
| U:\ESTLHRI\Secure\Shared\Tallahassee Permit Folder\2016 Renewal\Attachment D-7 Written Health and Safety Program March 2016.doc | Appendix D-7-III | Revised: March 22, 2016 |
|---|------------------|-------------------------|

VEOLIA ES TECHNICAL SOLUTIONS, LLC
RESPIRATORY PROTECTION PROGRAM
TALLAHASSEE FACILITY

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RESPIRATORY PROTECTION PROGRAM

I. PURPOSE

Veolia ES Technical Solutions, LLC (Veolia) has determined that some employee classifications at the Tallahassee facility may be exposed to mercury vapors exceeding the OSHA PEL and/or company guidelines. Engineering controls have been implemented; however there are still areas within the plant and task which may expose an employee to mercury concentrations which exceed the ACGIH TLV and/or the OSHA PEL. The company is researching additional ventilation options, but will require certain employees to wear respirators until those additional controls have been implemented.

This written program provides guidance on the selection, use and maintenance of respirators, including the employee medical/training requirements of the Veolia, Respiratory Protection Program following 29 CFR 1910.134 and ANSI Z88.2-1980. This program will insure protection of Veolia employees against the inhalation of harmful air contaminants and against oxygen deficient atmospheres when effective engineering controls are not feasible.

II. SCOPE

These guidelines cover any Veolia Tallahassee employee using maintenance-free disposable dust masks, air-purifying respirators and supplied air respirators on a mandatory or optional basis in routine and emergency use situations. (Employees who voluntarily choose to wear disposable dust masks are not subject to the medical evaluation, cleaning, storage and maintenance provisions of this program.)

Company guidelines require that employees exposed to mercury vapor levels with a time weighted average concentration above 0.025 mg/m^3 wear an MSA full face air-purifying respirator and MSA Mersorb cartridges with end-of-service-life (ESLI) indicators. Employees working in dusty atmospheres will be required to use a combination cartridge with a P100 filter.

Employees exposed to levels above $0.5 \text{ mg mercury/m}^3$, and/or responding to a release of mercury, will be fitted with MSA Ultraview pressure demand supplied air respirators.

Daily spot air monitoring in conjunction with periodic 8 hour full shift sampling has shown that respiratory protection is required for the following job functions.

| Task/Process | Required Respiratory Protection |
|--|--|
| Processing of fluorescent lamps at the lamp feed belt. | MSA full face air-purifying respirator and MSA Mersorb P100 cartridges with end-of-service-life (ESLI) indicators. |
| Operations occurring in the Crush and separate room (maintenance, unclogging, changing powder, etc.) | MSA full face air-purifying respirator and MSA Mersorb P100 cartridges with end-of-service-life (ESLI) indicators. |
| Operations occurring within the HID Machine enclosure | MSA full face air-purifying respirator and MSA Mersorb P100 cartridges with end-of-service-life (ESLI) indicators. |
| Operations occurring in the prep room | MSA full face air-purifying respirator and MSA Mersorb P100 cartridges with end-of-service-life (ESLI) indicators. |
| Operations occurring in the retort room | MSA full face air-purifying respirator and MSA Mersorb P100 cartridges with end-of-service-life (ESLI) indicators. |
| Emergency response operations | MSA Ultra-View pressure demand supplied air respirator |

III. RESPONSIBILITY

- A. The Director of Regulatory Affairs is responsible for overall administration of the Respiratory Protection Program, including evaluation of the work environment for potential hazards, respirator selection, employee medical surveillance, training and fit-testing.
- B. The Response Manager/Project Manager, in conjunction with the Regional EHS Manager, is responsible for project-specific environmental monitoring and respirator selection. The Response Manager/Project Manager is also responsible for ensuring compliance with Veolia's respirator policy at his/her job site.
- C. The General Manager, in conjunction with the Regional EHS Manager, is responsible for fixed facility environmental monitoring and respirator selection. The General Manager is responsible for ensuring compliance with Veolia's respirator policy at his/her facility.
- D. The Regional EHS Managers are responsible for periodically auditing the use of respirators at various job sites to insure compliance with established guidelines, procedures, and applicable regulations.

- E. The Regional EHS Manager and each Supervisor are responsible for insuring that respirator users under their supervision have been provided the proper medical surveillance, training, and fit-testing before using any type of respiratory protection.
- F. Each Supervisor must be knowledgeable in which specific areas and tasks under their jurisdiction require respiratory protection and the minimum number of qualified employees required to staff that job.
- G. Supervisors are responsible for insuring that employees under their direct supervision wear the necessary respiratory protective equipment.
- H. Employees are responsible for reporting any problems associated with the use of respirators and new conditions that may require investigation for respiratory protection to their Supervisor and/or the Regional EHS Manager.
- I. Employees will use respiratory protection following prescribed procedures and training, guard against damage to respirators, care for and clean their respirators, store them in a clean, sanitary environment, and report any malfunction of the respirator to supervision. Employees are responsible for self fit-testing respirators each time a respirator is worn, using techniques showed during the respirator training.
- J. Any employee that disregards company and/or government regulations may be subject to disciplinary actions, including termination.

IV. RESPIRATOR SELECTION

- A. Respirators selected for use must be approved by the National Institute for Occupational Safety and Health (NIOSH) or the Mine Safety and Health Administration (MSHA) and properly labeled or color coded per the requirements of OSHA 29 CFR 1910.134 (g).
 - 1. A respirator approval is nullified when:
 - a. Components between different types and makes of respirators are mixed.
 - b. Non-approved components are used.

- c. An approved respirator is used in atmospheric concentrations for which it is not approved.
- B. Respirator selection will be based on the potential hazard(s) to which the user may be exposed. The selection must require consideration of:
 - 1. Nature, extent of, and adverse health effects of a hazard or characteristics of hazardous operation.
 - a. Oxygen deficiency
 - b. Chemical properties
 - c. Physiological effects
 - d. Toxic material's concentrations
 - e. PEL's or TLV's
 - f. IDLH
 - g. Warning properties of a chemical contaminant
 - 2. Air contaminant concentration in areas that may be used to supply respirable air.
 - 3. Time for respirator use and activity level of user.
 - 4. Physical characteristics and limitations of respirator types.
 - 5. Respirator protection factors and respirator fit.
- C. Respirators selected for use must be approved by the Regulatory Affairs Department before purchase. Employees will be provided with several sizes and/or models to ensure a proper fit.
- D. Only manufacturer specified replacement parts will be used for repair. Repair parts cannot be interchanged between various manufacture's respirators.
- E. Supplied air will meet the quality specification for a minimum of Grade D breathing air. A certificate of analysis shall be provided by the vendor with each shipment of breathing air.

- F. See Table 1 for the site specific hazard analysis. The hazard analysis will need to be updated any time the work process changes.

V. MEDICAL EVALUATION

- A. Employees must not be provided or use respiratory protection without prior written certification stating the employee can use respiratory protection.
- B. Determination of medical certification for respirator use shall be made by a certified physician or other qualified medical personnel under the direction of a certified physician. The licensed physician for this facility is

Dr. Fredrick Kohana
AllOne Health Resources
600 West Cummins Park, Ste 3400
Woburn, MA 01801
781-341-4678

- C. The physician will be provided with
1. A copy of this respiratory protection program,
 2. A copy of the respiratory protection standard,
 3. A copy of the medical questionnaire as found in Appendix C of the standard, and
 4. Additional information as outlined in Attachment 1.
- D. Repeat medical evaluations shall be conducted for all respirator users on an annual basis or as determined by the direction of the certified physician.
- E. Follow up medical exams will be conducted as required by the standard and/or as deemed necessary by the licensed physician.
- F. Additional medical exams will be conducted when
1. The employee reports symptoms related to his or her ability to wear a respirator,
 2. The licensed physician determines that medical reevaluation is needed,
 3. Information from this program suggests a need for reevaluation,

- 4. The workplace changes such that it may result in an increased burden on the employee's health.
- G. Exams will be administered confidentially during normal working hours and in a manner understandable to employees.
- H. Employees will be provided with the opportunity to discuss the results of the tests with the physician if they so request.
- I. Employees who are medically unable to wear a negative pressure air purifying respirator (APR) will be provided with a powered APR.
- J. Records of each employee respirator medical evaluation are maintained with the employee's medical file. Maintenance of medical records will follow OSHA 29 CFR 1910.120, and 1910.134.

VI. RESPIRATOR TRAINING

- A. Before use of any respirator, the employee must be trained in the proper use of the respirator. Training must be given on each type of respirator that the employee will use.
- B. The direct supervisor of an employee wearing respiratory protection must be knowledgeable in the proper use of the respirator and have received at least the same amount of training as received by the employee.
- C. Respirator training must be done by a competent individual who is knowledgeable about Veolia's respiratory protection program, requirements of applicable State and Federal regulations, and must include at least the following information:
 - 1. Instruction in nature, extent, and effects of respiratory hazards.
 - 2. Discussion about why a particular respirator is used.
 - 3. Discussion of respirator capabilities and limitations.
 - 4. Instructions in how to inspect, wear and remove the specific respirator.
 - 5. Instruction in testing for leaks.

6. Instruction in how to recognize any potential problems with the respirator.
 7. Explanation of the procedures for maintenance and storage of the respirator.
 8. General provisions of OSHA 29 CFR 1910.134 and the Veolia, LLC Respiratory Protection Program.
- D. Training will be conducted
1. Initially, prior to use,
 2. Annually,
 3. If workplace changes affect respirator use, or
 4. If retraining appears to be necessary.
- E. All training will be documented. The records will be maintained with medical records following OSHA 29 CFR 1910.120 and 1910.134.

VII. FIT TESTING

- A. Upon initial job assignment fit-testing will be done by the Regional EHS Staff or local Supervisor. Employee respirator training for all types of respirators will be done.
- B. Fit-testing must include instruction on negative and positive pressure tests as appropriate for the specific respirator.
- C. Fit test evaluation will be made using recognized qualitative fit-testing procedures.
- D. An acceptable fit is achieved if the respirator wearer is unable to detect penetration of the test agent into the respirator.
- E. Self fit-checking should be done by the employee each time the respirator is worn using the techniques shown during the respirator training.
- F. Fit-testing must include a series of exercises such as normal breathing, deep breathing, turning head from side to side, nodding head up and down, talking, or

other activities that may simulate actual working conditions, to insure a proper seal always.

- G. Employees cannot use or be fit-tested for tight-fitting respirators that require a seal for effective performance when facial hair or other conditions prevent the seal. Besides a beard, other conditions that may prevent a seal include absence of normally worn dentures, facial shape, facial scars or eyewear that projects under the facepiece seal.
- H. Beards and/or facial hair that interferes with the respirator sealing surface are strictly prohibited.
- I. Contact lens must not be worn with in combination with fullface respirator masks. Respirator users will be issued a pair of prescription spectacle kits if they are required to wear a full face respirator and use prescription glasses.
- J. A respirator training document will be completed following training and acceptable fit-testing of each respirator make/model. Employees will only be allowed to wear the make, model and size that they tested in.
- K. Records of respirator fit test will be maintained with the employee's training file. The record will include:
 - 1. Employee name,
 - 2. Type of fit test performed,
 - 3. Make, model and size of respirator tested,
 - 4. Date of the fit test, and
 - 5. Pass/Fail.
- L. Fit-testing and training will be conducted
 - 1. Prior to assignment,
 - 2. annually,
 - 3. any time the employee switches to a different type of respirator, or
 - 4. if the employee experiences physical changes that may affect respirator fit.

VIII. ISSUANCE OF RESPIRATORS

- A. Employees will be issued respiratory protection known to provide adequate protection from the type and concentration of potential exposure.
- B. Issuance of respirators shall be controlled to insure that the employee being issued a respirator has had an updated respiratory medical evaluation, training, and fit-testing for the specific respirator needed.
- C. It is the employee's responsibility to wear and properly maintain the respirator assigned to them.

IX. MAINTENANCE AND CARE OF RESPIRATORS

- A. Replaceable cartridge type respirators assigned for individual use should be stored in a resealable plastic bag or other clean location between usage. All respirators must be periodically washed and sanitized as deemed appropriate based on the activities, contaminants and concentrations the respirator is used for. Each individual is responsible for cleaning his/her respirators.
- B. Cartridges shall be replaced when the end of service life indicator (ELSI) turns from orange to brown.
- C. Inspection of the individual's respirator should be made by the respirator user before and after each use.
- D. Cleaning procedures include:
 - 1. Removing and dismantling of any facepiece replaceable parts.
 - 2. Washing facepiece and associated parts in a warm, soapy solution or commercially available respirator cleaning solution.
 - 3. Rinsing facepiece and parts in clean warm water.
 - 4. Wipe the respirator with a disinfectant wipe, as supplied by the manufacturer.
 - 5. Rinse again with clean warm water.
 - 6. Air drying.

7. Inspecting facepiece and parts prior to reassembly.
 8. Covering a respirator with a plastic bag or other clean storage container.
- E. Replacement of worn or damaged respirator parts will be made only with manufacturer-designated replacement parts.
- F. Supplied air respirators will be inspected monthly. Dated records of inspections and repairs will be maintained at each location.
- G. All respirators shall be stored to protect against dust, dirt, sunlight, extreme heat or cold, and excessive moisture. Storage measures that can be used to protect respirators against dusts, chemicals, and moisture include:
1. Hermetically-sealed plastic bags, or plastic bags that can be sealed.
 2. Plastic containers with tight-fitting lids, such as freezer containers.
 3. Cans with tight-fitting lids.

X. INSPECTION AND MAINTENANCE

A. Supplied Air Respirators

1. Check the facepiece and breathing hose for integrity.
2. Check the cylinder air pressure. Also, check the integrity of the regulator, harness assembly, and all straps and buckles.
3. Ensure that the regulator and warning devices (end-of-service alarm) function properly.

B. Air Purifying Respirators

1. Check rubber facepiece for dirt, pliability of rubber, deterioration, and cracks, tears, or holes.
2. Check straps for breaks, tears, loss of elasticity, broken attachment snaps and proper tightness.

3. Check valves (exhalation and inhalation) for holes, warpage, cracks, and dirt.
 4. Check filters, cartridges and canisters for dents, corrosion and expiration dates. Check protection afforded by canister and its limitations.
- C. All respirators must be inspected routinely before and after each use. A respirator that is not routinely used must be inspected after each use and at least monthly to assure that it is in satisfactory working condition.
- D. Respirator inspection must include a check of the tightness of connections and the condition of the facepiece, headbands, valves, connecting tube, and canisters. Rubber or elastomer parts shall be inspected for pliability and signs of deterioration. Stretching and manipulating rubber or elastomer parts with a massaging action will keep them pliable and flexible and prevent them from taking a set during storage.
- E. A record will be kept of inspection dates and findings. The records will be kept with the particular piece of equipment until the sheet has been completely filled in. Once an inspection sheet is complete, the records will be forwarded to the Regulatory Affairs Department.

XI. SAFE USE OF RESPIRATORS

- A. In areas where the respirator wearer, with failure of the respirator, could be overcome by a toxic or oxygen deficient atmosphere, at least one additional employee must be present.
- B. Communications (visual, voice, or signal line) must be maintained between all of the employees present.
- C. In case of an emergency, all personnel will be evacuated. The Operations Manager will don a full face respirator and begin taking air readings with the Jerome Mercury Vapor Analyzer. The Operations Manager will not proceed if the readings exceed 0.5 mg/m^3 . No employees will be allowed back in until readings are below 0.025 mg/m^3 .
- D. A standby person must be present with suitable rescue equipment when SCBA's or Supplied Air respirators are used in atmospheres immediately dangerous to life or health.

- E. When SCBA's or Supplied Air respirators are used in atmospheres immediately dangerous to life or health, employees must be equipped with a safety harness and safety lines for lifting or removing persons from hazardous atmospheres.
- F. Beards, facial hair, or any condition that interferes with the respirator sealing surface or valve function is strictly prohibited.

XII. EVALUATION OF THE RESPIRATOR PROGRAM EFFECTIVENESS

- A. Periodic evaluation of the effectiveness of the Respiratory Protection Program is essential to ensure that employees are being provided with adequate respiratory protection.
- B. The effectiveness of the Respiratory Protection Program will be evaluated at least annually and corrective action will be taken to correct any problems found in the program.
- C. Respirator wearers will be consulted periodically about their acceptance of wearing respirators. Many factors affect the acceptance of wearing respirators. These factors include: comfort, resistance to breathing, fatigue, interference with vision, difficult verbal communication, restriction of movement, interference with job performance and confidence in the effectiveness of the respirator to provide adequate protection.
- D. Frequent inspections will be conducted to ensure that proper types of respirators are selected, that respirator wearers are trained properly, that the correct respirators are issued and used, that respirators are worn properly, that respirators being used are in good operating condition, that respirators are inspected and maintained properly, that respirator storage is satisfactory, and that respiratory hazards are monitored using the proper equipment.
- E. The results of the evaluation will be used to decide the effectiveness of the program. Action will be taken to correct any defects found in the Respiratory Protection Program.

TYPES OF RESPIRATORY PROTECTION

The type of respiratory protection used will be based on respiratory hazards such as:

- | | | |
|-----|-----------------------|--|
| (1) | Oxygen Deficiency - | Normal - 20.9% Minimum allowable - 19.5% Maximum allowable - 23.5% |
| (2) | Toxic Contaminants - | Dust, fumes, mist, gases, and vapors |
| (3) | Unknown Atmospheres - | Spills, IDLH atmospheres, or unknowns |

AIR-PURIFYING RESPIRATORS

- Removes Air Contaminants

Limitations

- Does not supply oxygen - Use only in adequately ventilated areas containing at least 19.5% oxygen.
- Contaminant level constraints - Do not use when concentrations of contaminants are unknown, exceed the rated capacity of the cartridge, or in atmospheres immediately dangerous to life or health.
- Breathing demand of the wearer.
- Contaminant does not exhibit adequate warning properties (including odor, eye and/or respiratory irritation).

Leave area immediately if:

- (1) Breathing becomes difficult
- (2) Dizziness or other distress occurs
- (3) You taste or smell contaminant

Replacing Cartridges

The following conditions are indications that the cartridges have served their useful life and should be replaced:

- Odor or taste of gases or vapors
- Eye, nose, or throat irritation
- End of Service Life Indicator (ESLI) changes color.
Mersorb cartridges are to be changed out when the ESLI changes color from orange to brown.

To replace cartridges proceed as follows:

- (1) Remove both cartridges and discard.
- (2) Remove the replacement cartridges from storage bags and insert into the threaded receptacles making sure gaskets are in place in the cartridge holders.
- (3) Carefully hand tighten the cartridges to prevent damage to threads and to insure a good seal against the gaskets.

SUPPLIED AIR RESPIRATORS

- Air supply must be independent of ambient air.
- Air flows through hose to facepiece.
- Air must be free of contaminants.
- Must use a 5 minute escape bottle.
- Serves as a long-duration work device and an escape device as well. The Hip-Air bottle is approved for respiratory protection for entry into, for extended periods of work in, and for escape from IDLH atmospheres. The self-contained air supply is approved for escape only.
- When connected to a respirable air source, the device permits the wearer to work and move about freely, within the limits of the approved hose length.

Limitations

- Maximum hose length - 300 ft.
- Maximum inlet pressure - 125 psig. Normal operating pressures should be between 60-80 psi.

