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DIVISION OF AIR RESOURCE MANAGEMENT

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VOLUME REDUCTION, MERCURY RECOVERY OR MERCURY RECLAMATION AIR GENERAL PERMIT EXAMPLE REGISTRATION WORKSHEET

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Facility Identification Number - If known (seven digit number)

0830171-001 DIVISION OF AIR RESOURCE MANAGEMENT

Registration Type

Check one:

INITIAL REGISTRATION - Notification of intent to:

- X Construct and operate a proposed new facility.
[] Operate an existing permitted facility not currently using an air general permit...
[] Operates an existing facility not currently permitted or using an air general permit.

RE-REGISTRATION (for facilities currently using an air general permit) - Notification of intent to:

- [] Continue operating the facility after expiration of the current term of air general permit use.
[] Continue operating the facility after a change of ownership.
[] Make an equipment change requiring re-registration pursuant to Rule 62-210.310(2)(e), F.A.C.
[] Any other change not considered an administrative correction under Rule 62-210.310(2)(d), F.A.C.

Surrender of Existing Air Operation Permit(s) - For Initial Registrations Only, if Applicable

All existing air operation permits for this facility are hereby surrendered upon the effective date of this air general permit; specifically permit number(s):

N/A

General Facility Information

Facility Owner/Company Name (Name of corporation, agency, or individual owner who or which owns, leases, operates, controls, or supervises the facility.)

Lighting Resources LLC

Site Name (Name, if any, of the facility site; e.g., Plant A, Metropolis Plant, etc. If more than one facility is owned, a complete registration must be submitted for each.)

Facility Location (Physical location of the facility, not necessarily the mailing address.)

Street Address: 1007 SW 16th Lane

City: Ocala

County: Marion

Zip Code: 34471-1228

Facility Start-Up Date (Estimated start-up date of proposed new facility.)(N/A for existing facility.)

Filed as LQH Transfer facility 3-1-2011, anticipated Mercury recovery permit by 01-01-2012.

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Facility Contact

Name and Position Title (Plant manager or person to be contacted regarding day-to-day operations at the facility.)
Print Name and Title: Bonnie Bishop-Clark - Branch Manager

Facility Contact Telephone Numbers
Telephone: 352-509-3001 Fax: 352-509-3012
Cell phone: 904-881-2229
E-mail: bonnie@lightingresourcesinc.com

Facility Contact Mailing Address
Organization/Firm: Lighting Resources LLC
Mailing Address: 1007 SW 16th Lane
City: Ocala County: Marion Zip Code: 34471-1228

Other Contact/Representative (to serve as additional Department contact)

Name and Position Title
Print Name and Title: Heath Clark

Other Contact/Representative Telephone Numbers
Telephone: 352-509-3001 Fax: 352-509-3012
Cell phone: 404-291-5291
E-mail: heath@lightingresourcesinc.com

Other Contact/Representative Mailing Address
Organization/Firm: Lighting Resources LLC
Mailing Address: 1007 SW 16th Lane
City: Ocala County: Marion Zip Code: 34471-1228

Government Facility Code (check only one)

Facility not owned or operated by a federal, state, or local government.
 Facility owned or operated by the federal government.
 Facility owned or operated by the state.
 Facility owned or operated by the county.
 Facility owned or operated by the municipality.
 Facility owned or operated by a water management district.

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Type of Process

Check all that apply:

- Volume Reduction
- Mercury Recovery
- Mercury Reclamation

Dual Air Handling Systems

For facilities with dual air handling systems pursuant to Rule 62-96.417(1)(c), F.A.C., provide a description of the primary and secondary air handling systems (i.e., number, type and capacity of filters). List the make and model numbers of the air pollution control equipment on the primary and secondary air handling systems. Also, list the type of adsorbent used, the number and location of filters, and the filter capacity and replacement frequency. Attach additional pages if necessary.

Per manufacturer,

The air handling system comprises of (2) Dantherm Filtration Airmaster air extractor units. Each unit extracts approximately 2800m³ air per hour. Each unit is connected to its own activated carbon vessel which contains 2000 pounds of sulfur based carbon @ 20%.