BREATHING AIR REQUIREMENTS (ASTM GRADE D)

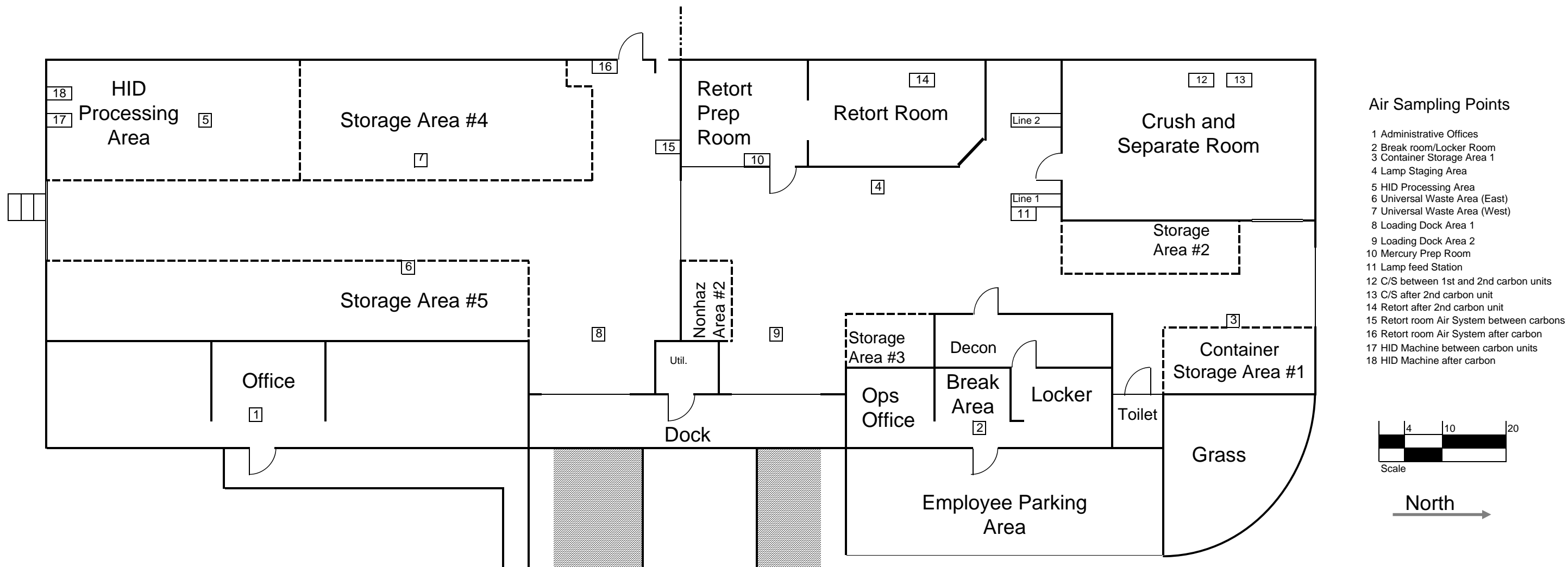
- O₂ concentration is that concentration normally present in the atmosphere
- Condensed hydrocarbons <5 mg/m³
- Carbon monoxide <20 ppm
- Carbon dioxide <1,000 ppm
- No pronounced odor

HYDROSTATIC TESTING OF AIR CYLINDERS (SCBA & HIP-AIR)

- Every 3 years for composite bottles
- Every 5 years for steel bottles
- Cylinder pressure - 2216 psig

Table 1 – Tallahassee Hazard Analysis

| Task/Process | Contaminant and Level | OSHA PEL ACGIH TLV | Controls |
|---|---|--|---|
| Processing of lamps at the lamp feed station | Mercury vapor at 0.015 to 0.15mg.m ³ | 0.1 mg/m ³ (PEL) 0.025 mg/m ³ (TLV) | Full face APR with Mersorb P100 cartridges with ESLI for these tasks. |
| Operations occurring in the crush and separate room (maintenance, unclogging, changing powder, etc) | Mercury vapor at 0.03 to 0.57 mg/m ³ | 0.1 mg/m ³ (PEL) 0.025 mg/m ³ (TLV) | Full face APR with Mersorb P100 cartridges with ESLI for these tasks. |
| Operations occurring within the HID Machine enclosure | Mercury vapor at 0.02 to 0.075 mg/m ³ | 0.1 mg/m ³ (PEL) 0.025 mg/m ³ (TLV) | Full face APR with Mersorb P100 cartridges with ESLI for these tasks. |
| Operations occurring in the prep room | Mercury vapor at 0.005 to 0.067 mg/m ³ | 0.1 mg/m ³ (PEL) 0.025 mg/m ³ (TLV) | Full face APR with Mersorb P100 cartridges with ESLI for these tasks. |
| Operations occurring in the retort room | Mercury vapor at 0.05 to 0.15 mg/m ³ | 0.1 mg/m ³ (PEL) 0.025 mg/m ³ (TLV) | Full face APR with Mersorb P100 cartridges with ESLI for these tasks. |
| Cleanup Operations involving broken lamps or <1 lb. elemental mercury | Mercury vapor at 0.015 to 0.15mg.m ³ | 0.1 mg/m ³ (PEL) 0.025 mg/m ³ (TLV) | Full face APR with Mersorb P100 cartridges with ESLI for these tasks. |
| Emergency Response Operations involving >1 lb. elemental mercury or in the retort room | Mercury vapor at unknown concentrations | 0.1 mg/m ³ (PEL) 0.025 mg/m ³ (TLV) | Full face SAR |



Air Sampling Points
Figure 7.1

Veolia ES Technical Solutions, L.L.C.
342 Marpan Lane
Tallahassee, FL 32305

Revised: March 11, 2016

Attachment D-8

Quality Control Plan

8.1 Introduction

Veolia ES Technical Solutions, L.L.C. (Veolia) operates a mercury recovery and reclamation facility and in accordance with the requirements of §62-737.840(3) and §62-737.860(4) F.A.C. has developed this Quality Control Plan. The primary quality control procedures used in the recovery and reclamation of mercury from MCMA is through the prequalification of all incoming wastes, the testing of by-products and wastes generated in the recycling process and following standard operating procedures for the collection and analysis of all samples. To address these issues Veolia has developed this Quality Control Plan. The Plan contains the following sections:

- Incoming Waste Analysis Plan
- Recovered Material Testing Plan
- “Standard Operating Procedures for Sampling at Facilities Permitted Under Chapter 62-737, F.A.C., November 14, 1997 Revision”

In addition to these procedures, Veolia has also developed a detailed inspection program and air monitoring program to verify the ongoing effectiveness of the equipment and control devices. The Inspection Plan is contained in Section 12 and the Air Monitoring Plan is contained in Section 4 Operations Plan.

8.2 Incoming Waste Analysis Plan

8.2.1 Incoming Material Acceptance Procedures:

All waste materials brought into or through the facility must be profiled and entered into the waste tracking system. Profiles are completed by the generator or completed based upon information provided by the generator of the waste prior to receipt and are kept on file at the facility. Veolia uses three different types of profiles for the materials received.

Prior to receipt of a waste at the Veolia facility, specific waste evaluation and acceptance procedures are employed to qualify a generator's waste materials for acceptance and to ascertain RCRA status, chemical and physical characteristics, and compatibility with the on-site recycling operations or availability of off-site outlets for the material. Veolia has developed a tiered process to acquire the necessary data and conduct this evaluation. There are three categories of approvals under this program:

- Standard Approvals, this category applies to universal wastes. Standard material profiles have been developed for these wastes and are maintained on file at the facility.
- Generic Approvals, this category applies to materials that are not federal universal wastes, may vary slightly between generators and are subject to varying degrees of regulation, requiring additional review and evaluation.

- Case-by-case Approvals, this category applies to waste that may vary between generators and requires a detailed review of the physical and chemical properties of the material prior to approval.

The written generator notification as required under 40 CFR 264.12(b) may vary from generator to generator depending on the type of material that the generator is shipping to Veolia and the type of contract/arrangements that the generator has in place. This notification may take the form of an Approval Letter, be contained in a Quotation, printed directly on packaging materials provided to generators by Veolia, or some other form of written communication as deemed appropriate at the discretion of the facility. An example of an Approval Letter is included in Appendix D-8-I.

Since the facility only accepts mercury containing manufactured articles and clean up articles and PPE from handling of manufactured articles, generator knowledge will typically be sufficient to properly characterize the waste. If at any point during the approvals process, analytical testing is needed to provide additional information, generators will be required to submit analytical data obtained using methods specified by the US EPA or FLDEP as applicable.

8.2.2 Standard Approvals

Once Veolia has been notified by a generator that they wish to ship materials subject to the standard approvals process, the generator's information will be recorded and the generator will be notified in writing that Veolia has the appropriate licenses and processing capabilities to accept their material for recycling. Since these wastes are universally generated and will not vary from generator to generator, the generators of these types of materials will not be required to submit a site specific Wastestream Information Profile sheet for waste contained in this category.

8.2.3 Generic Approvals

Generators wishing to ship materials contained in the generic approvals category will be required to submit a site specific Wastestream Information Profile sheet. The Wastestream Information Profile sheet must contain specific information regarding the identity of the waste, physical and chemical properties of the waste, and the regulatory status of the waste. This information will then be reviewed by the operations manager or his designee to ensure that the material can be received at the facility. Once the material has been approved the generator will be notified in writing that the facility has the appropriate licenses and the processing capabilities to accept the waste. A sample Wastestream Information Profile sheet is included in Appendix D-8-I.

8.2.4 Case-by-case Approvals

Generators wishing to ship materials contained in the case-by-case approvals category will be required to submit a site specific Wastestream Information Profile sheet. The

Wastestream Information Profile sheet must contain specific information regarding the identity of the waste, physical and chemical properties of the waste, and the regulatory status of the waste. This information will then be reviewed by the operations manager or his designee and by corporate approvals staff to ensure that the material can be received at the facility. Once the material has been approved the generator will be notified in writing that the facility has the appropriate licenses and the processing capabilities to accept the waste. A sample Wastestream Information Profile sheet is included in Appendix D-8-I.

As part of the above referenced procedures, Veolia staff will assign a product code to each profile. The product code is an internally assigned code designating the type of material and the type of process to be used for the management of the material. A list of the waste streams commonly accepted by Veolia for mercury recovery and reclamation is included below along with a reference to the applicable product codes and approvals category. An additional suffix may be added to the product code to further differentiate materials at the discretion of the facility.

8.2.5 Veolia Product Codes and Waste Descriptions

8.2.5.1 Lamps

| Product Code | Description | Approval Category |
|--------------|-------------------------------|-------------------|
| LP-F | Fluorescent Lamps | Standard |
| LP-FCIRC | Circular Fluorescent Lamps | Standard |
| LP-FCMP | Compact Fluorescent Lamps | Standard |
| LP-FDM | Crushed Lamps | Standard |
| LP-FSS | Shielded Fluorescent Lamps | Standard |
| LP-FUT | U-Tube Lamps | Standard |
| LP-FUV | UV Fluorescent Lamps | Standard |
| LP-H | HID Lamps | Standard |
| LP-MH01 | Metal Halide Lamps | Standard |
| LP-MISC | Miscellaneous Specialty Lamps | Generic |
| LP-MV01 | Mercury Vapor Lamps | Standard |
| LP-NEON | Neon Lamps | Standard |
| LP-SHP | High Pressure Sodium Lamps | Standard |

8.2.5.2 Mercury

| Product Code | Description | Approval Category |
|--------------|--|-------------------|
| MC-BATT | Mercury Batteries | Standard |
| MC-AMALG | Dental Amalgam | Generic |
| MC-DE | Mercury Contaminated Clean-up Articles and PPE | Generic |
| MC-HG | Mercury | Generic |
| MC-HGREG | Mercury Containing Gas Regulators | Generic |
| MC-MA | Mercury Containing Articles | Standard |
| MC-PD | Phosphor Powder | Generic |

Product codes are internally generated codes which may be periodically updated or revised. However, these revisions will not alter the types of materials being received by Veolia.

8.2.6 Scheduling Material Into the Facility

There are four methods by which materials may be transported to the facility:

- Generator self transport
- Common carrier transport
- Generator arranged transport, and
- Veolia arranged transport.

8.2.6.1 Generator self transport and common carrier transport

In order to promote the recycling fluorescent lamps from small businesses, Veolia has developed and marketed a line of packaging which includes the prepayment for the transport and recycling of the materials. Under this program, a generator purchases the container, fills the container with the designated universal waste, calls a phone number that is preprinted on the packaging to schedule the pick up of the package by a common carrier, such as FedEx Ground, and the container is transported to Veolia's facility. The delivery of these containers and generator self transported universal waste will arrive at the facility without prior notice to the facility. Due to the small volume and the nature of the material, only universal wastes, the facility has the capacity to manage these materials as they arrive.

8.2.6.2 Generator arranged transport

In the case where a generator arranges their own transportation for shipments to the facility, the generator will contact the facility and request a permission to deliver the material on a particular date. If the delivery does not conflict with other deliveries already scheduled the generator will be given an appointment. If there is a conflict an alternate date for the delivery of the material will be proposed. Under this scenario, the generator, or his agent is responsible for ensuring that the materials are accompanied by the appropriate shipping papers. If the material is subject to the hazardous waste manifesting requirements, the procedures outlined below will be used by the facility for the completion and distribution of the manifest.

8.2.6.3 Veolia arranged transport

Generators will contact Veolia to request the pick up of approved materials. Customer Services Representatives will then enter all of the pertinent customer information into our waste tracking system. The system tracks the customer's location of pickup, billing address, pickup contacts phone numbers, and what material is scheduled to be picked up. Once this information is entered into the waste tracking system it creates an open sales order which transportation can then put onto the

schedule for pickup. Customers are then notified by transportation of the day and approximate time that the material will be picked up. Veolia will normally assist the customer in preparation of the shipping documents for the pickup.

8.2.6.4 Completion of the Uniform Hazardous Waste Manifest

All shipments of hazardous waste subject to the manifesting requirements of 40 CFR 262 will be accompanied by a properly completed Uniform Hazardous Waste Manifest. The manifest will be prepared by the generator of the waste prior to pick up or with the assistance of Veolia. When assisting a generator with the completion of the manifest the customer will provide Veolia with the following information:

- Type and quantity of containers
- Material classification(s)
- Scaled or estimated weight(s) and/or lamp counts
- Labels, placards and markings on containers
- Generator's USEPA ID number
- Generator's State ID number (if applicable)
- State hazardous waste permit number (if applicable)
- Transporter ID numbers, dates, and times

At the time of pick up the manifest will be dated by the generator and transporter according to procedures under 40 CFR 262.20-23. Upon receipt of material by Veolia, the manifest is signed and dated by the receiving agent and significant discrepancies are noted, pursuant to 40 CFR 264.70-72.

Shipments of waste that are not subject to hazardous waste manifesting requirements will be accompanied by shipping paper that documents the transfer of the waste from the generator to Veolia.

8.2.7 Receipt of Material Into the Facility

Upon arrival of a shipment at the Veolia facility, the following sequence of events occurs:

- a. The driver presents the paperwork for the load to the shipping and receiving coordinator or designated representative trained to receive material into the facility.
 1. Driver will bring Shipping documents to the office where it is reviewed to ensure that there is no unscheduled manifested waste on the trailer. If there is manifested hazardous waste destined for Tallahassee facility the trailer will be backed into the loading dock for unloading. The manifested waste will be removed before it can go to the transfer yard.
 2. For trailers that are delivered to the transfer yard the receiving clerk will enter trailer information onto a log that is maintained electronically. The following entries will be made on every trailer.
 - Trailer Number
 - Arrival Date

- Generator Name
 - Shipping Paper Number
3. Unload Deadline. This will be 10 days from the date the trailer is placed in transfer yard.
 4. Transfer Yard will be checked daily to ensure Log matches physical inventory in Transfer Yard. Trailers should be checked to ensure that they are secure while in the yard. Any discrepancies should be immediately reported to the Operations Manager.
 5. The receiving clerk will update the log each time a change is made to the inventory of material in transfer, additions or removals. Entries will be made in a timely manner and without delay.
 6. The Operations Supervisor or designee will review the log on a daily basis. This review will be completed to ensure the log is current and for use in planning the production schedule for the day.

If any of the personnel listed above are absent from the facility there will be a trained designated employee to oversee the 10 Day log and ensure timely entries are made to the log.

- b. When the trailer is moved from the transfer lot to the loading dock Veolia personnel will compare shipping documents and material description against the material profiles, and the material actually received.
- c. All containers are visually inspected to verify that the shipment contains only the waste material as described in the material profile and shipping document.
- d. If the shipment conforms to the material profile, the shipping document is signed and the truck unloaded by trained personnel. A copy of the signed shipping document/hazardous waste manifest is then sent to the generator (and customer if they are not the same) within 30 days. Should Veolia deny acceptance of the delivery, the shipment will be returned to the generator or shipped to an alternate facility selected by the generator.

Upon off-loading, each container is logged into the waste tracking system and placed into the storage area or transferred directly to a processing area. A Veolia receiving record is executed to record all pertinent information. Sample Receiving Reports are included in Appendix D-8-I.

8.2.7.1 Waste Rejection

Wastes will be rejected for the following reasons:

Waste does not conform to the material profile and the waste contains materials that the facility is not permitted to accept.

Other wastes that cannot be accepted by Veolia are included in the shipment.

Unscheduled load that would cause Veolia to exceed a permitted storage limit

8.2.7.2 Manifest Discrepancies

Upon receipt of materials at the Veolia facility, shipments are checked for significant discrepancies, according to 40 CFR 264.72. Discrepancies are noted on the manifest by the receiving agent. Discrepancies in quantity or type of hazardous waste are reconciled with the generator through telephone calls by Veolia personnel within 15 days following receipt at the Veolia facility. If a significant discrepancy cannot be resolved within 15 days after receipt of the waste, Veolia shall immediately submit a letter report, including a copy of the manifest to the Department.

8.2.7.3 Un-manifested Waste Report

If Veolia were to receive an un-manifested shipment of hazardous waste not specifically authorized by the regulations, Veolia would prepare and submit an un-manifested waste report to the Department within 15 days of receipt of the un-manifested waste.

8.3. Recovered Material Testing Plan

This section describes testing methods, laboratory qualifications, testing frequency, sampling procedures, sampling equipment decontamination and documentation procedures. The sampling programs contained in this document have been developed to demonstrate the ongoing effectiveness of the mercury recovery and mercury reclamation processes and equipment. The sampling plans have also been developed to demonstrate compliance with the residual contaminant levels specified in §62-737.840(3) F.A.C. for mercury recovery facilities and the reclamation rate requirements of §62-737.860(4) F.A.C. for mercury reclamation facilities.

8.3.1 Sampling and Testing Methods

All sampling of materials covered by this plan will be performed in accordance with the procedures defined in Sections 6 through 8 and in accordance with the procedures contained in *Quality Assurance Standard Operating Procedures for Sampling at Facilities Permitted Under Chapter 62-737, Florida Administrative Code*, November 14, 1997 Revision (Reformatted April 15, 2010) copy of which is included in Appendix D-8-II.

All analysis of samples covered by this plan will be conducted in accordance with the procedures contained in *Test Methods for evaluating solid Wastes, Physical/Chemical Methods*, EPA publication SW-846.

8.3.2 Laboratory

All analysis will be performed by an independent laboratory that is certified by the State of Florida.

8.3.3 Testing Frequency – Mercury Recovery Operations

Table 8.1 indicates the schedule for testing recovered materials from the mercury recovery operation. A sample of each material type will be collected on a daily basis. Following the completion of each weeks processing, the daily samples will be combined to form a weekly composite sample.

On days when equipment is not operational, no daily sample will be taken. Daily samples will not be "doubled up", i.e., two daily samples collected on the same day, to make up for daily samples when the equipment is not operational. The weekly composite will consist of equal aliquots of daily samples collected on days when the equipment is operational. For example, if the equipment is operational for only three days during a particular week, that week's weekly composite sample shall consist of equal aliquots of the daily samples collected during the three days when the equipment was operational.

It is recommended that daily samples be collected during maximum daily throughput and when equipment has been operating for at least 30 minutes. However, daily samples will be collected if the equipment is operated for any period of time during that day. If the equipment is operational for 2 days or less in a particular week, no weekly composite sample is required for that week. However, the daily samples for those one or two days will still be collected and used as part of the next weekly composite sample.

Based on the analytical testing history for materials generated from the mercury recovery operations, the average total mercury concentration is less than 4 mg/kg. As such, the total concentration is less than twenty times the TCLP limit. Based on the 20:1 dilution of the extraction procedure defined in the TCLP, these materials would not exceed the toxicity characteristic level for mercury of 0.2 mg/l. As such, TCLP testing will not be performed in these samples unless the 12 week rolling average of total mercury analytical results exceeds 4.0 mg/kg.

Table 8.1
Testing Frequency for Mercury Recovery Operation

| ITEM | TESTING PARAMETER | TEST FREQUENCY |
|-----------------------|-------------------|--------------------------------------|
| Glass | Total Mercury | Weekly Composite Sample |
| Metals | Total Mercury | Weekly Composite Sample |
| Plastics ¹ | Total Mercury | Weekly Composite Sample if Processed |
| Glass | TCLP Mercury | Annual, as necessary |
| Metals | TCLP Mercury | Annual, as necessary |
| Plastics | TCLP Mercury | Annual, as necessary |

1. Refers to plastics that have been in direct contact with mercury or phosphor powder.

8.3.4 Testing Frequency – Mercury Recovery Operations

Table 8.2 indicates the schedule for testing recovered materials from the mercury reclamation operation. The following paragraphs describe the testing frequency for recovered materials from the mercury reclamation operation.

It is recommended by DEP that a sample be collected during maximum daily throughput and when equipment has been operating for at least 30-minutes. However, a sample can be collected if the equipment is operated for any period of time during a day.

8.3.4.1 Powder

The term Powder is used in this section generically to describe the phosphor powder derived from the recycling of fluorescent lamps. This material is comprised of the calcium phosphate based phosphor powder, glass fines and mercury. The normal concentration range for mercury in the powder generated at this facility ranges from 150 to 1500 mg/kg.

A minimum of one sample per month will be collected from a batch of pre-retort powder. A sample will also be collected from this batch following retort processing. These samples will be analyzed for total mercury and evaluated to determine the effectiveness of the reclamation process.

In order to achieve the recovery rate specified by the regulations, the allowable post-retort concentration of mercury will typically be less than 15 mg/kg. Past analytical history indicates that powder at this concentration will not leach significant levels of mercury. However, at least one sample per year will be submitted to the laboratory for TCLP mercury testing.

8.3.4.2 Arc Tubes and MCMA

Arc Tubes and MCMA are derived from crushed HID arc tubes, crushed neon lamp glass and glass from drained mercury containing devices. The normal concentration range for mercury in this material is 250 to 2500 mg/kg.

Prior to retort processing, the glass derived from the processing of HID lamp arc tubes, neon lamps and drained mercury containing devices are consolidated to form a batch. A minimum of one sample per month will be collected from a batch of pre-retort glass. A sample will also be collected from this batch following retort processing. These samples will be analyzed for total mercury and evaluated to determine the effectiveness of the reclamation process. In the event that this material is not processed in the retort during any month, a sample will not be collected and a notation will be made to the facility operating recording noting that no glass was retorted.

At least one sample of post-retort glass will be collected and analyzed for TCLP mercury on an annual basis.

Table 8.2
Testing Frequency for Mercury Reclamation Operations

| CATEGORY | TEST FREQUENCY |
|--------------------|--|
| Powder | Monthly pre-retort and post-retort total mercury tests if processed. Annual TCLP mercury. |
| Arc Tubes and MCMA | Monthly pre-retort and post-retort total mercury tests if processed. Annual TCLP mercury. |

8.3.4.3 Other Mercury Materials

In addition to the above listed materials the facility will also receive a small amount of mercury containing batteries and dental amalgam. Due to the small volume of these types of materials received, these materials will be consolidated with the Arc Tubes and MCMA for retort processing and will be represented by the samples collected from those materials.

8.4 Sampling Procedures – Mercury Recovery Operations

The following describes the procedures for sampling recovered materials from the Mercury Recovery operation. The minimum weekly composite sample size is 150-grams.

8.4.1 Glass

- A. A daily sample must be taken if any lamps are processed during the day.
- B. The sample container must be glass or polyethylene with a screw top lid.
- C. Using the designated stainless steel or plastic scoop or spoon, a 50 gram sample of glass will be taken from the discharge point of the equipment. Excess material will be raked off with a spatula or knife.
- D. The daily sample will be placed into the weekly composite sample container provided by the lab. The container will be closed immediately following sample collection.
- E. The Daily Facility Inspection Form will be used to document dates on which samples are collected.
- F. At the end of each week, a sample label provided by the lab will be placed on the sample container.
- G. A Chain of Custody (COC) Record for the weekly composite sample must be filled out. A copy of the COC form must accompany the sample to the laboratory. Once the laboratory receives the samples and signs the COC, they will return a copy to Veolia. Copies of the COC records are maintained for a period of at least three years. A sample chain of custody is included as Appendix D-8-I.

8.4.2 Metals

- A. A daily sample must be taken if any lamps are processed during the day.
- B. The sample container must be glass or polyethylene with a screw top lid.
- C. Using the designated stainless steel or plastic scoop or spoon, a 50 gram sample of metal will be taken from the discharge point of the equipment or from the accumulation container from manual processing operations. Excess material will be raked off with a spatula or knife. When multiple processing operations are conducted, the daily sample will be comprised of a mixture of materials representative of the overall volume of metals generated on that date.
- D. The daily sample will be placed into the weekly composite sample container provided by the lab. The container will be closed immediately following sample collection.
- E. The Daily Facility Inspection Form will be used to document dates on which samples are collected.
- F. At the end of each week, a sample label provided by the lab will be placed on the sample container.
- G. A Chain of Custody (COC) Record for the weekly composite sample must be filled out. A copy of the COC form must accompany the sample to the laboratory. Once the laboratory receives the samples and signs the COC, they will return a copy to Veolia. Copies of the COC records are maintained for a period of at least three years. A sample chain of custody is included as Appendix D-8-I.

8.5 Sampling Procedures – Mercury Reclamation Operations

Prior to retort processing, individual batches of material will be sampled in accordance with the sampling frequency specified above. The batch will be flagged as having been sampled and held pending the receipt of the analytical results. Pre-retort material samples should be collected in the same physical and chemical state in which they are fed into the process equipment. The goal of the sampling methodology contained below is generate a sample that is truly representative of the waste stream.

The following paragraphs describe the procedures for sampling recovered materials from the Mercury Reclamation operation. The minimum sample size is 50-grams.

8.5.1 Powder

- A. Collect a sample of pre-retort powder and post-retort powder from a single batch.
- B. The sample container must be glass or polyethylene with a screw top lid.
- C. Using a clean stainless steel or plastic scoop or spoon, collect an aliquot of powder from various points within each drum contained in the batch. A total mass of 150 grams should be collected for each sample.
- D. The sample will be placed into a sample container provided by the lab. The sample container will be closed immediately following sampling.
- E. The sample label provided by the lab will be placed on the sample container.

- F. A Chain of Custody (COC) Record must be filled out for each sample. If multiple samples are collected on the same date a single chain of custody may be used for all samples. A copy of the COC form must accompany the sample to the laboratory. Once the laboratory receives the samples and signs the COC, they will return a copy to Veolia. Copies of the COC records are maintained for a period of at least 3-years. A sample chain of custody is included as Appendix D-8-I.

8.5.2 Arc Tubes and MCMA

- A. Collect a sample of pre-retort arc tubes and MCMA and post-retort arc tubes and MCMA from a single batch.
- B. The sample container must be glass or polyethylene with a screw top lid.
- C. Using a clean stainless steel or plastic scoop or spoon, collect an aliquot of glass from various depths within each drum contained in the batch. A total mass of 150 grams should be collected for each sample.
- D. The sample will be placed into a sample container provided by the lab. The sample container will be closed immediately following sampling.
- E. The sample label provided by the lab will be placed on the sample container.
- F. A Chain of Custody (COC) Record must be filled out for each sample. If multiple samples are collected on the same date a single chain of custody may be used for all samples. A copy of the COC form must accompany the sample to the laboratory. Once the laboratory receives the samples and signs the COC, they will return a copy to Veolia. Copies of the COC records are maintained for a period of at least 3-years. A sample chain of custody is included as Appendix D-8-I.

8.6 Sampling Equipment Decontamination (Cleaning)

The reusable sampling tools will be cleaned in accordance with the following procedures. Single use tools will be disposed following use and new tools will be used at the beginning of every week.

- A. Disassemble equipment if possible and if necessary.
- B. Wash thoroughly with a mild detergent and hot tap water using a brush to remove any particulate matter or surface film.
- C. Rinse thoroughly with hot tap water.
- D. Place the sampling equipment in a plastic storage container or wrap with plastic wrap to prevent contamination during storage or prior to use.

8.7 Documentation Requirements

The following sections address Veolia's documentation procedures for recovered materials.

8.7.1 Chain of Custody Record

A Chain of Custody Record will be filled out for all samples submitted for laboratory analysis recording the following information:

- (1) Unique sample identification number;
- (2) Sampling site name and address;
- (3) Name of person collecting sample;
- (4) Time and date of the sample collection when final weekly sample is filed;
- (5) Clear indication of number of sample containers;
- (6) Chemical analysis which is to be performed on the sample (either Hg Total or TCLP);
- (7) Appropriate places for signatures of sampler and all subsequent persons accepting custody.
- (8) Time of day and calendar date of all custody transfers;
- (9) Comments or remarks section, e.g., unusual ambient conditions; and

8.7.2 Weekly Values of Mercury Totals

Weekly Sampling Log will be used to record the weekly values and the 12-week rolling average sample analytical results for the weekly composite samples for metal end caps and glass. A copy of the Weekly Sampling Log is included in Appendix D-8-I.

8.7.3 Mercury Reclamation Rate Log

A Mercury Reclamation Rate Log will be filled out for powder and Arc Tube and MCMA that is reclaimed. The log sheet summarizes the effectiveness of the reclamation process for powder and the different categories of items described in the log. A copy of the Mercury Reclamation Rate Log is included in Appendix D-8-I.

8.8 Quality Control Procedures

Materials sampled to verify the effectiveness of the mercury reclamation process will not be processed until the pre-retort analytical results have been obtained from the laboratory. If any samples are found to lie outside the normal concentration range for the material type, the batch will be resampled and a second batch will be sampled. This requirement has been included to ensure that percent recovery rates are calculated based on valid laboratory results and are not skewed either high or low.

Recovered materials, with the exception of glass derived from the mercury recovery operation, will not be shipped off-site until the required testing and analytical results (i.e., mercury totals) indicate that the material is fit for such deliveries.

Any material that exceeds a regulatory limit will be, resampled, reprocessed, or sent to a mercury reclamation facility.

Appendix D-8-I

Sampling Forms and Logs

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| U:\ESTLHR1\Secure\Shared\Tallahassee Permit Folder\2016 Renewal\Attachment D-8 Quality Control Plan March 2016.doc | Appendix D-8-I | Revised: March 22, 2016 |
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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

[illegible]

2015 Analytical Testing Results
Weekly Glass and Aluminum Samples

| Week ending | Week | Aluminum | Entered | Verified | Shipped for Reuse | Notes | Rolling Average | | Glass | Entered | Verified | Shipped for Reuse | Notes | Rolling Average | | Aluminum Weekly Exceedence | Glass Weekly Exceedence | Aluminum Rolling Average Exceedence | Glass Rolling Average Exceedence |
|-------------|------|----------|---------|----------|-------------------|---------|-----------------|--|-------|---------|----------|-------------------|---------|-----------------|--|----------------------------|-------------------------|-------------------------------------|----------------------------------|
| 10/11/2014 | 41 | 2 | R | L | Y | | 1.175 | | 2.8 | R | L | Y | | 1.622 | | | | | |
| 10/18/2014 | 42 | 1 | L | R | Y | | 1.554 | | 0.18 | L | R | Y | | 1.462 | | | | | |
| 10/25/2014 | 43 | 2 | R | L | Y | | 1.558 | | 0.27 | R | L | Y | | 1.555 | | | | | |
| 11/1/2014 | 44 | 2.5 | R | L | Y | | 1.360 | | 1.9 | R | L | Y | | 1.833 | | | | | |
| 11/8/2014 | 45 | 2 | R | L | Y | | 1.252 | | 3.7 | R | L | Y | | 1.716 | | | | | |
| 11/15/2014 | 46 | 0.28 | R | PD | Y | | 1.214 | | 2 | R | PD | Y | | 1.799 | | | | | |
| 11/22/2014 | 47 | 3.3 | R | PD | Y | | 1.265 | | 0.94 | R | PD | Y | | 1.755 | | | | | |
| 11/29/2014 | 48 | 2.9 | R | PD | Y | | 1.357 | | 2.7 | R | PD | Y | | 2.013 | | | | | |
| 12/6/2014 | 49 | 2 | R | PD | Y | | 1.467 | | 1.2 | R | PD | Y | | 2.247 | | | | | |
| 12/13/2014 | 50 | 2 | R | PD | Y | | 1.438 | | 1.7 | R | PD | Y | | 2.072 | | | | | |
| 12/20/2014 | 51 | 3.7 | R | PD | Y | | 1.529 | | 4.2 | R | PD | Y | | 2.318 | | | | | |
| 12/27/2014 | 52 | 2 | R | PD | Y | | 1.481 | | 0.93 | R | PD | Y | | 2.316 | | | | | |
| 1/3/2015 | 1 | 2 | PD | R | Y | 2015-1 | 2.140 | | 3.8 | PD | R | Y | | 1.960 | | NULL | 0.8 | 1.14000 | 0.96000 |
| 1/10/2015 | 2 | 2 | PD | R | Y | 2015-2 | 2.223 | | 2.1 | PD | R | Y | | 2.120 | | NULL | NULL | 1.22333 | 1.12000 |
| 1/17/2015 | 3 | 2 | R | L | Y | 2015-3 | 2.223 | | 3.1 | R | L | Y | | 2.356 | | NULL | 0.1 | 1.22333 | 1.35583 |
| 1/24/2015 | 4 | 2 | R | L | Y | 2015-4 | 2.182 | | 2.4 | R | L | Y | 2015-3 | 2.398 | | NULL | NULL | 1.18167 | 1.39750 |
| 1/31/2015 | 5 | 0.27 | R | L | Y | | 2.038 | | 2.4 | R | L | Y | | 2.289 | | NULL | NULL | 1.03750 | 1.28917 |
| 2/7/2015 | 6 | 0.051 | R | L | Y | | 2.018 | | 2.7 | R | L | Y | | 2.348 | | NULL | NULL | 1.01842 | 1.34750 |
| 2/14/2015 | 7 | 4.7 | R | L | Y | | 2.135 | | 0.89 | R | L | Y | | 2.343 | | 1.7 | NULL | 1.13508 | 1.34333 |
| 2/21/2015 | 8 | | | | Y | 2015-5 | NULL | | | | | Y | 2015-5 | NULL | | NULL | NULL | NULL | NULL |
| 2/28/2015 | 9 | 2 | R | L | Y | | 2.066 | | 0.77 | R | L | Y | 2015-6 | 2.272 | | NULL | NULL | 1.06555 | 1.27182 |
| 3/7/2015 | 10 | 2 | R | L | Y | | 2.066 | | 1.6 | R | L | Y | | 2.263 | | NULL | NULL | 1.06555 | 1.26273 |
| 3/14/2015 | 11 | 2 | R | L | Y | | 1.911 | | 4.2 | R | L | Y | | 2.263 | | NULL | 1.2 | 0.91100 | 1.26273 |
| 3/21/2015 | 12 | 2 | R | L | Y | | 1.911 | | 1.6 | R | L | Y | | 2.324 | | NULL | NULL | 0.91100 | 1.32364 |
| 3/28/2015 | 13 | 2 | R | L | Y | 2015-6 | 2.000 | | 1.9 | R | L | Y | | 2.151 | | NULL | NULL | 1.00000 | 1.15091 |
| 4/4/2015 | 14 | 0.34 | R | L | Y | | 1.170 | | 0.61 | R | L | Y | | 2.015 | | NULL | NULL | 0.17000 | 1.01545 |
| 4/11/2015 | 15 | 1.3 | R | L | Y | | 1.213 | | 2.6 | R | L | Y | | 1.970 | | NULL | NULL | 0.21333 | 0.97000 |
| 4/18/2015 | 16 | 0.58 | R | L | Y | | 1.055 | | 0.92 | R | L | Y | | 1.835 | | NULL | NULL | 0.05500 | 0.83545 |
| 4/25/2015 | 17 | 0.43 | R | L | Y | | 0.930 | | 1.4 | R | L | Y | | 1.745 | | NULL | NULL | NULL | 0.74455 |
| 5/2/2015 | 18 | 0.14 | R | L | Y | | 0.798 | | 3.6 | R | L | Y | | 1.826 | | NULL | 0.6 | NULL | 0.82636 |
| 5/9/2015 | 19 | 0.93 | R | L | Y | | 0.817 | | 2.7 | R | L | Y | | 1.991 | | NULL | NULL | NULL | 0.99091 |
| 5/16/2015 | 20 | 0.46 | R | L | Y | | 0.773 | | 2.4 | R | L | Y | | 2.025 | | NULL | NULL | NULL | 1.02500 |
| 5/23/2015 | 21 | 0.2 | R | PD | Y | | 0.709 | | 0.87 | R | PD | Y | | 2.033 | | NULL | NULL | NULL | 1.03333 |
| 5/30/2015 | 22 | 0.49 | R | PD | Y | | 0.687 | | 2.2 | R | PD | Y | | 2.083 | | NULL | NULL | NULL | 1.08333 |
| 6/6/2015 | 23 | 2.3 | R | PD | Y | | 0.834 | | 4 | R | PD | Y | | 2.067 | | NULL | 1 | NULL | 1.06667 |
| 6/13/2015 | 24 | 1.5 | R | PD | Y | | 0.889 | | 2 | R | PD | Y | | 2.100 | | NULL | NULL | NULL | 1.10000 |
| 6/20/2015 | 25 | 1.4 | R | PD | Y | | 0.839 | | 1.8 | R | PD | Y | | 2.092 | | NULL | NULL | NULL | 1.09167 |
| 6/27/2015 | 26 | 1.1 | R | PD | Y | 2015-7 | 0.903 | | 2.1 | R | PD | Y | | 2.216 | | NULL | NULL | NULL | 1.21583 |
| 7/4/2015 | 27 | 0.22 | R | PD | Y | 2015-8 | 0.813 | | 0.76 | R | PD | Y | | 2.063 | | NULL | NULL | NULL | 1.06250 |
| 7/11/2015 | 28 | 1.9 | R | PD | Y | 2015-9 | 0.923 | | 1.3 | R | PD | Y | 2015-9 | 2.094 | | NULL | NULL | NULL | 1.09417 |
| 7/18/2015 | 29 | 1.5 | R | PD | Y | | 1.012 | | 2.6 | R | PD | Y | | 2.194 | | NULL | NULL | 0.01167 | 1.19417 |
| 7/25/2015 | 30 | 0.7 | R | PD | Y | | 1.058 | | 1.6 | R | PD | Y | 2015-10 | 2.028 | | NULL | NULL | 0.05833 | 1.02750 |
| 8/1/2015 | 31 | 4.7 | R | PD | Y | | 1.373 | | 1.7 | R | PD | Y | | 1.944 | | 1.7 | NULL | 0.37250 | 0.94417 |
| 8/8/2015 | 32 | 0.61 | R | PD | Y | 2015-11 | 1.385 | | 2.2 | R | PD | Y | 2015-11 | 1.928 | | NULL | NULL | 0.38500 | 0.92750 |
| 8/15/2015 | 33 | 0.32 | R | PD | Y | | 1.395 | | 3.1 | R | PD | Y | | 2.113 | | NULL | 0.1 | 0.39500 | 1.11333 |
| 8/22/2015 | 34 | 0.35 | R | PD | Y | | 1.383 | | 1.4 | R | PD | Y | | 2.047 | | NULL | NULL | 0.38333 | 1.04667 |
| 8/29/2015 | 35 | 2.8 | R | PD | Y | | 1.425 | | 0.72 | R | PD | Y | | 1.773 | | NULL | NULL | 0.42500 | 0.77333 |
| 9/5/2015 | 36 | 3.4 | R | PD | Y | | 1.583 | | 2.3 | R | PD | Y | 2015-12 | 1.798 | | 0.4 | NULL | 0.58333 | 0.79833 |

2015 Analytical Testing Results
Weekly Glass and Aluminum Samples

| Week ending | Week | Aluminum | Entered | Verified | Shipped for Reuse | Notes | Rolling Average | | Glass | Entered | Verified | Shipped for Reuse | Notes | Rolling Average | | Aluminum Weekly Exceedence | Glass Weekly Exceedence | Aluminum Rolling Average Exceedence | Glass Rolling Average Exceedence |
|-------------|------|----------|---------|----------|-------------------|---------|-----------------|--|-------|---------|----------|-------------------|---------|-----------------|--|----------------------------|-------------------------|-------------------------------------|----------------------------------|
| 9/12/2015 | 37 | 2.7 | R | PD | Y | 2015-13 | 1.692 | | 1.1 | R | PD | Y | | 1.740 | | NULL | NULL | 0.69167 | 0.74000 |
| 9/19/2015 | 38 | 0.35 | R | PD | Y | | 1.629 | | 1.8 | R | PD | Y | | 1.715 | | NULL | NULL | 0.62917 | 0.71500 |
| 9/26/2015 | 39 | 4.8 | R | PD | Y | | 2.011 | | 0.92 | R | PD | Y | 2015-14 | 1.728 | | 1.8 | NULL | 1.01083 | 0.72833 |
| 10/3/2015 | 40 | 0.62 | R | PD | Y | | 1.904 | | 2.1 | R | PD | Y | | 1.795 | | NULL | NULL | 0.90417 | 0.79500 |
| 10/10/2015 | 41 | 1.2 | PD | R | Y | | 1.879 | | 1.2 | PD | R | Y | | 1.678 | | NULL | NULL | 0.87917 | 0.67833 |
| 10/17/2015 | 42 | 1.6 | R | PD | Y | | 1.954 | | 4.2 | R | PD | Y | 2015-15 | 1.895 | | NULL | 1.2 | 0.95417 | 0.89500 |
| 10/24/2015 | 43 | 0.64 | R | PD | Y | | 1.616 | | 0.58 | R | PD | Y | | 1.802 | | NULL | NULL | 0.61583 | 0.80167 |
| 10/31/2015 | 44 | 1.8 | R | PD | Y | 2015-16 | 1.715 | | 4.5 | R | PD | Y | | 1.993 | | NULL | 1.5 | 0.71500 | 0.99333 |
| 11/7/2015 | 45 | 4.5 | R | PD | Y | 2015-17 | 2.063 | | 1.5 | R | PD | Y | | 1.860 | | 1.5 | NULL | 1.06333 | 0.86000 |
| 11/14/2015 | 46 | 0.19 | R | PD | Y | 2015-18 | 2.050 | | 1 | R | PD | Y | 2015-18 | 1.827 | | NULL | NULL | 1.05000 | 0.82667 |
| 11/21/2015 | 47 | 0.3 | R | PD | Y | 2015-19 | 1.842 | | 1.8 | R | PD | Y | | 1.917 | | NULL | NULL | 0.84167 | 0.91667 |
| 11/28/2015 | 48 | 0.67 | R | PD | Y | | 1.614 | | 0.2 | R | PD | Y | | 1.742 | | NULL | NULL | 0.61417 | 0.74167 |
| 12/5/2015 | 49 | 1.2 | R | PD | Y | | 1.489 | | 0.49 | R | PD | Y | | 1.691 | | NULL | NULL | 0.48917 | 0.69083 |
| 12/12/2015 | 50 | 0.47 | R | PD | Y | | 1.499 | | 0.83 | R | PD | Y | | 1.610 | | NULL | NULL | 0.49917 | 0.61000 |
| 12/19/2015 | 51 | 3.4 | R | PD | Y | | 1.383 | | 0.56 | R | PD | Y | | 1.580 | | 0.4 | NULL | 0.38250 | 0.58000 |
| 12/26/2015 | 52 | 17 | R | PD | N | 2015-20 | 2.748 | | 0.9 | R | PD | Y | | 1.480 | | NONE | NULL | NONE | 0.48000 |
| | | | | | | | | | | | | | | | | 1.2500 | 0.8125 | 0.7186 | 0.9827 |
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POWDER