Each extractor contains (6) filters which are polyester pleated with a PTFE coating. The life of these filters is 12-24 months depending on throughput and climate.

The carbon vessels remove mercury vapor to 0.0001 mg/m³. An average 5 plus year lifespan of the carbon is anticipated.

In addition, is attached a description from the MP8000 manufacturer.

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Single Air Handling System

For facilities with a single air handling system with redundant mercury controls pursuant to Rule 62-296.417(1)(d), F.A.C., provide a description of the redundant air pollution control equipment (i.e., number, type and capacity of filters). List the make and model numbers of the air pollution control equipment. Also, list the type of adsorbent used, the number and location of filters, and the filter capacity and replacement frequency. Attach additional pages if necessary.

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Helpful Definitions

“Department” or “DEP” - The State of Florida Department of Environmental Protection.

“Emissions Unit” - Any part or activity of a facility that emits or has the potential to emit any air pollutant.

“Facility” - All of the emissions units which are located on one or more contiguous or adjacent properties, and which are under the control of the same person (or persons under common control).

“Mercury Reclamation Process” - A facility where operations or processes are performed or equipment is used to receive and recapture mercury from spent lamps, mercury-containing devices, mercury-containing materials or residuals, or pourable, commodity grade mercury materials and that can demonstrate, using a quality control plan approved in accordance with Chapter 62-160, F.A.C., and an EPA analytical test method for determining the total mercury content of a waste material, an effective reclamation rate of at least 99% of the mercury introduced into its process or a resulting total mercury concentration remaining in the processed material that is below the method detection limit; and by which a commercial grade of mercury is produced for recycling.

“Mercury Recovery Process” - A facility where operations or processes are performed or equipment is used to receive and process spent mercury-containing lamps or devices for the purpose of crushing or dismantling and separating the lamps or devices in a manner as to produce: separated, individual recyclable components such as glass and scrap metal; and mercury-containing phosphor powder, ampoules or other mercury-containing residuals which will be processed at a mercury reclamation facility for the purpose of reclamation of the mercury.

“OSHA” - United States Occupational Safety and Health Administration.

“Owner” or “Operator” - Any person or entity who or which owns, leases, operates, controls or - supervises an emissions unit or facility.

“Volume Reduction Process” - A facility where operations or processes are performed or equipment is used to receive and process spent mercury-containing lamps or devices in a manner such as crushing, grinding, compacting, or physically altering the state of the lamps or devices and which does not produce separation of the residuals, and is used for the size or volume reduction of lamps or mercury-containing devices.

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MP8000 Lamp Recycling Plant Emissions

Correctly designed lamp recycling plants should operate under negative pressure to reduce emissions of mercury vapour into the workplace. Whilst there should be zero emissions of mercury from a lamp recycling system this is not always the case and therefore these are required under laws to be kept to a minimum level.

Balcan lamp recycling systems use air extraction filter units to draw off all mercury bearing phosphor powder and vapour from the contents of the lamps down to less than 5 micron size. These ensure the plant operates at negative pressure. All mercury bearing vapours pass through the filters and are ducted to the Main Carbon Filter Stack. The vessel contains approximately 2 cubic metres of Sulphur based Activated Carbon, with which the mercury reacts and allows the exhausted air to be mercury free and ducted to atmosphere.

Balcan's philosophy is to work as close to zero emissions as possible and by using a single large carbon vessel we are able to achieve consistently low to zero results. We believe the advantage of a single vessel is in economies of scale with an improved lifetime expectancy of the carbon, over using smaller 'barrel' filters. Using one large high flow, annular carbon vessel, gives a much greater surface area with maximum throughput and removal of mercury from the vapour stream. Through years of regular monitoring you will also be able to see when the emissions start to increase, albeit very slowly, indicating the carbon is beginning to reach its capacity. Due to the size of the vessel this will give the ability of being able to schedule a carbon replacement service before permissible limits are reached. We believe that when using smaller filters the time between levels beginning to increase and saturation can happen quickly and can lead to unnecessary loss of production when not having the time to schedule carbon replacement.