Recovery Rate Log

2015

Average wt. of Powder drum = 600

| | # of Drums | Sample ID | Mercury Total Before Processing | Mercury Total after Processing | Before, Wt. of Hg in mg | After, wt. of Hg in mg | Percent Recovery |
|------|------------|-------------|------------------------------------|-----------------------------------|----------------------------|---------------------------|---------------------|
| JAN | 16 | 490-70170-1 | 630 | | 6.048 | | |
| | | 490-70170-2 | | 7.9 | | 0.07584 | |
| FEB | 6 | 490-72039-1 | 390 | | 1.404 | | |
| | | 490-72039-2 | | 14 | | 0.0504 | |
| MAR | 0 | 490-74475-1 | 480 | | 0 | | |
| | | 490-74475-2 | | 15.00 | | 0 | |
| APR | 0 | | | | 0 | | |
| | | | | | | 0 | |
| MAY | 0 | | | | 0 | | |
| | | | | | | 0 | |
| JUN | 16 | 490-81258-1 | 25 | | 0.24 | | 97% |
| | | 490-81258-2 | | 4.8 | | 0.04608 | |
| JUL | 0 | | | | 0 | | |
| | | | | | | 0 | |
| AUG | 0 | | | | 0 | | |
| | | | | | | 0 | |
| SEPT | 4 | 490-87949-1 | 140 | | 0.336 | | |
| | | 490-87949-2 | | 4.6 | | 0.01104 | |
| OCT | 0 | | | | 0 | | |
| | | | | | | 0 | |
| NOV | 5 | 490-91160-1 | 230 | | 0.69 | | |
| | | 490-91160-2 | | 12.00 | | 0.036 | |
| DEC | 3 | 490-93027-1 | 180 | | 0.324 | | 94% |
| | | 490-93027-2 | | 16 | | 0.0288 | |

Notes:

ARC TUBES

Recovery Rate Log

2015

Average weight of arc tube drum = 550

| | # of Drums | Sample ID | Mercury Total Before Processing | Mercury Total after Processing | Before, wt of Hg in mg | After, wt, of Hg in mg | Percent Recovery |
|------|------------|-------------|------------------------------------|-----------------------------------|---------------------------|---------------------------|---------------------|
| JAN | 32 | 490-70168-1 | 9.4 | | 0.16544 | | |
| | | 490-70168-2 | | 0.029 | | 0.0005104 | |
| FEB | 13 | 490-72042-1 | 12 | | 0.0858 | | |
| | | 490-72042-2 | | 0.64 | | 0.004576 | |
| MAR | 21 | 490-74478-1 | 22 | | 0.2541 | | |
| | | 490-74478-2 | | 0.03 | | 0.0003465 | |
| APR | 0 | | | | 0 | | |
| | | | | | | 0 | |
| MAY | 0 | | | | 0 | | |
| | | | | | | 0 | |
| JUN | 0 | | | | 0 | | 98% |
| | | | | | | 0 | |
| JUL | 36 | 490-82487-1 | 5.2 | | 0.10296 | | |
| | | 490-82487-2 | | 0.19 | | 0.003762 | |
| AUG | 30 | 490-85248-1 | 3.4 | | 0.0561 | | |
| | | 490-85248-2 | | 0.03 | | 0.000495 | |
| SEPT | 21 | 490-87952-1 | 200 | | 2.31 | | |
| | | 490-87952-2 | | 17 | | 0.19635 | |
| OCT | 30 | 490-88942-1 | 72 | | 1.188 | | |
| | | 490-88942-2 | | 2 | | 0.033 | |
| NOV | 17 | 490-91157-1 | 61 | | 0.57035 | | |
| | | 490-91157-2 | | 1.80 | | 0.01683 | |
| DEC | 30 | 490-93026-1 | 4.7 | | 0.07755 | | 94% |
| | | 490-93026-2 | | 0.35 | | 0.005775 | |

Notes:

Ferrous Metals

Recovery Rate Log

2015

Average weight of arc tube drum = 650

| | # of Drums | Sample ID | Mercury Total Before Processing | Mercury Total after Processing | Before, wt of Hg in mg | After, wt, of Hg in mg | Percent Recovery |
|------|------------|-------------|---------------------------------|--------------------------------|------------------------|------------------------|------------------|
| JAN | 3 | | 9.4 | | 0.01833 | | |
| | | | | 0.029 | | 0.00005655 | |
| FEB | 3 | | 12 | | 0.0234 | | |
| | | | | 0.64 | | 0.001248 | |
| MAR | 3 | | 22 | | 0.0429 | | |
| | | | | 0.03 | | 0.0000585 | |
| APR | 0 | | | | 0 | | |
| | | | | | | 0 | |
| MAY | 0 | | | | 0 | | |
| | | | | | | 0 | |
| JUN | 0 | | | | 0 | | |
| | | | | | | 0 | 98% |
| JUL | 6 | | 5.2 | | 0.02028 | | |
| | | | | 0.19 | | 0.000741 | |
| AUG | 0 | | | | 0 | | |
| | | | | | | 0 | |
| SEPT | 0 | | | | 0 | | |
| | | | | | | 0 | |
| OCT | 3 | 490-88975-1 | 2 | | 0.0039 | | |
| | | 490-88975-2 | | 0.21 | | 0.0004095 | |
| NOV | 0 | | | | 0 | | |
| | | | | | | 0 | |
| DEC | 0 | | | | 0 | | |
| | | | | | | 0 | 94% |

Notes:

| | Material Processed | Weight of material (or container count for amalgam kits) | Mercury Total Before Processing (lb) | Mercury Total after Processing (lb) | Percent Recovery | Wt Recovered in mg |
|-----------|--------------------|--|--------------------------------------|-------------------------------------|------------------|--------------------|
| January | MCMA | 18 | 2.25 | 0.000004194 | 100.000% | 1021498.096 |
| | Amalgam Kit | 2 | 1.5 | 0.0000 | 99.998% | 680985.8012 |
| | Clean up Articles | 0 | 0 | 0 | 0.000% | 0 |
| | Elemental | 0 | 0 | 0 | 0.000% | 0 |
| | Batteries | 0 | 0 | 0 | 0.000% | 0 |
| February | MCMA | 29 | 3.625 | 0.000006757 | 100.000% | 1645746.932 |
| | Amalgam Kit | 0 | 0 | 0.00 | 0.000% | 0 |
| | Clean up Articles | 0 | 0 | 0 | 0.000% | 0 |
| | Elemental | 0 | 0 | 0 | 0.000% | 0 |
| | Batteries | 0 | 0 | 0 | 0.000% | 0 |
| March | MCMA | 311 | 38.875 | 0.000072463 | 100.000% | 17649217.1 |
| | Amalgam Kit | 0 | 0 | 0.00 | 0.000% | 0 |
| | Clean up Articles | 0 | 0 | 0 | 0.000% | 0 |
| | Elemental | 0 | 0 | 0 | 0.000% | 0 |
| | Batteries | 0 | 0 | 0 | 0.000% | 0 |
| April | MCMA | 28 | 3.5 | 0.000006524 | 100.000% | 1588997.038 |
| | Amalgam Kit | 0 | 0 | 0.00 | 0.000% | 0 |
| | Clean up Articles | 0 | 0 | 0 | 0.000% | 0 |
| | Elemental | 0 | 0 | 0 | 0.000% | 0 |
| | Batteries | 0 | 0 | 0 | 0.000% | 0 |
| May | MCMA | 547 | 68.375 | 0.000127451 | 100.000% | 31042192.14 |
| | Amalgam Kit | 0 | 0 | 0.00 | 0.000% | 0 |
| | Clean up Articles | 0 | 0 | 0 | 0.000% | 0 |
| | Elemental | 0 | 0 | 0 | 0.000% | 0 |
| | Batteries | 0 | 0 | 0 | 0.000% | 0 |
| June | MCMA | 51 | 6.375 | 0.000011883 | 100.000% | 2894244.605 |
| | Amalgam Kit | 0 | 0 | 0.00 | 0.000% | 0 |
| | Clean up Articles | 0 | 0 | 0 | 0.000% | 0 |
| | Elemental | 0 | 0 | 0 | 0.000% | 0 |
| | Batteries | 0 | 0 | 0 | 0.000% | 0 |
| July | MCMA | 38 | 4.75 | 0.000135343 | 99.997% | 2156438.554 |
| | Amalgam Kit | 3 | 2.25 | 0.00 | 99.998% | 1021477.799 |
| | Clean up Articles | 0 | 0 | 0 | 0.000% | 0 |
| | Elemental | 0 | 0 | 0 | 0.000% | 0 |
| | Batteries | 0 | 0 | 0 | 0.000% | 0 |
| August | MCMA | 53.7 | 6.7125 | 0.000191262 | 99.997% | 3047388.167 |
| | Amalgam Kit | 0 | 0 | 0.00 | 0.000% | 0 |
| | Clean up Articles | 0 | 0 | 0 | 0.000% | 0 |
| | Elemental | 0 | 0 | 0 | 0.000% | 0 |
| | Batteries | 0 | 0 | 0 | 0.000% | 0 |
| September | MCMA | 175 | 21.875 | 0.000623292 | 99.997% | 9930967.026 |
| | Amalgam Kit | 1 | 0.75 | 0.00 | 99.998% | 340492.5998 |
| | Clean up Articles | 0 | 0 | 0 | 0.000% | 0 |
| | Elemental | 0 | 0 | 0 | 0.000% | 0 |
| | Batteries | 113 | 19.775 | 0.000218843 | 99.999% | 8977750.645 |
| October | MCMA | 81 | 10.125 | 0.000288495 | 99.997% | 4596619.023 |
| | Amalgam Kit | 0 | 0 | 0.00 | 0.000% | 0 |
| | Clean up Articles | 0 | 0 | 0 | 0.000% | 0 |
| | Elemental | 0 | 0 | 0 | 0.000% | 0 |
| | Batteries | 0 | 0 | 0 | 0.000% | 0 |
| November | MCMA | 206.2 | 25.775 | 0.000734416 | 99.997% | 11701516.58 |
| | Amalgam Kit | 6 | 4.5 | 0.00 | 99.998% | 2042955.599 |
| | Clean up Articles | 0 | 0 | 0 | 0.000% | 0 |
| | Elemental | 0 | 0 | 0 | 0.000% | 0 |
| | Batteries | 0 | 0 | 0 | 0.000% | 0 |
| December | MCMA | 84 | 10.5 | 0.00029918 | 99.997% | 4766864.172 |
| | Amalgam Kit | 0 | 0 | 0.00 | 0.000% | 0 |
| | Clean up Articles | 10 | 0.25 | 2.71667E-06 | 99.999% | 113498.7666 |
| | Elemental | 7 | 6.65 | 0.00000245 | 100.000% | 3019098.888 |
| | Batteries | 2 | 0.35 | 3.87333E-06 | 99.999% | 158898.2415 |

Before

MCMA - weight is assumed to be 75% packaging and 50% of net weight of contents is mercury
 Amalgam Kits - weight is assumed to be 0.75 lb per kit. Kits limited to one pound of mercury per kit.
 Clean up articles - weight is assumed to 50% packaging and 5% of net weight being mercury
 Elemental - weight is assumed to equal 95% of gross weight to allow for packaging

After

MCMA - final concentration is assumed to be equal to 1/2 year average for arc tubes as MCMA is primarily mercury in uncoated glass
 Amalgam kits - final concentration is assumed to be equal to 1/2 year average for powder final concentration due to effects of amalgamation
 Clean up articles - final concentration is assumed to be equal to 1/2 year average for powder final concentration based on mixture of contents
 Elemental - final concentration is assumed to be equal to 1/2 year average for arc tubes for empty packages.

Overall Recovery Rate

| | Weight of mercury before, in mg | | | | Weight of mercury after, in mg | | | | MCMA and other | Recovery Rate |
|-----------------|---------------------------------|-----------|---------------|----------------|--------------------------------|-----------|---------------|--|----------------|---------------|
| | Powder | Arc Tubes | Ferrous Metal | MCMA and other | Powder | Arc Tubes | Ferrous Metal | | | |
| January | 6.048 | 0.165 | 0.018 | 1702500 | 0.076 | 0.001 | 0.000 | | 16.10 | 100% |
| February | 1.404 | 0.086 | 0.023 | 1645750 | 0.050 | 0.005 | 0.001 | | 3.07 | 100% |
| March | 0.000 | 0.254 | 0.043 | 17649250 | 0.000 | 0.000 | 0.000 | | 32.90 | 100% |
| April | 0.000 | 0.000 | 0.000 | 1589000 | 0.000 | 0.000 | 0.000 | | 2.96 | 100% |
| May | 0.000 | 0.000 | 0.000 | 31042250 | 0.000 | 0.000 | 0.000 | | 57.86 | 100% |
| June | 0.240 | 0.000 | 0.000 | 2894250 | 0.046 | 0.000 | 0.000 | | 5.39 | 100% |
| July | 0.000 | 0.103 | 0.020 | 3178000 | 0.000 | 0.004 | 0.001 | | 83.65 | 100% |
| August | 0.000 | 0.056 | 0.000 | 3047475 | 0.000 | 0.000 | 0.000 | | 86.83 | 100% |
| September | 0.336 | 2.310 | 0.000 | 19249600 | 0.011 | 0.196 | 0.000 | | 389.73 | 100% |
| October | 0.000 | 1.188 | 0.004 | 4596750 | 0.000 | 0.033 | 0.000 | | 130.98 | 100% |
| November | 0.690 | 0.570 | 0.000 | 13744850 | 0.036 | 0.017 | 0.000 | | 377.83 | 100% |
| December | 0.324 | 0.078 | 0.000 | 8058500 | 0.029 | 0.006 | 0.000 | | 139.93 | 100% |
| Jan.-June Total | 7.692 | 0.505 | 0.085 | 56523000 | 0.172 | 0.005 | 0.001 | | 118.29 | 100% |
| July-Dec. Total | 1.350 | 4.305 | 0.024 | 51875175 | 0.076 | 0.256 | 0.001 | | 1208.94 | 100% |

Appendix D-8-II

*Quality Assurance Standard Operating Procedures for Sampling at Facilities
Permitted Under Chapter 62-737, Florida Administrative Code,
November 14, 1997 Revision (Reformatted April 15, 2010)*

| | | |
|--|-----------------|-------------------------|
| U:\ESTLHR1\Secure\Shared\Tallahassee Permit Folder\2016 Renewal\Attachment D-8 Quality Control Plan March 2016.doc | Appendix D-8-II | Revised: March 22, 2016 |
|--|-----------------|-------------------------|



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

QUALITY ASSURANCE STANDARD OPERATING PROCEDURES FOR SAMPLING AT FACILITIES PERMITTED UNDER CHAPTER 62-737, FLORIDA ADMINISTRATIVE CODE

**DIVISION OF WASTE MANAGEMENT
BUREAU OF SOLID AND HAZARDOUS WASTE
HAZARDOUS WASTE MANAGEMENT SECTION
NOVEMBER 14, 1997 REVISION
(REFORMATTED APRIL 15, 2010)**

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I. APPLICABILITY AND INTENT

The Department of Environmental Protection has compiled the following document, entitled “Quality Assurance Standard Operating Procedures for Sampling at Facilities Permitted Under Chapter 62-737, F.A.C.” (referred to as “Mercury SOPs” hereinafter) in order to establish standard operating procedures (SOPs) for sampling which address the quality assurance (QA) requirements for processes (operations) and closure of facilities recycling or storing mercury containing lamps or devices identified in Chapter 62-737, Florida Administrative Code (F.A.C.).

Sampling related to process (operations) are only one element of the quality control (QC) plan required in 62-737.800(4)(f), F.A.C. Facilities applying for a permit under Rules 62-737.800 must submit additional elements of a QC plan, such as checklists, logs or other elements which describe how the facility will monitor or evaluate the operational conditions or conformance to Chapter 62-737, F.A.C. These additional elements are specified in 62-737.900(2), F.A.C., “Mercury-Containing Lamp and Device Mercury Recovery and Mercury Reclamation Facility Permit Application Form and Instructions” and briefly summarized in the Appendix section of these Mercury SOPs for your convenience. These additional elements do not involve sampling, are facility specific and shall not be reviewed and approved by the Department’s Quality Assurance Section.

All facilities applying for a permit under Chapter 62-737, F.A.C., must submit a closure plan. Sampling during closure must follow the SOPs specified in these Mercury SOPs.

II. INTRODUCTION

Facilities identified as **Mercury Recovery Facilities** in 62-737.200(13), F.A.C. are required to demonstrate to the Department that their recovery process produces recovered separated glass and metal end caps that contain less than the levels of mercury specified in 62-737.840(3), F.A.C., if these items are to be shipped off site for further recycling or disposal or treatment other than mercury reclamation. Facilities identified as **Mercury Reclamation Facilities** in 62-737.200(12), F.A.C., are required by 62-737.860(4), F.A.C., to demonstrate to the Department that their reclamation process recovers 99% of the mercury introduced into the reclamation process. These two types of facilities must submit a QC plan which meets the requirements of 62-160.300(6), F.A.C., to ensure the integrity of their process (operation).

In accordance with 62-160.300(6), F.A.C., all sampling and analysis for facility process quality control and facility closure shall be conducted in a manner consistent with the Quality Assurance Category 2C requirements. All parties conducting sampling and analysis as required in Chapter 62-737, F.A.C., shall follow these **Mercury SOPs (Quality Assurance Standard Operating Procedures for Sampling at Facilities Permitted Under Chapter 62-737, F.A.C.)** or equivalent procedures as specified in 62-160.300(6), F.A.C. Subsequent analyses of collected samples must be performed by a

laboratory which has a current Department Approved Comprehensive Quality Assurance Plan for the laboratory analysis being performed

The rest of these Mercury SOPs are divided into two sections: Facility Process (Operational) Sampling and Closure Sampling. An Appendix in Section V contains additional Quality Control requirements and explanatory information.

III.FACILITY PROCESS (OPERATIONAL) SAMPLING

A. Chain of Custody (COC) Record

1. The possession or custody of samples must be traceable from the time they are obtained until the time the sample is received at the laboratory for analysis.
2. Sampler must label the sample container with a sample tag (usually an adhesive label). The label must be filled out using waterproof ink at the time of sample collection prior to placing it with other samples and must contain the following information:
 - a. Name of personnel collecting sample*
 - b. Unique sample identification number or code for each sample source and container
 - c. Time and date of the sample collection*
 - d. Location from which sample was taken and process name if facility has more than one process
 - e. Weight or other information identifying quantity of subsample (e.g., one level scoop)*
 - f. Chemical analysis which is to be performed on the sample

*Note: When daily subsamples are being collected in a single sample container in order to produce a “weekly sample composite of process operations” [62-737.840(3)(a)2, F.A.C.], the name of sampler, collection date/military time and quantity of each subsample must be recorded in a permanent daily sampling log.

3. Sampler must complete a COC record concurrent with the sampling event. Two copies of the chain of custody form must accompany the sample to the laboratory. Once the laboratory receives the samples and signs the COC, a copy must be sent to the sample collection organization. All parties accepting the custody of the samples, including the sampler, coordinator, transporter, laboratory custodian, etc. must provide signatures with date and time of sample receipt on the COC form. The COC record or form shall specifically contain the following information:
 - a. Unique sample identification number or code for each sample source and container
 - b. Sampling site name and address
 - c. Name of personnel collecting sample
 - d. Time and date of the sample collection when final weekly sample is filled

- e. Clear indication of number of sample containers
- f. Chemical analysis which is to be performed on the sample
- g. Appropriate places for signatures of sampler and all subsequent persons* accepting custody and identification of common carriers
- h. Time of day and calendar date of all custody transfers
- I. Comments or remarks section, e.g., unusual ambient conditions

* Note: If samples are transported via integrated intermodal air/ground transporters of small packages, e.g., Federal Express, UPS, etc., the driver is not required to sign the COC. However, the parcel tracking number must be recorded on the COC by the sending party.

- 4. Copies of the COC records must be maintained for a period of at least 3 years in a loose-leaf binder or bound notebook.

B. Sampling Equipment

Samples shall be obtained using a plastic or stainless steel scoop or shovel. A spatula or similar device shall be used for raking off excess sample. Stainless steel is recommended.

C. Sample Containers

Sample containers may be glass or polyethylene with screw top lids. Polyethylene is recommended.

D. Sampling Equipment and Sample Container Decontamination (Cleaning)

- 1. Disassemble equipment if possible
- 2. Wash thoroughly with laboratory grade detergent (Alconox, Liquinox, or equivalent) and hot tap water using a brush to remove any particulate matter or surface film.
- 3. Rinse thoroughly with hot tap water.
- 4. Rinse thoroughly with 10% nitric acid (HNO₃) solution.* Note: 10% nitric acid solution is made by adding one part concentrated nitric acid to five parts deionized water.
- 5. Rinse thoroughly with deionized water and allow to air dry.
- 6. Wrap completely with plastic wrap to prevent contamination during storage or prior to use.*

*Note: Step #4 is not necessary for ferrous, e.g., stainless steel, sampling equipment. Step # 6 not necessary for screw top sample containers.

E. Sampling Methodology

1. Mercury Recovery Facilities [See Rule 62-737.840, F.A.C.]

Note: Facilities running more than one process line shall conduct required process (operational) sampling on each process line.

a. Daily samples

- (1) Samples may be collected in individual containers and composited later into the weekly composite sample or as equal daily aliquots into a single container which will then become the weekly composite sample. Samples may be collected in containers supplied by the facility or by the laboratory.
- (2) Minimum sample size for the weekly composite sample is 150 grams. A minimum sample size of 50 grams for daily samples is recommended in order to insure that the required 150 gram weekly composite sample is collected during weeks when equipment may not be operational every day. Smaller daily samples may be used as long as the required 150 gram weekly composite sample can be obtained from equal size daily samples. Note: On days when equipment is not operational, no daily sample shall be taken. Daily samples shall not be “doubled up”, i.e., two daily samples collected on the same day, to make up for daily samples when equipment is not operational. The weekly composite shall consist of equal aliquots of daily samples collected on days when equipment is operational. For example, if the equipment is operational for only three days during a particular week, that week’s weekly composite sample shall consist of equal aliquots of the daily samples collected during the three days when the equipment was operational.
- (3) It is recommended that daily samples be collected during maximum daily throughput and when equipment has been operating for at least 30 minutes. However, daily samples shall be collected if the equipment is operated for any period of time during that day. If the equipment is operational for 2 days or less in a particular week, no weekly composite sample shall be required for that week. However, the daily samples for those one or two days shall still be collected and used as part of the next weekly composite sample.
- (4) Representative Sampling
 - (a) Metal endcap assembly processed material: Daily sample material shall be collected using one of the following three procedures.
 - [1] Procedure 1: Representative sampling of endcap assembly processed material as the material exits the process
 - [a] Endcap assembly processed material as they exit the process may not be ground, milled, sized or sieve-separated in any way prior to daily sample collection unless such grinding, milling, sizing or sieve-separation is a part of the facility’s material processing operational procedures.

- [b] Lab aliquots must include portions of all components of the end cap assembly as contained in the 150 gram weekly composite sample required in the SOPs. For example, if the weekly 150 gram composite sample contains at least one whole endcap which includes aluminum outer cap material, pins and filaments, then the lab aliquot must be taken from a whole endcap which includes aluminum outer cap material, pins and filaments and must contain portions of the aluminum outer cap material, pins and filaments.
 - [c] Material shall be collected between the point at which the material exits the equipment and the bin or container which accumulates the material.
- [2] Procedure 2. Representative sampling of endcap assembly processed material after the material exits the process.
- [a] Grind to particle size which passes through a #4 sieve using grinder or mill. This particle size makes the individual parts of the endcap assembly, i.e., aluminum outer cap material, pins and filaments, indistinguishable from each other. Grinding may be performed by either the facility owner/operator or the testing laboratory.
 - [b] The lab aliquot shall be selected from the ground particles.
- [3] Procedure 3. An alternate representative sampling procedure for sampling endcap assembly processed material requested by a mercury recovery facility and approved by the DEP prior to implementation.
- [a] At a minimum, this procedure must include representative sampling of endcap assembly processed material. For example, if the weekly 150 gram composite sample contains at least one whole endcap which includes aluminum outer cap material, pins and filaments, then the lab aliquot must be taken from a whole endcap which includes aluminum outer cap material, pins and filaments and must contain portions of the aluminum outer cap material, pins and filaments.
 - [b] The procedure must comply with the SOPs unless the DEP approves equivalent alternate procedures not specified in the SOPs.
- (b) Other process material, e.g., glass. Material shall be collected between the point at which the material exits the equipment and the bin or container which accumulates the material.
- (5) Sampling equipment and containers shall be decontaminated according to specified protocols in Section III.D. Permanent (non-disposable) sampling equipment shall be decontaminated at least once per week with daily decontamination recommended.
 - (6) Overfill sampling equipment, e.g., scoop, with material collected. Rake off the excess material with a spatula or knife. Empty into precleaned sample container.
 - (7) Repeat Step 5 until the required quantity is obtained. Record subsample information in permanent daily sampling log (see Chain of Custody Record, III.A.2., Note) if daily samples are being collected in a single sample container as part of weekly composite sample.

b. Weekly composite samples

- (1) Place all previous daily subsamples (whether collected in separate containers or as equal daily aliquots collected in a single container) in a stainless steel, glass or aluminum (or plastic, unless sample is too hot) tray. The sample containers shall be cleaned according to protocols listed in the laboratory's current Department Approved Comprehensive Quality Assurance Plan.
- (2) The sample in the tray shall be homogenized thoroughly by alternately mixing, dividing, and remixing the sample.
- (3) After thorough mixing, transfer sufficient sample to the appropriate sample container(s) leaving minimal headspace.
- (4) Clean the outside and rim of the sample container to remove excess material.
- (5) Affix sample label and complete the COC forms.
- (6) Holding time shall not exceed 28 days.

2. Mercury Reclamation Facilities [See Rule 62-737.860, F.A.C.]

Note: Facilities running more than one process line shall conduct required process (operational) sampling on each process line. Facilities processing more than one process feed category, e.g., phosphor powder, inorganic mercury glassware, etc., must conduct process (operational) sampling on each process feed category as per facility permit conditions.

- a. Minimum sample size is 50 grams.
- b. Sampling equipment and containers shall be decontaminated according to specified protocols in Section III.D.
- c. Collect composites of randomly collected samples of material before processing and on the same material once it has been processed. Unprocessed materials should be collected in the same physical and chemical state in which they are fed into the process equipment, e.g., whole lamps or thermostats, broken lamps, mercury-containing phosphor powder, etc. It is recommended that unprocessed materials of homogeneous size and configuration be used for process sampling even though materials of heterogeneous size and configuration may be routinely mixed during normal processing. For example, mercury-containing ampoules should be of similar size, e.g., medium; mercury-containing arc tubes from High Intensity Discharge mercury-containing lamps should be from the same type of lamp, e.g., metal halide, and of similar size, e.g., small. Processed materials should be collected as closely as possible to the point at which the materials exit the equipment and, if possible, before the materials are deposited into the bin or container which accumulates the material. Processed materials shall be collected according to the categories needed to perform the required calculations to demonstrate 99% recovery of the mercury present in unprocessed materials (see Section 62-737.860(4), F.A.C.). For example, if mercury containing glass ampoules removed from thermostats are being processed, separate samples of the processed materials of glass, metal, and mercury shall be collected.

Aliquots to be composited shall be thoroughly mixed following procedures in Section III.E.1.b., “Weekly Composite Samples.”

- d. After thorough mixing (if required), place or transfer the sample to the appropriate sample container(s) leaving minimal headspace. The sample containers shall be cleaned according to protocols listed in the laboratory’s current Department Approved Comprehensive Quality Assurance Plan.
- e. Clean the outside and rim of the sample container to remove excess material.
- f. Affix sample label and complete the chain-of-custody forms.
- g. Holding time shall not exceed 28 days.

IV. FACILITY CLOSURE

A. Notification

The Department District Office Waste Program Administrator must be notified in writing by certified mail that the facility is being closed at least 30 days prior to initiation of any closure activities.

B. Documentation

1. Field Log - A field log must be maintained for all facility closures and made available to the Department upon request. The information must be maintained for a period of at least 3 years in a loose-leaf binder or bound notebook. All entries should be made in the facility or in the field, not back at the office. Entries should be made in waterproof ink and all mistakes should have one line drawn through and initialed. The log should include the following information

a. General Information

- (1) Site name and address and FDEP facility permit number
- (2) Dates and military times of all closure activities
- (3) Names of all personnel on-site and company affiliation
- (4) Ambient conditions, e.g., temperature and humidity inside; weather outside.
- (5) Signature of sampler(s)
- (6) Site sketch indicating location of facility and sampling points

b. Sampling Information

- (1) Date and military time of sample collection
- (2) Specific description of sample location, e.g., process room wall, north edge of paved outdoor storage area, etc.
- (3) Type of sample, e.g., soil to depth of 15 cm, first wash down rinsate, vacuum residuals, etc.
- (4) Unique sample identification number or code for each sample source and container

2. Chain of Custody (COC) Record

- a. The possession or custody of samples must be traceable from the time they are obtained until final disposal of the sample. Sample custody is being followed if:
 - (1) Sample container is secured to prevent tampering or is placed in a designated, secured area, or
 - (2) Sample is in actual physical possession of the sampler.
- b. Sampler must label the sample container with a sample tag (usually an adhesive label). The label must be filled out using waterproof ink at the time of sample collection prior to placing it with other samples and must contain the following information:
 - (1) Unique sample identification number or code for each sample source and container
 - (2) Date and military time of sample collection
 - (3) Chemical analysis which is to be performed on the sample
- c. Sampler must complete a chain of custody record concurrent with the sampling event. Two copies of the chain of custody form must accompany the sample to the laboratory. Once the sample transporter signs out and receiver signs in, one copy must be retained by the laboratory and one retained by the transporter who will deliver it to the party collecting the sample. All parties except a common carrier accepting the custody of the samples, including the sampler, coordinator, transporter, laboratory custodian, etc. must provide signatures with date and time of sample receipt on the chain of custody form. The COC record or form shall specifically contain the following information:
 - (1) Unique sample identification number or code for each sample source and container
 - (2) Sampling site name and address
 - (3) Name of personnel collecting sample
 - (4) Time and date of the sample collection when final weekly sample is filled
 - (5) Clear indication of number of sample containers
 - (6) Chemical analysis which is to be performed on the sample
 - (7) Appropriate places for signatures of sampler and all subsequent persons* accepting custody and identification of common carriers
 - (8) Time of day and calendar date of all custody transfers
 - (9) Comments or remarks section, e.g., unusual ambient conditions

* Note: If samples are transported via integrated intermodal air/ground transporters of small packages, e.g., Federal Express, UPS, etc., the driver is not required to sign the COC. However, the parcel tracking number must be recorded on the COC by the sending party.

C. Sampling Equipment

All liquid residuals, solid residuals and soil sampling equipment (e.g., spoons, scoops, shovels, hand bucket augers, bombs and bailers) shall be constructed of stainless steel or teflon (or plastic, unless sample is too hot) shall be used. Sample mixing trays shall be stainless steel, glass, aluminum (or plastic, unless sample is too hot).

D. Sample Containers

Precleaned glass or polyethylene sample containers with screw tops shall be used. Sample container decontamination will follow the laboratory's current Department Approved Comprehensive Quality Assurance Plan.

E. Sampling Equipment and Sample Container Decontamination (Cleaning)

1. Disassemble equipment if possible
2. Wash thoroughly with reagent grade detergent (Alconox, Liquinox or equivalent) and hot tap water using a brush to remove any particulate matter or surface film.
3. Rinse thoroughly with hot tap water.
4. Rinse thoroughly with 10% nitric acid (HNO_3) solution* Note: 10% nitric acid solution is made by adding one part concentrated nitric acid to five parts deionized water.
5. Rinse thoroughly with deionized water and allow to air dry.
6. Wrap completely with plastic wrap to prevent contamination during storage or prior to use.

*Note: Step #4 is not necessary for ferrous, e.g., stainless steel, sampling equipment.

F. Sampling Methodology

Facility closure involves sampling and analysis of four (4) different types of materials: decontamination solid residuals, decontamination liquid residuals, surface wipes and soils.

1. Decontamination Solid Residuals

- a. General - For the purposes of this subsection, decontamination solid residuals refer to floor and equipment sweepings or vacuum residuals, PPE, wipes, or other solid materials resulting from decontamination of equipment or buildings.
- b. Minimum sample size is 200 grams.
- c. Sampling equipment shall be decontaminated according to specified protocols in Section IV.E

- d. Collect composites of randomly collected samples of residuals. The number of aliquots will vary depending upon the quantity of materials being analyzed and subject to the approval of the DEP project engineer.
- e. Sample collection, e.g., overfill scoop and rake off excess, record subsample information, and mixing procedures shall follow procedures listed in III.E.1. a. "Daily Samples" and III.E.1. b. "Weekly Composite Samples".
- f. After thorough mixing (if required), place or transfer the sample to the appropriate sample container(s) leaving minimal headspace.
- g. Clean the outside and rim of the sample container to remove excess material. Cap sample container.
- h. Affix sample label and complete the chain-of-custody forms.
- i. Holding time shall not exceed 28 days.

2. Decontamination Liquid Residuals

- a. General - For the purposes of this subsection, pits, ponds, and lagoons refer to any basin, pit, or open tank (lined or unlined) which contains or is suspected of containing unknown concentrated liquid, solid, or sludge chemical wastes
- b. Sampling Locations - Sampling locations within pits, ponds, and lagoons shall yield samples which are representative of that section, or of the entire pit, pond, or lagoon being sampled. All phases (floating solids, all liquid phases, and sludge) in the pit, pond, or lagoon shall be sampled.
- c. Safety - Because of the dangers involved with container sampling, the sampling of drums or other containers containing either unknown materials or known hazardous materials shall be considered a hazardous duty assignment. Additional information regarding container sampling is available in the draft EPA *Safety Manual for Hazardous Waste Site Inspections*, US EPA, Draft 1979. Safety procedures for container sampling will be in accordance with the Region IV *Field Health and Safety Manual*, US EPA, Region IV, 1990 Edition (or latest edition).
- d. All equipment shall be decontaminated according to specified protocols in Section IV.E
- e. Holding time shall not exceed 28 days. Water samples shall be preserved with nitric acid (HNO₃). Solid waste and concentrated waste samples have no preservative requirements. Soil samples must be preserved at 4° C.
- f. Sampling Equipment - The following equipment may be used for field use in collecting liquid waste samples from pits, ponds, and lagoons: sampling containers; sampling containers affixed to a piece of conduit pipe, stainless steel scoop affixed to a piece of conduit pipe with a scoop bracket, stainless steel spoon affixed to a conduit pipe, peristaltic pump and tubing arrangement and Bacon-Bomb samplers. For sludge sampling of pits, ponds, and lagoons, stainless steel scoops attached to conduit pipe, stainless steel push tubes and corers are available.

g. Sampling Techniques

(1) Liquid Waste Sampling

- (a) Minimum sample size is 100 ml.
- (b) If the sampling technique utilized requires multiple aliquots, or if the final sample will consist of aliquots from several different locations in the pit, pond, or lagoon, all aliquots should be placed into a large glass sample container or other suitable compositing container, and mixed thoroughly before containerization.
- (c) Phase Separation or Stratification of Container Contents
 - [1] When this condition occurs, or is suspected, care must be taken to insure that the sample collected is representative of the container contents. If only one layer or phase is sampled, this should be noted and taken into account when interpreting analytical results.
 - [2] Determine whether phases are present by using a peristaltic pump.
 - [a] The tubing attached to the pump is strapped to a piece of conduit pipe and slowly lowered to the bottom of the unit to be sampled.
 - [b] The pump discharge (and the intake tubing) is examined to determine if phases are present.
 - [3] If phases are present, collect a sample of all phases.
 - [a] The top liquid phase can be sampled by direct dipping with the sample container, or dipping with the sample container attached to the conduit pipe - either directly or by way of a fishing pole type arrangement, or dipping the sample with a stainless steel scoop attached directly to conduit pipe with a scoop bracket.
 - [b] Alternatively, all liquid phases can be sampled with a peristaltic pump and tubing arrangement with the tubing attached to a conduit pipe and held at the desired depth or with the Bacon-Bomb sampler opened at the desired depth. The Bacon-Bomb sampler can be operated directly from the banks of pits, ponds, and lagoons; from piers; or operated by way of a fishing pole type arrangement using a piece of conduit pipe.
 - [4] If phases are not present, samples may be composited by depth (i.e., collected throughout the entire depth of the container or at several different depths) to provide a representative sample. Samples shall not be composited across containers. Composite samples may be collected using a coliwasa sampler or a glass profile tube.
 - [a] Coliwasa Sampler
 - { 1 } The coliwasa sampler is a single use glass sampler, consisting of an outerglass tube with one end tapered, and a separate inner glass tube with a small bulb on one end.

- {2} Slowly lower the outer tube into the pit, pond, or lagoon tapered end first. This must be done slowly for two reasons. One, the drum may contain solid material which might break the tube and injure the sampler. Second, slowly lowering the tube allows the liquid phases in the pit, pond, or lagoon to stay in equilibrium with the coliwasa sampler, ensuring a representative sample.
- {3} Insert the inner glass tube (bulb end first) into the outer tube. This may be done very slowly after the outer tube is fully inserted into the pit, pond, or lagoon or the inner tube may be inserted prior to immersing the outer tube. In the latter case, the bulb tip of the outer tube must be pulled back several inches from the tapered end of the outer tube.
- {4} After both inner and outer tubes are inserted into the pit, pond, or lagoon to be sampled, press the inner tube bulb end gently against the tapered end of the outer tube, forming a seal.
- {5} Withdraw both tubes from the pit, pond, or lagoon and the ends of the tubes are held over the sample container.
- {6} Place the sample in the sample container. By manipulating the inner tube, the sampler can control the rate of flow of the sampled liquid into the sample container.

[b] Glass Profile Tube Sampler

- {1} Samples can also be collected using a four-foot length of glass tube with a ½-inch or less inside diameter
- {2} Insert the tube into the opening of the pit, pond, or lagoon as far as possible.
- {3} Seal the open end either with the thumb or a rubber stopper to hold the sample in the tube while removing the tube from the container.
- {4} Place the sample in the appropriate container.
- {5} Repeat the procedure until an adequate amount of sample is collected.

[c] Optional Samplers - Other sampling procedures including the use of automatic samplers, pumps, siphons, multiple valves and ports, etc., may be used depending on the specific container involved.

- (2) **Floating Solids** can be sampled directly or with a stainless steel scoop or spoon attached to a piece of conduit pipe, if necessary.

(3) **Sludge Sampling**

- (a) Minimum sample size is 200 grams.
- (b) If the sampling technique involves multiple aliquots, or if the final sample will consist of aliquots from several different locations in the pit, pond, or lagoon, all aliquots should be placed into a Pyrex dish, a large glass sample container or other suitable container and mixed thoroughly before containerization.
- (c) Push tube or scoop may be used to collect the sample.

[1] Stainless Steel Push Tube

- [a] Push the stainless steel push tube into the sludge
 - [b] Empty the tube contents into a Pyrex dish, a large glass sample container or other suitable container. "Emptying" may include shaking to remove sludge or extrusion of thick or gummy sludges with a new wooden dowel. A disadvantage of this technique is the need for multiple insertions of the tube into the sludge to collect sufficient sample volume.
 - [c] Repeat the procedure until an adequate amount of sample is collected.
- [2] Stainless Steel Scoop
- [a] Insert the scoop into the sludge. Attach a scoop to a piece of conduit pipe with a scoop bracket, if necessary. The scoop bracket has a decided advantage in that it allows sampling personnel to adjust the angle between the scoop and the conduit pipe.
 - [b] Empty the scoop contents into a Pyrex dish, a large glass sample container or other suitable container.
 - [c] Repeat the procedure until an adequate amount of sample is collected.

3. Surface wipes

a. Sampling Equipment

- (1) Wipe filter papers (Whatman Quantitative Grade 41 or 42 Filter Papers or equivalent)
- (2) 5% nitric acid (HNO_3)
- (3) Scintillation vials, 20-ml with polypropylene or Teflon cap liners. Metal cap liners should not be used.

b. Sampling Methodology

- (1) If multiple samples are to be taken at the site, prepare a rough sketch of the area(s) or room(s) which are to be wipe sampled.
- (2) Use a new set of clean impervious gloves with each individual sample. This avoids contamination of the filter by the hand and the subsequent possibility for false positives and prevents contact with the substance.
- (3) Moisten the filter with 5% nitric acid (HNO_3).
- (4) Wipe a section of the surface to be sampled using a template with an opening exactly 100 cm^2 . For irregular surfaces, the wiped area should be as close as possible to 100 cm^2 , estimated as accurately as possible and documented.
- (5) Maximum pressure should be applied when wiping.
- (6) To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making concentric squares of decreasing size.
- (7) If the filter dries out during the wiping procedure, discard the filter, reduce area to be wiped by half, document the reduced area size and repeat wiping procedure with a new filter.
- (8) Without allowing the filter to contact any other surface, fold the filter with the exposed side in, then fold it over again. Place the filter in a sample vial, cap the vial, number it, place a corresponding number at the sample location on the sketch. Then complete the sample label and COC record.