Maximum permissible emissions from exhaust 0.025mg/m³

Typical emissions from Balcan MP8000 - 0.0001 - 0.002mg/m³

Estimated lifespan of carbon – 5 years based on throughput of 5-10 Million lamps per year.

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A-2c. Mercury, Phosphor Powder Collection, Filtration, and Vapor Capture.

The MP 8000 is equipped with two particulate and mercury vapor collection and filtration systems for air pollution control. The air extraction units are designed to draw off all mercury-bearing phosphor powder and mercury vapor from the contents of the lamps down to five (5) micron size. These high vacuum units ensure that the plant operates at negative pressure. All finer dust and vapors that pass through the HEPA filters are ducted to the main filter stack containing approximately two (2) cubic meters (1,000 pounds per unit) of twelve (12) percent sulfur impregnated activated carbon for mercury adsorption.

Mercury-bearing lamp phosphors and air containing mercury vapors are drawn from fifteen separate locations on the processing machine to ensure maximum collection of mercury, mercury vapors, and contaminated phosphor powder. The air and particulate filtration units are set to operate continuously for mercury vapor collection and fugitive emission prevention. The air discharge from the filtration units is vented and released directly within the confines of the lamp processing room obviating the necessity of an exterior exhaust stack(s). The environmental benefits and protections garnered are incalculable as the lamp processing machine's integral air filtering system will continuously recirculate and clean the air potentially exposed to vaporous mercury.

HEPA filters that are used to separate phosphor powder are cleaned via continuous air backflow and collected in sealed 55-gallon steel drums attached directly to the air filtration units and are integral to the process. Each drum will collect powder from approximately 40,000 fluorescent lamps. When filled, drums are removed from the machine, are classified as D009 characteristic hazardous waste, and are placed into 90-day storage for transport offsite to the Lighting Resources, LLC facility located in Greenwood, Indiana. The phosphor powder is entered into a retort oven for mercury reclamation at the permitted Indiana facility.

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D-1b. Daily Operations Procedural Review.

The Operations Manager will prepare a Daily Activities Report (Appendix D-1) that summarizes all materials received, inventoried and staged for processing, materials shipped off-site, and processed. This daily report will also provide, as a minimum, twice-daily mercury vapor readings taken throughout the facility, records of daily inspections, equipment inspections, and general housekeeping. Additionally, the facility manager submits a daily PULSE report (Appendix D-2) to the Company President detailing facility performance based upon the manager's morning walk-through inspection.

D-1c. Training.

The Operations Manager will maintain a master training calendar (Appendix D-3) that lists and tracks completion of all required training for RCRA, OSHA and USDOT compliance. Monthly classes are scheduled in conjunction with scheduled safety meetings.

D-1d. Equipment Performance.

Equipment performance is monitored on a daily basis. Visual and audible keys are the primary indicators that the machinery is functioning as designed. Visual inspection of the discharge of glass readily identifies malfunctions. The Balcan MP800 cleans the lamp glass to a standard unmatched by any other like purposed equipment currently in use by any other mercury recovery facility. Reduction in glass clarity or excessive lamp metals mixed in the glass discharge provides immediate equipment status feedback.

As mentioned previously, mercury vapor levels as indicted by the Jerome Model 431X Mercury Vapor Analyzer provides indications regarding filter and filtration efficiency and effectiveness. Vapor level readings are taken and recorded at least twice daily. Significant vapor increases above those normally associated with process, ambient air temperature increases, and experience require special inspections to determine the cause and any necessary repairs or adjustments. An equally sensitive equipment efficiency analysis tool is the weekly composite sample laboratory test results. Significant increases of residual mercury levels on the lamp glass or metals may indicate equipment deficiencies that warrant investigation and possible repair.

Lighting Resources uses the Jerome Model 431X Mercury Vapor Analyzer as its premier mercury vapor detection device. All employees are trained in its use and adjustment. This device requires annual calibration and parts replacement. Lighting Resources will return the meter to the Arizona Instruments Company for the necessary maintenance and calibration within the manufacturers' recommended service interval and will maintain the appropriate calibration and service records on site.