- (9) At least one blank filter treated in the same fashion, but without wiping, should be submitted for each sample area.

4. Soils

a. General

- (1) All equipment shall be decontaminated according to specified protocols in Section III.D.
- (2) Sample containers shall be glass or polyethylene with screw top lids. Polyethylene is recommended
- (3) Holding time shall not exceed 28 days. The sample containers shall be cleaned according to protocols listed in the laboratory's current Department Approved Comprehensive Quality Assurance Plan.
- (4) Minimum sample size shall be 200 grams.

b. Sample Handling Protocols after Sample Acquisition

- (1) Breakdown the sampler, e.g., split spoon, if necessary. This should be done with the appropriate tools.
- (2) At this time, any portion of the sample that has been disturbed shall be identified, removed with a stainless steel spatula and discarded.
- (3) Slice the sample using a clean, decontaminated spatula from the center portion of the sampler, e.g., corer, split spoon or bucket auger head and place in a stainless steel, glass or aluminum foil-lined tray.
- (4) The sample in the tray shall be homogenized thoroughly by alternately mixing, dividing, and remixing the sample.
- (5) After thorough mixing, transfer the sample to the appropriate sample container(s) leaving minimal headspace.
- (6) Clean the outside of the sample container to remove excess soil.
- (7) The container rim should also be cleaned of soil and sand particles so that the lid can be sealed.
- (8) Affix sample label, seal and complete the chain-of-custody forms.

(9) Liners

- (a) If properly used, liners may be inserted into the sampler and used as the actual sample container.
- (b) Be aware that EPA Test Methods for Evaluation of Solid Waste, SW-846, has mandated that all solid samples must be transported in containers that have screw tops. This also means that all container and lid requirements are still in effect.
- (c) The ends of the liner must be covered with polyethylene, Teflon or aluminum foil sheeting. The sheeting should be secured by placing an end cap over the sheeting.
- (d) With any sample containerized this way, specific instructions must be sent with the sample so that the laboratory will know how to handle the sample. All non-volatile samples must be homogenized by the laboratory prior to analyses. Also, any disturbed portions of the sample should be discarded prior to mixing.

- c. Composite Soil Sampling - The following is not a complete discussion regarding development of a sample compositing scheme nor all available sampling protocols. When a large site area is to be investigated for contamination, it is sometimes advantageous to composite soil or sediment samples and thus minimize the number of samples to be analyzed.
- (1) Sample aliquots (of identical size) to be composited shall be placed in a mixing tray and thoroughly mixed with a cleaned spoon, or spatula. The sample shall be thoroughly blended by mixing, and dividing into sections. Each section shall then be mixed separately. Recombine all mixed sections and mix thoroughly. Repeat sectioning and mixing process to ensure proper homogenization.
 - (2) The origin and size of each (sub)sample or aliquot that is used to make the composite shall be documented in the field notebook along with the other important sampling details.
 - (a) Although the size of these subsamples is important and should be documented, it is critical that these subsamples be of equivalent size, so that the composite sample is not biased by unequal aliquoting.
 - (b) There is no level of accuracy here; it is dependent upon the size of the aliquots.
 - (c) Aliquoting should be done in a systematic manner.
 - (3) Clean the outside of the sample container to remove excess soil, affix label, seal (if required), and complete the COC record.
- d. Discrete Soil Sampling - Note: When a relatively small site area to be investigated for contamination, discrete sampling is required.
- (1) Soil sampling locations should be selected such that a representative portion of the soils are collected with minimal disturbance with the concurrence of the DEP closure project engineer.
 - (2) Surface soil sampling (ground surface to 6 inches below ground surface)
 - (a) Leaves, grass and surface debris shall be removed from the area to be sampled using a clean stainless steel spoon or shovel.
 - (b) Surface soil samples can then be collected using a precleaned stainless steel scoop or spoon.
 - (3) Shallow subsurface soil sampling (6 inches to 2 feet below ground surface)
 - (a) Shallow subsurface samples may be collected by digging a hole or trench to the required depth with a stainless steel shovel.
 - (b) Some situations may require a trench or pit to be dug with a backhoe. Depending upon the equipment available at the site or the soil type to be penetrated, this option is acceptable. [Please note that any OSHA requirements for in-trench sampling should be followed.] In these situations, the trench is first dug to the appropriate depth and then the sample is exposed by using one precleaned spoon, spatula, or equivalent to clean away the soil that came in contact with the backhoe bucket and a second precleaned spoon to actually collect the sample.
 - (c) Alternatively, shallow subsurface soil samples may be collected with an 2-4 inch steel hand auger which would minimize the soil to be removed in order to

reach the desired depth. Using this method, a sampling depth of up to 2 feet may be obtained.

- [1] A soil sample is obtained by pushing and rotating the auger into the soil until the bucket is filled.
- [2] The sample can be removed (with some difficulty) from the bucket by pushing or scraping with an appropriate pre-cleaned stainless steel tool.
- [3] Addition of a sleeve may allow an undisturbed soil sample to be obtained.
 - [a] The device consists of a standard auger head with a removable non-contaminating sleeve which is inserted into the auger barrel.
 - [b] The soil sample is obtained in the normal manner by pushing and rotating the auger into the soil. In this case it is the sleeve which fills with soil. After auger retrieval, the sleeve, which is readily removed from the auger, is capped.
- [4] If the auger hole is prone to collapse, due to low cohesion in some soils, a temporary rigid PVC casing should be inserted into the hole. The casing prevents hole collapse and minimizes cross-contamination between soil zones as the auger is advanced. Upon sample collection, the temporary casing (if used) must be removed and the hole filled with the excavated soil. [If a confining layer has been breached during sampling, the hole shall be grouted to land surface with Type-1 Portland cement. NOTE: this requirement may be different throughout Florida. Contact the local Water Management District office for local requirements.]

IV. APPENDIX: ADDITIONAL QUALITY CONTROL REQUIREMENTS

This section contains explanatory information about facility processes and other quality control requirements for mercury recovery and mercury reclamation facilities permitted under Chapter 62-737, F.A.C. Some of this information does not pertain directly to these Quality Assurance Standard Operating Procedures for Sampling. The intent is to provide an overview and explanation of additional quality control requirements for these facilities.

A. Mercury Recovery Facilities

1. Processed Material Testing

Mercury Recovery Facilities are required in 62-737.840(3)(c), F.A.C., to test the processed lamp glass and lamp metal end caps if they intend to deliver these materials to facilities other than Mercury Reclamation Facilities. Facilities are required to take daily physical samples of these materials at the point at which they exit the processing equipment. The daily samples collected during the week shall be consolidated into one weekly composite sample. This shall be performed by thoroughly mixing equal amounts of the daily samples into a single container. The Facility shall submit the weekly sample for analytical testing to determine the total mercury content of the material sampled. This shall be performed for both glass and metal end caps individually.

Facilities are also required in 62-737.840(3)(c), F.A.C., to maintain a 12 week average value of mercury contained in the glass and metal end caps which is an average calculation of the levels reported in the weekly composite sample results. The average is calculated using the most recent 12 weekly sample results obtained from the weekly composite samples.

2. Quality Control Plan

Facilities shall submit a QC Plan which identifies the methods which they shall use for testing of the glass and metal end caps. This plan shall include logs or checklists that includes a space for the person performing the sample collection or the inspector to sign when sample collection is performed. The date and time of the inspection shall be indicated on the report. The Plan shall also include measures that the facility shall use to ensure that material is not shipped off site of the facility until the required testing and analytical results indicate the material is fit for such deliveries. This shall include the corrective measures a facility shall employ when its 12 week average levels approach the ceilings specified in the Rule. The plan must include the sampling protocols identified in the sampling section of this document.

The QC Plan must also include the types and frequencies of equipment inspections which might be required or specified by the equipment manufacturer or

defined by the facility. These inspections shall be used to determine that the processing equipment in use is properly operating. The facility must inspect the equipment daily to determine that the equipment is operating properly. The facility shall use logs or checklists and indicate any levels or meter readings associated with the inspection and shall include a space for the inspector to sign and date the written record of inspection.

B. Mercury Reclamation Facility

1. Determining Categories of Material

Facilities shall determine the types and general formulations of material which they introduce in their process for mercury reclamation and determine the process recovery rates of mercury for each process.

As specified in 62-737.860.(4), F.A.C., Mercury Reclamation Facilities shall demonstrate, using an EPA approved methodology for analyzing total mercury content, an effective reclamation rate of 99 percent of the mercury introduced into the reclamation process, or a resulting total mercury concentration of the processed material which is below the method detection limits for the testing method utilized. Facilities must demonstrate through records and logs the effectiveness of their process. Facilities must submit testing and QC Plans for each type or classification of material introduced into its equipment for reclamation. Types of material can be identified in categories such as phosphor powder resulting from mercury recovery operations, co-mingled crushed or broken lamps, mercury containing glass ampoules removed from thermostats, etc. An example of a category would be the following:

"Category 1 - Mercury containing phosphor powder received from Mercury Recovery operations where the material is a combination of mercury, fragments of broken glass, and phosphor powder and the range of mercury concentration of the material is between 2,000 and 4,000 parts per million of total mercury and where the total mercury does not exceed 4,000 parts per million."

A facility may process various types or categories of mercury containing materials at its facilities but they must segregate these materials into categories, define the quantitative limits and the constituents of a material included in a category, and determine the effective recovery rate for each category of material it processes. When a facility performs testing to determine the effective recovery rate for material processed within a category, it must perform testing on the material as represented in a worst case, or highest concentration of mercury which is defined in that category. In its QC plan, these facilities must also identify how it will carry out ongoing analytical testing programs to monitor the effectiveness of each process and each category of material processed. The plan must also include written plans which describe how they will monitor processing equipment during processing activities, to ensure that the process is being performed as indicated in its process definitions.

2. Defining Processes

Facilities must determine the specifics of a process that it shall perform on the categories of materials it will process. An example of a process description is:

"Category 1, Low Level Phosphor Powder;

Process: Load material in not greater than 45 pound quantities into a specially designed container and place into the retort operation which consists of Acme model 1234 Vacuum Retort Machine. Raise the temperature of the material to 1600 degrees F within one hour, maintain a temperature of 1600 F for 9 hours and cool the material for one hour in the device until the temperature of the material is less than 100 F."

A process may contain several variables it might have as in altering the temperatures during the process, or taking material from one piece of equipment and processing it in another device as a secondary process. Facilities shall adequately describe the functional aspects of a process and in its QC plan, define what steps it will take to ensure the process is performed as specified in the process description.

3. Sample and Test to Determine Effectiveness

Once a category of material is defined and a process is engineered, then the facility must demonstrate the effectiveness of the process. To determine the effectiveness of the process, facilities must sample and test the material entering the process for total mercury content, perform the process under the methods identified in the process description, and then sample and test the material exiting the process for total mercury content. The results of the testing must demonstrate a mercury recovery rate of 99 percent or greater.

4. QC Plan for Each Category and Process

When a facility identifies a category of material it desires to process, defines a protocol by which to process the material and recover 99 percent of the mercury of that material entered into the process, then it must define a Quality Control Plan to monitor the effectiveness of the process. The QC plan shall include the testing required and the frequency of testing which it will employ to monitor the process. As specified in 62-737.860(4), F.A.C., the Department shall require, at a minimum, one complete process evaluation test per category and process type semi-annually to determine the continuing effectiveness of the process. This test shall include EPA approved analytical methods defined to identify the maximum mercury concentration contained in the material identified in a category or type and after processing the material, analytical testing to determine the remaining mercury, or the mercury reclamation rate of 99 percent, or the non-detection of mercury in the processed material. The physical sampling procedures shall be defined in the sampling section of this document.

As part of its QC plan, facilities must implement records or checklists that operators or inspectors shall use to monitor the essential elements of a process, such as temperature of the device during use or times or procedures which must be performed during the process. These checklists must include a space for the operator or inspector to initial or sign the document and the times and dates of the inspection once the ongoing inspections are performed.

5. Summary

Mercury Reclamation Facilities must define the types and physical specifications and the maximum mercury concentration of material which it shall process. They then must specify the physical process which they shall use to reclaim the mercury contained in the material. Next, facilities must use analytical testing of the unprocessed and processed material to demonstrate that the applied process can recover 99 percent of the mercury contained in the material. Alternately, facilities may use analytical testing of processed material only to demonstrate a total mercury content below the method detection limit. Last, facilities must use analytical testing on a semi-annual basis on sample or production runs of processing operations and use process checklists and inspections to demonstrate that the process continues to deliver the recovery rates of mercury which were determined during the original testing of the process.

Attachment D-9 Closure Plan

9.1 Introduction

Veolia ES Technical Solutions, L.L.C. (Veolia) operates a mercury recovery, and reclamation facility at 342 Marpan Lane, Tallahassee, Florida. The building contains the following areas:

- Administrative offices,
- Operations support area,
- Receiving and staging area,
- Storage and accumulation areas,
 - Container Storage Areas
 - Universal Waste Storage Areas
 - Non-hazardous Waste Storage Areas
 - North Yard
- Prep and retort room, and
- Lamp processing room.
- HID Processing Area
- In-transit ten-day transfer operation

In support of the mercury reclamation and recovery operations, Veolia also occupies space in the building directly immediately to the south of the mercury recovery and reclamation facility, at 336 Marpan Lane. The building is used for the storage of new and reusable shipping containers as well as an area for the handling and accumulation of electronic waste, non hazardous batteries, and universal wastes not recycled on-site. A trailer parking area is located at 4972 Woodville Highway South Lot which is used for the parking of empty trailers and the transfer of universal wastes. The warehouse space located at 336 Marpan Lane will herein be referred to as the “e-waste area” and the transfer yard located at 4972 Woodville Highway South Lot will herein be referred to as the “transfer yard.” This closure plan was written to comply with 40 CFR Part 264.112.

9.2 Maximum Inventory of Waste

9.2.1 Maximum Inventory of Waste

Table 9.1 summarizes the maximum inventory of hazardous waste, universal waste, and non hazardous waste which could be on-site during facility operations and associated with the mercury recovery and reclamation activities as well as the facility’s universal waste handler activities. The maximum inventory contains an approximate volume of each type of waste anticipated to be present at any time during the facility’s life. Actual volumes of individual waste streams will vary; however, the total volume of waste on-site will not exceed the maximum storage capacities listed in Attachment D-4.

Table 9.1 – Maximum Inventory of Waste

| Material | Maximum Inventory |
|-----------------------------------|-------------------------------------|
| Fluorescent Lamps 4' and less | 40,000 Lamps |
| Fluorescent Lamps >4' | 40,000 Lamps |
| Fluorescent, shattershield | 30,000 Lamps |
| Fluorescent, U-tube and circular | 20,000 Lamps |
| Fluorescent, Compact | 30,000 Lamps |
| HID Lamps | 31,488 Lamps |
| Mercury Containing Devices | 20 drums |
| Dental Amalgam and Traps | 2 drums |
| Phosphor Powder | 20 drums |
| HID Arc Tubes (whole and crushed) | 20 drums |
| Prep Room Debris | 4 cubic yard boxes (16 drum equiv.) |
| Condensate Water | 8 drums |
| Spent Carbon | 8 drums |
| Retorted Powder/Arc Tubes | 10 drums |
| Non-hazardous PPE | 4 cubic yard boxes (16 drum equiv.) |
| Batteries | 36 Pallets (72 drum equiv.) |
| Electronic Waste | 36 Pallets (72 drum equiv.) |
| Glass | 100 tons |
| Aluminum End Caps/Scrap Metal | 5 tons |
| Plastic | 30 tons |
| Cardboard | 30 tons |
| Elemental Mercury | 500 pounds |

9.2.2 Anticipated Inventory of Waste Generated as a Result of Closure Activities

Table 9.2 summarizes the expected maximum inventory of waste materials anticipated to be generated as a result of closure activities.

Table 9.2 – Anticipated Inventory of Waste Generated from Closure Activities

| Clean-up Wastes | Estimated Quantity |
|---|--------------------|
| Demolition Debris – Hazardous Waste | 20 tons |
| Demolition Debris – Non-hazardous Waste | 40 tons |
| Decon Wash and Rinse Water | 15 drums |
| Hazardous Waste Solids (non-debris) | 4 drums |

9.3. Closure Schedule

Figure 9.1 illustrates a closure schedule for Veolia's mercury reclamation, recovery and storage facility. The schedule reflects each of the tasks described in the section titled Detailed Description of Decontamination Activities. It is anticipated the inventory removal and pre-decontamination activities could be completed within thirty days. Decontamination activities are expected to require an additional ninety days to complete.

9.4. Detailed Description of Decontamination Activities

Decontamination activities at Veolia's facility consist of pre-decontamination, decontamination and post-decontamination related tasks. All tasks will be conducted by a third party. In the event of a planned closure, the recycling (e.g., crusher, separator and distiller) equipment and pollution control equipment (i.e., carbon filters, HEPA filter and baghouse filter) will be removed by Veolia. They will be dismantled before third party pre-decontamination activities and transported to a new location. In the event that this equipment is no longer usable for its intended purpose it will be decontaminated and recycled or disposed as appropriate.

9.4.1 Inventory Removal

The first step in the closure process will be the removal of all wastes and supplies from the facility. In the event of a planned closure of the facility, Veolia will transport all wastes and materials to other Veolia facilities for reuse, recycling or disposal. In the event of an unplanned closure or if Veolia does not have a facility permitted or available to accept the material, it will be shipped to the corresponding facility noted in the closure cost estimate contained in Table 9.3. In the case of materials meeting the definition of hazardous waste, a uniform hazardous waste manifest will be used to document the shipment of the material. In all other cases, a straight bill of lading will be used to document the shipment.

9.4.2 Pre-Decontamination Activities

Personnel will thoroughly sweep surface dust and glass from floors, and other readily accessible surfaces within the building, with the exception of the spaces inside the prep and retort room and inside the lamp processing room. Level "D" (work uniform and a dust mask) personal protective equipment would be required for this cleaning. Personal protective clothing such as dust masks and cleaning rags will be placed into 55-gallon drums and will be combined with the collected debris (i.e., dirt, dust and glass).

9.4.2 Decontamination Activities

Decontamination of Veolia's facility consists of three principal phases. Phase I involves determining the extent, if any, of mercury contamination. Phase II includes the demolition of the prep and retort room and the lamp processing room, the cleaning of the exterior surface of all equipment and accessible surfaces (i.e., floors, walls and ceilings). Phase III involves verifying that the cleaning activities completed in step two were successful.

9.4.2.1 Phase I - Contamination Evaluation

The current level of mercury contamination in the buildings is not known; however, for the purpose of closure it will be assumed that all surfaces within the warehouse and processing areas exhibit some level of contamination. As such, these areas will proceed directly to Phase II. The office areas and the e-waste area will be screened with a direct reading mercury monitoring instrument. The results of the direct reading instrument will be used to determine the decontamination activities required

for these areas. The transfer yard will be sampled to assess whether this area has been impacted by facility activities. Surface soil samples will be collected from the transfer yard and analyzed for total mercury. Eight samples will be collected from this area.

Sampling locations will be determined by a qualified independent third party. The sampling will also be conducted by an independent third party and will be analyzed by a state certified laboratory. Any area with mercury levels that exceed the closure standard will proceed to Phase II. If all samples from an area meet the closure standard, the area will be designated as meeting the closure standard and no further decontamination or testing will be required.

9.4.2.2 Phase II - Facility Decontamination

Decontamination of Veolia's building will be performed by the following procedures:

- Remove mercury contamination from all accessible surfaces and equipment in the prep room, retort room, and lamp processing room using a high efficiency mercury vacuum and a cold water pressure washer.
- Remove equipment and supplies from the prep room, retort room, and lamp processing room for reuse, recycling or disposal.
- Construct a containment area using polyethylene sheeting around the prep room, retort room, and lamp processing room.
- Demolish the prep room, retort room, and lamp processing room and containerize for off-site disposal.
- Remove mercury contamination from all accessible surfaces using a high efficiency mercury vacuum and a cold water pressure washer.
- Clean walls, ceiling beams, floor and equipment in accordance with the following procedures:
 1. Visually inspect the surfaces to be decontaminated. For surfaces with excessive dust buildup proceed to Step 2. If the surfaces have only a minimal amount of dust buildup, proceed to Step 3.
 2. Vacuum the surfaces using a mercury vacuum equipped with a HEPA filter and carbon filter.
 3. Using pump sprayers, mops and rags, wet the surface with a general purpose cleaner/degreaser. An example of this type of cleaner/degreaser would be Simple Green® All Purpose Cleaner. Scrub the surfaces as necessary to remove dust and any other surface contamination that might exist.
 4. Rinse the surface using a cold water pressure washer.
 5. Recover any cleaning fluids and rinse waters for proper disposal.
 6. Wet the surfaces with a mercury decontamination fluid. An example of this type of decontamination fluid would be HgX® from Acton Technologies.
 7. Scrub the surfaces to ensure that the decontamination fluid contacts all surfaces.
 8. Rinse the surface using a pressure washer and water.
 9. Recover any cleaning fluids and rinse waters for proper disposal.
 10. Repeat Steps 6 through 9.

11. Repeat Steps 3 through 5.
 - Collect all cleaning fluids and rinsate.
 - Containerize and segregate waste materials from clean-up activities (e.g., solids, liquid, cleaning materials and personal protective equipment); and
 - Sample waste materials and manage appropriately.

9.4.2.3 Phase III - Decontamination Verification

The objective of this phase is to sample and analyze representative areas and surfaces in order to determine that decontamination activities have removed mercury to target clean-up concentrations. The analytical results from the testing of air samples will provide documentation of successful facility decontamination. A total of twelve air samples will be collected from interior spaces. Samples will be collected from each of the following areas, administrative office, operations office/locker room, hazardous waste storage area, lamp storage area, universal waste battery storage area, HID processing area, lamp processing area, lamp processing room, retort room and container storage area in the building south of the lamp facility. Two additional air samples will be collected from warehouse/processing areas as determined by an independent third party. In addition, it is anticipated that three waste stream samples will be collected and analyzed for disposal purposes. Air sampling will be completed in accordance with the following procedures:

Final Clearance Sampling Protocol

This protocol is designed to be implemented after the decontamination activities have been completed and the facility has been adequately cleaned and for the sole purpose of gathering valid data.

Quantitative Sampling:

1. Prior to the sampling period, the indoor temperature of facility environment should be determined and documented. Temperature should be at least 75° F for a minimum of 60 minutes prior to commencing sampling. If the facility temperature is below 75° F, the facility shall be heated to achieve this temperature.
2. Following the heating period, if necessary, the facility should be closed up (ventilation systems turned off and doors closed) for a minimum of 60 minutes to allow for equilibrium temperatures to be achieved.
3. Final clearance sampling shall be performed utilizing USEPA Response Team SOP #1827 with a modified NIOSH 6009 method, 5/13/99 or OSHA ID-140. The pump will be calibrated to 0.2 liters/min., or as defined by the method. The media utilized will be hopacalite or approved equivalent (e.g. SKC Hydrar).

4. One (1) field blank (opened in field and handled with samples) shall be taken for the sampling event. In addition, two (2) unopened trip blanks from the same lot shall be retained and submitted with the corresponding field blank.
5. The sample media shall be set at a height of between three to four (3-4) feet from ground level to represent a breathing zone sample.
6. The sample time should be approximately eight (8) hours or as necessary to obtain a detection limit less than 0.001 mg/m^3 . Periodic pump flow checks and ambient temperature readings shall be performed and documented throughout the sampling period (minimum of 3).
7. Upon completion of the sampling, samples shall be handled and submitted to an AIHA accredited laboratory for analysis utilizing proper chain of custody procedures.
8. The analytical method to be utilized should be USEPA Response Team SOP #1827 with a modified NIOSH 6009 method, 5/13/99 or OSHA ID-140.
9. Upon completion of the final clearance test and receipt of results, the sampling firm will prepare a clearance sampling report and submit as a component of the closure certification report. The report shall consist of, at a minimum:
 - a. Floor map documenting the locations of samples taken
 - b. Sample data sheets documenting either the instrument readings or the media number, sample location, pump flow (with checks), final volume sampled, sample duration and any remarkable field notes.
 - c. Sample results as submitted by the laboratory corresponding to provided sample data sheets, as applicable.
 - d. Copy of this sampling protocol.

9.4.3 Post-Decontamination Activities

For purposes of this plan, these activities focus on the quantity and disposition of clean-up residue. Table 9.2 contains a listing of the types and volumes of wastes anticipated to be generated.

9.5. Closure Performance Standards

Table 9.4

| <u>Chemical</u> | <u>Environmental Media</u> | <u>Maximum Concentration</u> | | <u>Analytical Method</u> | <u>Source</u> |
|-----------------|----------------------------|------------------------------|-------------------|--------------------------|---------------|
| | | <u>Residential</u> | <u>Industrial</u> | | |
| <u>Mercury</u> | <u>Soil</u> | <u>2.1 mg/kg</u> | <u>2.1 mg/kg</u> | <u>EPA Method 7471</u> | <u>Note 2</u> |
| <u>Mercury</u> | <u>Indoor Air</u> | <u>1.0 ug/m3</u> | <u>3.0 ug/m3</u> | <u>NIOSH Method 6009</u> | <u>Note 1</u> |

1. May 18, 2006 letter report from Stephen M. Roberts, Ph.D., University of Florida to Tim Bahr, Florida Department of Environmental Protection regarding Mercury Criteria for Buildings.

2. Florida Department of Environmental Protection Cleanup Target Levels Chapter 62-777 Florida Administrative Code based on leach ability to ground water.

9.6 Cost Estimate for Facility Closure

The closure cost estimate is based on costs for an independent third party to complete all activities required to close the facility. A detailed written facility closure estimate for the facility is presented in Table 9.3. Closure costs are expressed in 2016 dollars. Appendix D-9-I includes documentation of financial assurance for closure costs as required by 40 CFR 264.143.

9.7 Protection of Human Health and the Environment

Veolia has always maintained stringent operating practices. We strongly believe that the detailed decontamination procedures described in this Closure Plan ensure that the facility will not pose a threat to human health and the environment. Closure or decontamination procedures at Veolia will minimize exposure to hazardous constituents resulting in the protection of human health and the environment.

9.8 Expected Year of Closure

It is not possible to predict an expected year of closure as Veolia is a recycling facility. Closure of the facility would likely occur for one of the following reasons. One, Veolia ES Technical Services, L.L.C. decides to terminate the Florida operation. Two, business continues to grow and it must move to a larger building. Three, another company acquires the firm and decides to relocate the operation.

9.9 Closure Activities

Veolia will notify DEP staff of all closure related activities.

9.10 Amendment of Plan

Veolia will comply with the provisions of 40 CFR Part 264.112 (c)

9.11 Notification of Final Closure

Veolia will comply with the provisions of 40 CFR Part 264.112 (d).

Table 9.3 – Closure Cost Estimate
Inventory Removal

| Material | Maximum Inventory | Per Unit Cost | Trans Cost | Total Cost | Source |
|-----------------------------------|-------------------|-----------------|---------------|-------------|--------|
| Fluorescent Lamps 4' and less | 40,000 Lamps | \$.14/lamp | Included | \$5600.00 | 1 |
| Fluorescent Lamps >4' | 40,000 Lamps | \$.30/lamp | Included | \$12000.00 | 1 |
| Compact Lamps | 30,000 Lamps | \$.20/lamp | Included | \$6000.00 | 1 |
| U-Tube and Circular Lamps | 20,000 Lamps | \$.16/lamp | Included | \$3200.00 | 1 |
| Shattershield Lamps | 30,000 Lamps | \$.14/lamp | Included | \$4800.00 | |
| HID Lamps | 31488 Lamps | \$.45/lamp | Included | \$14169.60 | 1 |
| Mercury Containing Devices | 20 drums | \$1250.00 / dm | \$114.51 / dm | \$27290.20 | 3,13 |
| Dental Amalgam and Traps | 2 drums | \$1,250.00 / dm | \$114.51 / dm | \$4580.40 | 3,13 |
| Phosphor Powder | 20 drums | \$156.81 / dm | \$26.25 / dm | \$5661.20 | 3,13 |
| HID Arc Tubes (whole and crushed) | 20 drums | \$156.81 / dm | \$26.25 / dm | \$5661.20 | 3,13 |
| Prep Room Debris | 4 cubic yards | \$325.00 / yard | \$105.00 / dm | \$1720.00 | 5,13 |
| Condensate Water | 8 drums | \$1,250.00 / dm | \$114.51 / dm | \$10916.08. | 3,13 |
| Spent Carbon | 8 drums | \$1,250.00 / dm | \$114.51 / dm | \$10916.08 | 3,13 |
| Retorted Phosphor Powder | 10 drums | \$50.00 / dm | \$15.00 / dm | \$650.00 | 4,11 |
| Non-hazardous PPE | 4 cubic yards | \$75.00 / dm | \$60.00 / dm | \$540.00 | 4,11 |
| Retorted Arc Tubes and MCMA | 20 drums | \$50 / dm | \$15.00 / dm | \$1300.00 | 4,11 |
| Glass | 100 tons | \$50.00 / ton | \$12.50 / ton | \$6250.00 | 14 |
| Aluminum End Caps/Scrap Metal | 5 tons | \$0.00 | \$0.00 | \$0.00 | 9 |
| Plastic | 30 tons | \$50.00 / ton | \$12.50 / ton | \$1875.00 | 4,11 |
| Cardboard | 30 tons | \$0.00 | \$0.00 | \$0.00 | 10 |

| | | | | | |
|--------------------------------|--------------|-----------------|-----------------|---------------------|------|
| Elemental Mercury | 500 pounds | \$10.00 / pound | \$2.00 / pound | \$6000.00 | 3,12 |
| Alkaline Batteries | 36 drums | \$150 / dm | \$64 / dm | \$7704.00 | 6,12 |
| Nickel Cadmium Batteries | 14 drums | \$30 / dm | \$64 / dm | \$1316.00 | 6,12 |
| Lithium Metal Batteries | 7 drums | \$1500 / dm | \$64 / dm | \$10948.00 | 6,12 |
| Lithium Ion Batteries | 15 drums | \$600 / dm | \$64 / dm | \$9960.00 | 6,12 |
| Lead Acid Batteries | 72 drums | 0 | 0 | \$0 | 7,12 |
| Electronic Waste | 40000 pounds | \$0.25/pound | \$0.025 / pound | \$11000.00 | 2 |
| Project Management | 8 hours | \$120.00 / hour | N/A | \$960.00 | 15 |
| Labor for Labeling and Loading | 16 hours | \$87.00 / hour | N/A | \$1392.00 | 15 |
| Mobilization / demobilization | 2 days | \$750.00 / day | N/A | \$1500.00 | 15 |
| TOTAL | | | | \$173,909.76 | |

Pre-Decontamination Activities

| Task/Materials | Quantity | Per Unit Cost | Total Cost | Source |
|---------------------------|----------|---------------|-------------------|--------|
| Labor (technician) | 16 hours | \$87.00 | \$1,392.00 | 15 |
| Project Management | 4 hours | \$120.00 | \$480.00 | 15 |
| Supplies (PPE, brooms...) | | | \$1,400.00 | 15 |
| TOTAL | | | \$3,272.00 | |

Decontamination Activities – Phase I

| Task/Materials | Quantity | Per Unit Cost | Total Cost | Source |
|--------------------|----------|---------------|-------------------|--------|
| Labor | 12 hours | \$100.00 | \$1200.00 | 15 |
| Project Management | 4 hours | \$120.00 | \$480.00 | 15 |
| Supplies | | | \$750.00 | 15 |
| TOTAL | | | \$2,430.00 | |

Decontamination Activities – Phase II

| Task/Materials | Quantity | Per Unit Cost | Total Cost | Source |
|------------------------------|-----------|---------------|--------------------|--------|
| Labor | 250 hours | \$68.00 | \$17,000.00 | 15 |
| Project Management | 32 hours | \$120.00 | \$3,240.00 | 15 |
| Supplies | | | \$1,000.00 | 15 |
| Equipment (lift, power wash) | 2 weeks | \$2,750.00 | \$5,500.00 | 17 |
| Wipes Analysis | 120 | \$30.00 | \$3,600.00 | 16 |
| TOTAL | | | \$30,340.00 | |

Decontamination Activities – Phase III

| Task/Materials | Quantity | Per Unit Cost | Total Cost | Source |
|--------------------------|-----------------|---------------|-------------------|--------|
| Labor | 16 hours | \$100.00 | \$1,600.00 | 15 |
| Project Management | 8 hours | \$120.00 | \$960.00 | 15 |
| Supplies | | Included | \$0 | |
| Wipes Analysis | 30 | \$30.00 | \$900.00 | 16 |
| Air Sampling for Mercury | 5 (inc. blanks) | \$65.00 | \$325.00 | 18 |
| TOTAL | | | \$3,785.00 | |

Decontamination Derived Wastes

| Material | Maximum Inventory | Per Unit Cost | Trans Cost | Total Cost | Source |
|---|--------------------------|---------------|-------------|--------------------|--------|
| Demolition Debris – Hazardous Waste | 20 tons (27 yd, 2 loads) | \$271/yd | \$1470/load | \$8360.00 | 5,13 |
| Demolition Debris – Non-hazardous Waste | 40 tons | \$50/ton | \$250/load | \$2500.00 | 4,11 |
| Decon Wash and Rinse Water | 15 drums | \$156.81 / dm | \$98 / dm | \$3822.15 | 5,13 |
| Hazardous Waste Solids (non-debris) | 4 drums | \$1250 / dm | \$175 / dm | \$5700.00 | 3,13 |
| TOTAL | | | | \$20,382.15 | |

Closure Report and Certification

| Task/Materials | Quantity | Per Unit Cost | Total Cost | Source |
|--------------------|----------|---------------|-------------------|--------|
| Report Preparation | 32 hours | \$100 | \$3200 | 15 |
| PE Certification | 4 hours | \$175 | \$700 | 15 |
| TOTAL | | | \$3,900.00 | |

Total Costs by Phase

| Phase | Total Cost by Phase |
|----------------------------------|---------------------|
| Inventory Removal | \$173,909.76 |
| Pre- Decontamination Activities | \$3,272.00 |
| Decontamination Phase- I | \$2,430.00 |
| Decontamination Phase-II | \$30,340.00 |
| Decontamination Phase-III | \$3,785.00 |
| Decontamination Derived Waste | \$20,382.15 |
| Closure Report and Certification | \$3,900.00 |
| SubTotal of Closure Cost | \$238,018.91 |
| 10 % Contingency on Plan Total | \$23,801.89 |
| Grand Total for Closure | \$261,820.80 |

Sources for Cost Estimates

| | |
|-----|---|
| 1. | Florida State Contract for Lamp and Mercury Recycling compact lamps and irregular shape lamps assumed to be evenly distributed and cost was averaged. |
| 2. | Florida State Contract for Electronics Recycling assuming each pallet contains 3 televisions, 6 monitors, 9 CPUs and 200 lb. mixed peripherals |
| 3. | WM Mercury Waste Solutions Union Grove, WI |
| 4. | Advanced Disposal Evergreen Landfill Valdosta, GA |
| 5. | Chemical Waste Management Emelle, AL |
| 6. | Raw Materials Company Buffalo, NY |
| 7. | Exide Muncie Indiana |
| 8. | D.F. Goldsmith Co. Evanston, IL |
| 9. | Viatek Tampa, FL |
| 10. | Smurfit Stone Jacksonville, FL |
| 11. | Advanced Disposal Valdosta, GA |
| 12. | CH Robinson Sun Prairie, WI |
| 13. | Smith Systems Includes 18% fuel surcharge |
| 14. | Leon County Landfill Tallahassee, FL |
| 15. | Environmental Sciences Group, Inc. Tampa, FL |
| 16. | Pace Analytical Services, Inc. Tampa, FL |
| 17. | ASAP Rentals Tampa, FL |
| 18. | Bureau Veritas Detroit, MI |

Appendix D-9-I

Financial Assurance for Closure

Attachment D-10
Certificate of Insurance



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
12/29/2015

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

| PRODUCER Marsh USA, Inc. 540 W. Madison Street Chicago, IL 60661 Attn: Veolia.CertRequest@marsh.com Fax: 212-948-5053 | CONTACT NAME: PHONE (A/C, No, Ext): E-MAIL: ADDRESS: <table style="width: 100%;"> <tr> <th style="text-align: left;">INSURER(S) AFFORDING COVERAGE</th> <th style="text-align: left;">NAIC #</th> </tr> <tr> <td>INSURER A : ACE American Insurance Company</td> <td>22667</td> </tr> <tr> <td>INSURER B : ACE Fire Underwriters Insurance Company</td> <td>20702</td> </tr> <tr> <td>INSURER C : Illinois Union Insurance Company</td> <td>27960</td> </tr> <tr> <td>INSURER D : N/A</td> <td>N/A</td> </tr> <tr> <td>INSURER E : N/A</td> <td>N/A</td> </tr> <tr> <td>INSURER F :</td> <td></td> </tr> </table> | INSURER(S) AFFORDING COVERAGE | NAIC # | INSURER A : ACE American Insurance Company | 22667 | INSURER B : ACE Fire Underwriters Insurance Company | 20702 | INSURER C : Illinois Union Insurance Company | 27960 | INSURER D : N/A | N/A | INSURER E : N/A | N/A | INSURER F : | |
|--|---|-------------------------------|--------|--|-------|---|-------|--|-------|-----------------|-----|-----------------|-----|-------------|--|
| INSURER(S) AFFORDING COVERAGE | NAIC # | | | | | | | | | | | | | | |
| INSURER A : ACE American Insurance Company | 22667 | | | | | | | | | | | | | | |
| INSURER B : ACE Fire Underwriters Insurance Company | 20702 | | | | | | | | | | | | | | |
| INSURER C : Illinois Union Insurance Company | 27960 | | | | | | | | | | | | | | |
| INSURER D : N/A | N/A | | | | | | | | | | | | | | |
| INSURER E : N/A | N/A | | | | | | | | | | | | | | |
| INSURER F : | | | | | | | | | | | | | | | |
| TALLA | | | | | | | | | | | | | | | |
| INSURED Veolia ES Technical Solutions, LLC 342 Marpan Lane Tallahassee, FL 32305 | | | | | | | | | | | | | | | |

| COVERAGES | | CERTIFICATE NUMBER: | | CHI-008451953-59 | | REVISION NUMBER: 2 | |
|---|---|---------------------|---|--------------------------|--------------------------|---|--|
| THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS. | | | | | | | |
| INSR LTR | TYPE OF INSURANCE | ADDL SUBR INSD VWD | POLICY NUMBER | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS | |
| A | <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER: | | HDO G27402884 | 01/01/2016 | 01/01/2017 | EACH OCCURRENCE \$ 5,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 5,000,000 GENERAL AGGREGATE \$ 10,000,000 PRODUCTS - COMP/OP AGG \$ 10,000,000 | |
| A | AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS | | ISA H0886651A | 01/01/2016 | 01/01/2017 | COMBINED SINGLE LIMIT (Ea accident) \$ 5,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$ | |
| | UMBRELLA LIAB <input type="checkbox"/> OCCUR EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input type="checkbox"/> RETENTION \$ | | | | | EACH OCCURRENCE \$ AGGREGATE \$ \$ | |
| A | WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/ MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below | Y/N N/A | WLR C48598158 (AOS) SCF C48598195 (WI) (Retro) | 01/01/2016 01/01/2016 | 01/01/2017 01/01/2017 | <input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000 | |
| C | Prof Liability/Claims-Made Contractors' Poll Occurrence | | GOO G27269096 002 CPL SIR: \$500,000 | 01/01/2016 | 01/01/2017 | Limit 5,000,000 Prof Liab SIR: \$1,000,000 | |

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

| CERTIFICATE HOLDER | CANCELLATION |
|--|---|
| Veolia ES Technical Solutions, LLC 342 Marpan Lane Tallahassee, FL 32305 | SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE of Marsh USA Inc. Manashi Mukherjee <i>Manashi Mukherjee</i> |

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AGENCY CUSTOMER ID: 010016

LOC #: Chicago



ADDITIONAL REMARKS SCHEDULE

Page 2 of 2

| | | | |
|----------------------------------|------------------|--|--|
| AGENCY Marsh USA, Inc. | | NAMED INSURED Veolia ES Technical Solutions, LLC 342 Marpan Lane Tallahassee, FL 32305 | |
| POLICY NUMBER | | EFFECTIVE DATE: | |
| CARRIER | NAIC CODE | | |

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,
FORM NUMBER: 25 **FORM TITLE:** Certificate of Liability Insurance

Pollution Legal Liability

Policy Number: PLS 1364667

Carrier: Lexington Insurance Company

Effective Date: 01/01/2015

Expiration Date: 01/01/2017

Limit: \$10,000,000

SIR: \$500,000

ACORD 101 (2008/01)

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Attachment D-11 Destination Facilities

Veolia has evaluated, approved, and entered into written agreements with the sites listed below in Table 11.1 to dispose of all toxic, hazardous and non-hazardous waste. These treatment, storage, and disposal facilities are fully permitted and/or approved by the US EPA and, where appropriate, by respective state/or local agencies.

Table 11.1 – Destination Facilities

| Facility Type | Materials Managed |
|---|--|
| Disposal by Incineration | |
| Veolia ES Technical Solutions, L.L.C. Highway 73, 3.5 Miles West of Taylor Bayou, Port Arthur, TX 77640 | <i>PCB Debris, Capacitors, PCB Oil, Potting Compound, Non PCB Oil, Non PCB Debris.</i> |
| Mercury Recycling - Retort: | |
| Veolia ES Technical Solutions, L.L.C. 5736 West Jefferson Phoenix, AZ 85043 | <i>Phosphor Powder HID Arc Tubes Condensate Water Shattershield Lamps</i> |
| Veolia ES Technical Solutions, L.L.C. 1275 Mineral Springs Drive Port Washington, WI 53074 | <i>Aluminum End Caps Activated Carbon Compact Fluorescent Lamps</i> |
| Veolia ES Technical Solutions, L.L.C. 90 Pleasant Street West Bridgewater, MA 02379 | <i>Back up facility</i> |
| Disposal by Secured Landfill: | |
| Advanced Disposal Evergreen Landfill 2995 Wetherington Lane, Valdosta, GA 31601 | <i>Non- Hazardous Solid Wastes</i> |
| Disposal by Treatment | |
| CWM – Emelle 36964 AL Highway 17, Emelle, AL 35459 | <i>Micro encapsulation</i> |
| Computer Recycling | |
| Viatek Solutions 5206 Eagle Trail Drive., Tampa, Florida 33634 | <i>Metals, Plastics, Boards, Chips</i> |
| Viatek Solutions 770 Tipton Industrial, Suite F, Lawrenceville, Georgia 30046 | <i>Metals, Plastics, Boards, Chips</i> |
| Phosphor Powder | |
| Advanced Disposal Evergreen Landfill 2995 Wetherington Lane, Valdosta, GA 31601 | <i>Phosphor Powder</i> |

| | |
|--|--|
| Glass Recycling/Reuse/Disposal | |
| Advanced Disposal Evergreen Landfill 2995 Wetherington Lane, Valdosta, GA 31601 | <i>Glass Cullet used as ADC</i> |
| Metal/Cardboard/Plastics/Pallets | |
| D.F. Goldsmith 909 Pitner Ave, Everston, IL 60202 | <i>Elemental Mercury</i> |
| Batteries | |
| Inmetco 245 Potersville Road, Ellwood City, PA 16117 | <i>Alkaline, NiCad, NiMH, Lithium Lithium Ion, Silver Oxide, Magnesium</i> |
| Interstate Battery 1541B E I65 Service Rd S, Mobile, AL 36606 | <i>Lead Acid Batteries</i> |
| Retriev Technologies (Formerly Toxco) 8090 Lancaster Newark Road, Baltimore, OH 43105 | <i>Lithium Metal and Lithium Ion Batteries</i> |
| PCB Electrical Equipment | |
| Veolia ES Technical Solutions, L.L.C. 5736 West Jefferson, Phoenix, AZ 85043 | <i>PCB Electrical Equipment</i> |

Attachment D-12

Inspection Program Plan

In accordance with the regulatory requirements set forth in 40 CFR 270.14(b)(5), Veolia ES Technical Solutions, L.L.C. (Veolia) has developed this Inspection Program Plan as an integral part of the recycling and generator activities conducted. The procedures set forth in this plan dictate that this facility will be in compliance with all requirements of 40 CFR 264.15. A copy of this plan will be available at the facility at all times.

12.1. Introduction

This Inspection Program Plan is intended to provide a mechanism to prevent and detect system malfunctions, equipment deterioration and operator errors which, if allowed to continue without remedial action, may ultimately lead to a release of hazardous waste constituents to the environment or create a threat to human health. The Inspection Program is designed to provide an early warning of the potential for such events in order that corrective and preventative actions may be taken in a timely manner.

The Inspection Program is divided into two segments: (1) general facility inspection, and (2) specific operations unit inspection. The former focuses on items which apply to facility-wide operations. Site security, safety and emergency equipment are included under this category. Inspection of the two basic operating systems, the container accumulation areas and loading/unloading area, are included in the second category.

The inspection program is implemented by qualified individuals assigned the responsibility to detect any unsafe conditions at the facility and prevent adverse consequences.

12.2. Inspection Program Administration

The facility Operations Manager is fully responsible for implementation of the Inspection Program. The Operations Manager is designated with the staff responsibility for performing the actual inspections. The Operations Manager is then responsible for directing the appropriate facility functional units to implement required remedial and corrective measures.

12.2.1 Personnel Qualifications

The Operations Manager and Supervisors are trained in hazardous waste management, fundamentals of material hazards assessment, inspection and follow-up procedures, documentation and record-keeping requirements, and various safety and contingency plan procedures. The qualifications and duties of the Operations Manager and Supervisor are included in the facility's Training Plan.

12.2.2 Hazard Assessment and Evaluation Procedures

The inspector must be familiar with the location of the equipment and systems to be inspected and their normal configuration. For any discrepancy observed, the inspector shall determine the potential for personnel injury or for release of hazardous waste constituents, and he/she shall assess the nature and timing of remedial action required. The determination shall consider:

1. The location and nature of the problem
2. The presence of secondary containment or control
3. The amount and type of waste material involved
4. The potential for human exposure, and
5. The likelihood of waste migration.

When an inspection indicates equipment malfunction or deterioration, or any other improper conditions, at least the following actions are to be taken as appropriate:

- Assess the situation
- Determine the corrective/remedial measures needed in response to the situation, including the appropriate interim measures.
- Establish the time frame within which the remedial action must occur. For emergency or near-emergency situations, prompt verbal reports shall be made to the Operations Manager, to be followed later with written reports. For minor discrepancies, routine written reporting procedures, as discussed later, will be followed.
- Provide adequate follow-up to verify that the specified response has occurred and that the situation has been resolved satisfactorily.

In general, all remedial actions and re-inspections are expected to be completed within the week following the inspection which detected a problem. In specific cases where urgent action is required, appropriate coordination with cognizant facility personnel and frequent monitoring of the situation by the inspector will be continued until remedial actions are completed. In cases where physical and/or operation constraints (i.e., replacement equipment availability) may require longer time frames to complete the problem, the inspection shall follow completion of the work.

12.2.3 Documentation and Record Keeping

Inspections (and re-inspections) are conducted and documented using forms specifically designed to contain all pertinent information. Sample forms are included in Appendix D-12-I to this attachment. Completed inspection forms are given to the Operations Manager who then takes action, as necessary, to initiate orders for required remedial actions. The inspector will have the authority to implement corrective actions for deficiencies which can be immediately corrected. In this case the corrective action will be noted on the inspection form. For all other deficiencies a Maintenance Work Order or Corrective Action Form is generated by the Operations Manager for the discrepancies noted by the inspector (if the discrepancy cannot be immediately corrected). The form contains pertinent corrective work orders and is forwarded to appropriate facility personnel for implementation. A copy is routed to the Facility Operations Manager for use as a re-inspection reminder and follow-up documentation.

All completed forms and attachments are accumulated in the facility operating records, which are kept on permanent file by Veolia.

An inspection form is provided for the weekly scheduled inspections. This format includes items such as the identification of the facility unit, the name of the inspector, and the date and time of the inspection. The inspection checklist section of the form is for indicating the status of designated equipment or structures. The designated equipment or operational status is made in the “observation” column. The inspector’s assessment, including, notations of the urgency of the required response are marked on the form. The completed form is delivered to the Operations Manager’s office for review and appropriate action.

The inspection report is prepared in advance to include pertinent items of equipment to be inspected according to the specific schedules shown later in this plan. These forms may be periodically modified to accommodate changing needs of the facility.

A separate Maintenance Work Order or Corrective Action Form (see Form 12.5 in Appendix D-12-I) is used for corrective action initiation and to document whether each discrepancy noted during an earlier inspection has been adequately corrected. This form identifies the equipment unit inspection. It also describes the required response actions, the date by which these are to be implemented, and the name of the person responsible for such actions.

The lower portion of this re-inspection form can be used by the inspector during his/her next scheduled inspection following the date by which the

corrective work was to be completed -- to confirm that the corrective action has been made. When completed, the re-inspection form is submitted to the Operations Manager's office for filing with the facility's inspection log.

In summary, the inspector observes facility operations and equipment on a periodic basis with a specific schedule and inspection elements. When any discrepancy is noted, the inspector initiates the corrective action or the inspection results are reviewed by the Operations Manager who initiates required corrective actions. A notation is made on the inspection form documenting corrective measures that are immediately implemented. A remedial work order form is created for each significant discrepancy; and corrective action is initiated.

In cases where specialized outside contractors are used to perform testing or inspection services, the results are reported on the contractor's forms. These reports are made part of the inspection log when received.

12.3 General Facility Inspection

The general facility inspection activity encompasses the facility perimeter and those items within the property that are common to all operations. The general facility inspection activities encompass the following:

- Security Devices
- Safety and Emergency Equipment

The general inspection schedules - including inspection parameters and frequency - are determined by the types of problems that can potentially occur.

12.3.1 Types of Potential Problems

The following considerations are pertinent to identification of the types of problems that may occur related to general facility operations:

- Breach of security, either intentional or unintentional, by persons or natural (i.e., climatology events). Such breaches may occur due to (1) damage to structures, (2) obstruction, damage or loss of warning signs.
- Unplanned release due to malfunction or failure of containment structures, if these are not kept in good repair.
- Health and safety equipment failure, absence or inaccessibility.

12.3.2 General Inspection Schedules

The general inspection schedules are based on the facility's operational mode, potential failure modes, and an assessment of the hazard magnitude posed by a particular malfunction, failure or discrepancy.

Security Devices have been included in the Facility Inspection and the inspection elements and frequency are shown in Table 12.2, Facility Inspection Elements, and the inspection elements and frequency for the Emergency Equipment are shown in Table 12.1, Emergency Equipment Inspection Elements. The location of the Safety and Emergency Equipment is listed in Section 6.8 of the Contingency Plan.

12.4 Unit Specific Inspection Activities/Schedules

The warehouse, loading/unloading areas, container storage areas, and processing equipment are subject to specific inspection schedules and procedures. The equipment and structure of each area or process within the facility will be regularly inspected for malfunction, deterioration, failure, operator errors or other causes which could endanger human health or the environment. The types of potential problems and the hazards uniquely associated with each of these areas have been used to establish the elements (parameters) and frequency of inspection as described in Section 12.4.1 below.

12.4.1 Container Accumulation/Loading Inspection

The potential problems of concern related to the facility's drum (container) accumulation area include:

- Spills in loading/unloading area
- Improperly labeled, deteriorated, damaged, leaking or open containers
- Improper placement or stacking of drums
- Failure or deterioration of spill containment structures
- Ignition, fire, explosion or odor during the inspection, consolidation, and transfer of hazardous waste from containers and vehicles.

The elements and frequency of inspection for the container unloading/loading area and container storage areas, Storage Areas #1 - 5, are shown in Table 12.2, Facility Inspection Elements.

The 10-day in transit area is an area of the facility that is subject to daily inspections and the inspection elements and frequency are shown in Table 12.4, Transfer Operation Inspection Elements.

12.4.2 Process Operations Inspections

The recycling operations at Veolia are subject to specific inspection schedules and procedures. The equipment and procedures used in each operation will be regularly inspected for malfunction, deterioration, failure, operator errors or other causes, which could endanger human health or the environment. The type of potential problems and the hazards uniquely associated with each of the operations is used to establish the inspection elements (parameters). The elements and frequency of inspection for the individual process operations are shown in Table 12.3 Process Equipment Inspection Elements.

TABLE 12.1**EMERGENCY EQUIPMENT INSPECTION ELEMENTS**

| <u>EQUIPMENT</u> | <u>INSPECTION ELEMENT/ TYPE OF PROBLEM</u> | <u>INSPECTION FREQUENCY</u> |
|---|---|--|
| Protective Gear (i.e., Boots, gloves, acid resistant clothing, disposal suits) | Check accessibility | Weekly |
| | Check for adequate supply | Weekly |
| Respirators (i.e., Dust masks, respirators) | Check for accessibility/Supply | Weekly |
| | Check for deterioration, damage, function | Weekly |
| First Aid Kits | Check accessibility | Weekly |
| | Check for adequate supply | Weekly |
| Internal/External Communication System (Telephone) | Check for accessibility | Weekly |
| | Check for operation | Weekly |
| Fire Extinguishers | Check to ensure access to units is not blocked | Weekly |
| | Check pressure gauge for full charge indication | Weekly |
| | Check inspection tag to ensure annual maintenance by fire services up-to-date | Weekly |
| Eyewash Station | Check to ensure access to units is not blocked | Weekly |
| | Check to ensure unit is free of excess dirt and has adequate flow | Weekly |

TABLE 12.2**FACILITY INSPECTION ELEMENTS**

| <u>EQUIPMENT</u> | <u>INSPECTION ELEMENT/ TYPE OF PROBLEM</u> | <u>INSPECTION FREQUENCY</u> |
|--------------------------------------|--|--|
| Doors | Check for proper lock function | Weekly |
| Warning Signs | Check for presence and visibility of warning signs | Weekly |
| Container Loading/ Unloading Area | Check for damage to containers, drum/ Container leaks, swelling or severe dents | Weekly |
| | Check for evidence of spilled material on dock, ramp and landing | Weekly |
| | Check for removal of used absorbent and cleaning materials | Weekly |
| | Check to ensure that all containers are removed from the receiving/loading dock within 24 hours of placement on the dock | Weekly |
| | Check for cracks and gaps in base concrete slab, and sumps | Weekly |
| Storage Areas #1 - #5 | Check for cracks and gaps in base or concrete slab | Weekly |
| | Check that all containers are properly closed and not leaking, swelling or severe dents | Weekly |
| | Check for proper placement/ stacking | Weekly |
| | Check adequacy of aisle space (24 inches min.) | Weekly |
| | Check for proper labeling of all containers in storage | Weekly |
| | Check that all containers labels are dated | Weekly |
| | Verify that all containers are within storage area | Weekly |

TABLE 12.3**PROCESS EQUIPMENT INSPECTION ELEMENTS**

| <u>EQUIPMENT</u> | <u>INSPECTION ELEMENT/ TYPE OF PROBLEM</u> | <u>INSPECTION FREQUENCY</u> |
|----------------------------|---|--|
| Lamp Line 1 Lamp Line 2 | Check to make sure that all equipment guards are in place and that all equipment is secure. | Weekly |
| | Check by-products separation, verify that equipment is properly separating materials. | Weekly |
| | Check air handling system including baghouse and filters. | Weekly |
| HID Machine | Check to make sure that all equipment guards are in place and that all equipment is secure. | Weekly |
| | Check by-products separation, verify that equipment is properly separating materials. | Weekly |
| | Check air handling system including baghouse and filters. | Weekly |
| Retort Equipment | Check to make sure that all equipment guards are in place and that all equipment is secure | Weekly |
| | Check dome gasket for signs of wear or defects. | Weekly |
| | Check coolant level and chiller operation | Weekly |
| Arc Tube Crusher | Check to make sure that all equipment guards are in place and that all equipment is secure. | Weekly |
| | Check air handling system including baghouse and filters. | Weekly |

TABLE 12.4**TRANSFER OPERATION INSPECTION ELEMENTS**

| | | |
|------------------------------|---|-------|
| 10-Day In Transit Area | Note number of containers (Maximum - 100 x 55 gal. drum equivalent) | Daily |
| | Verify 10-Day Log is completed and all containers in compliance with 10 Day requirement | Daily |
| | Check condition of truck/trailer (no missing floor boards, leaking roof, or truck/trailer damage) | Daily |
| | Verify that truck/trailer is on pavement or concrete | Daily |
| | Check pavement/concrete area (no cracks and gaps in base, and concrete slab) | Daily |
| | Check for drum/container leaks, swelling, pressure build up, or severe dents | Daily |
| | Check that drums/containers are not open(lids and bungs secure) | Daily |
| | Check for proper placement/ stacking (Aisle space not required for truck/ trailer storage) | Daily |
| | Check for proper labeling of all containers containers are properly segregated | Daily |
| | Verify security of truck/trailer, locked, (wheels chocked, trailer stand in place as appropriate) | Daily |
| | Fire protection equipment available | Daily |

Appendix D-12-I

Sample Inspection Forms



Form 12.1

Weekly Emergency Equipment Inspection Report

| Date: | | Time: | | Inspector: | |
|-------------------------------------|---|------------|--------------|------------|--|
| Inspection Checklist | | | | | |
| Equipment/ Structure | Inspection Element | Status | | Comments | |
| | | Acceptable | Unacceptable | | |
| First Aid kits | Check for accessibility | | | | |
| | Check for adequate supply | | | | |
| Internal/ external communication | Check for accessibility | | | | |
| | Check to ensure paging system is functional | | | | |
| Fire Extinguishers | Check to ensure access is not blocked | | | | |
| | Check pressure gauge, fully charged | | | | |
| | Check annual inspection tag | | | | |
| | Check pin seal, intact | | | | |
| Eyewash Station | Check cleanliness | | | | |
| | Check flow rate | | | | |
| | Check for accessibility | | | | |
| Emergency Respirators | Check accessibility | | | | |
| | Check for adequate supply (4 respirators with cartridges) | | | | |
| | Check for signs of deterioration | | | | |
| Protective Gear/ PPE | Check accessibility | | | | |
| | Check for adequate supply | | | | |
| Spill Kits/ Mercury Spill kits | Check location and to ensure kit is properly stocked | | | | |



Form 12.2

Weekly Facility Inspection Report

| Date: | | Time: | | Inspector: | |
|--------------------------------------|---|------------|--------------|------------|--|
| Inspection Checklist | | | | | |
| Equipment/ Structure | Inspection Element | Status | | Comments | |
| | | Acceptable | Unacceptable | | |
| Doors | Check for damage and proper closure and lock function | | | | |
| Warning signs | Check for presence and visibility of signs | | | | |
| Container Loading/ Unloading Area | Check for damage to containers | | | | |
| | Check for evidence of spilled material on dock, ramp and landing | | | | |
| | Check for removal of used absorbent and cleaning materials | | | | |
| | Check to ensure that all containers are removed from the loading dock within 24 hrs. of placement on the dock | | | | |
| | Check for cracks and gaps in base, and concrete slab | | | | |



Weekly Facility Inspection Report

| | | | | |
|--------------------------|---|--|--|--|
| Storage Areas #1 - #5 | Check for cracks and gaps in base, and concrete slab | | | |
| | Check that all containers are properly closed and not leaking, swelling or severe dents | | | |
| | Check for proper placement/stacking (8' high maximum) | | | |
| | Check adequacy of aisle space (24 inches minimum) | | | |
| | Check for proper labeling of all containers in storage | | | |
| | Check that all containers are properly dated | | | |
| | Verify that all containers are within the storage area (within red lines) | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |



Form 12.3

Weekly Process Equipment Inspection Report

| Date: | | Time: | | Inspector: | |
|------------------------------|---|------------|--------------|------------|--|
| Inspection Checklist | | | | | |
| Equipment/ Structure | Inspection Element | Status | | Comments | |
| | | Acceptable | Unacceptable | | |
| Lamp Processing Equipment | Check equipment guards | | | | |
| | Check by-product separation | | | | |
| | Check air handling system including baghouse and filters | | | | |
| Retort Oven and prep area | Check equipment guards | | | | |
| | Check gas fittings and lines | | | | |
| | Check door gasket | | | | |
| | Check coolant level and chiller operation | | | | |
| HID Arc Tube Crusher | Check equipment guards | | | | |
| | Check air handling system | | | | |
| HID Machine | Check equipment guards | | | | |
| | Check by-product separation | | | | |
| | Check air handling system including baghouse and filters | | | | |
| Jerome Meter | Verify annual calibration has been completed. | | | | |



Form 12.4

Daily Transfer Operation Inspection Report

| Date: | | Time: | | Inspector: | |
|---------------------------|---|------------|--------------|------------|--|
| Inspection Checklist | | | | | |
| Equipment/ Structure | Inspection Element | Status | | Comments | |
| | | Acceptable | Unacceptable | | |
| 10-Day In Transit Area | Note number of containers (Maximum - 100 x 55 gal. drum equivalent) | | | | |
| | Verify 10-Day Log is completed and all containers in compliance with 10 Day requirement | | | | |
| | Check condition of truck/trailer (no missing floor boards, leaking roof, or truck/trailer damage) | | | | |
| | Verify that truck/trailer is on pavement or concrete | | | | |
| | Check condition of pavement/concrete area (no cracks and gaps in base and concrete slab) | | | | |
| | Check for drum/container leaks, swelling, pressure build up, or severe dents | | | | |
| | Check that drums/containers are not open(lids and bungs secured) | | | | |
| | Check for proper placement/stacking (aisle space not required for truck/trailer storage) | | | | |
| | Check for proper labeling of all containers and that containers are properly segregated | | | | |
| | Verify security of truck/trailer (locked) | | | | |
| | Verify that fire protection equipment is available | | | | |