Company Name:	Johnson Controls Inc. – Florence Recycling Plant	**Permit Writer:**	James Myers
Permit Number:	1040-0129-CA	**Date:**	February 5, 2010

DATE APPLICATION RECEIVED: June 17, 2009

FACILITY DESCRIPTION

This is a lead-acid battery recycling facility. The primary product produced from the recycled batteries will be lead ingots. Sulfates and plastic will also be recovered from the batteries.

PROJECT DESCRIPTION

Johnson Control's is proposing to build a lead-acid battery recycling facility. The following processes will be constructed: battery breaking, separation, desulfurization of paste, crystallization of sodium sulfate, melting, smelting, refining, and casting. The baghouses will be equipped with a closed loop process to return the collected material to the process. Each building containing a lead process will be maintained under negative pressure.

SOURCE TEST REQUIREMENTS

The following equipment will be source tested for carbon monoxide to demonstrate compliance with PSD avoidance limits:

Unit IDs 06, 07, 08, 09, 11 – These Units will be tested for SO2.

Unit IDs 07-09 – Each smelting furnace emits 51.0 TPY of CO uncontrolled. An afterburner is used to complete the combustion process and will decrease CO emissions by 50%. These units along with 06 and 11 will be source tested initially. Additionally, unit ID 11 will then be source tested every two years. The other units will have CO CEMs so additional testing is unnecessary.

The following equipment will be source tested for NOx to demonstrate compliance with PSD avoidance limits:
Unit IDs 06, 07-09, 11 – There are no AP 42 factors for smelting furnaces. The furnaces combust anthracite coal and natural gas in an atmosphere with higher than normal oxygen concentrations. The NOx emissions are expected to be lower than the AP42 factors used for boilers.

The following equipment will be source tested for PM to comply with the requirements of SC Reg. 61-62.5, Standard 3 and 40 CFR 60 Subpart L: Unit IDs 07-09 (Afterburners).

The following equipment will be source tested for PM for PSD avoidance: 01, 06, 07, 08, 09, 10, 11, 12, 14

The following equipment will be source tested for lead to comply with the requirements of 40 CFR 63 Subpart X:
Units IDs 06, 07, 08, 09, 11

The following equipment will be source tested for metal HAPs to verify emission estimates: 06, 07, 08, 09, 11, 12

The following equipment will be source testing for various organic HAPs to verify emission factors or the presence/absence of that particular HAP: 03, 07, 08, 09. Unit ID 03 can be tested using an industrial hygiene type test.`

The Department will review the source tests. If the facility consistently tests below the limits and well below the limits, the frequency of the source tests may be reduced provided this does not conflict with any regulatory requirement.

SPECIAL CONDITIONS, MONITORING, LIMITS

Condition 49: In accordance with 40 CFR 58, Appendix D, paragraph 4.5, sources that emit at least 1.0 tons per year of lead must have a ambient air monitor installed.

Conditions 51 and 52: CEMs will be required for NOx for Unit IDs 06, 07, 08, 09, and 11. CEMs will be required for CO for Unit IDs 06, 07, 08, 09.

PUBLIC NOTICE

This is a synthetic minor construction permit and will receive a 30 day public review period. In addition, a Q&A session and public hearing will be held on September 22, 2009 to answer questions and to take comments on the project.

The following changes were made to the permit following the public comments period:

- The tonnage received, tonnage produce, and the "super desulfurization process was added to the facility description of the permit. A corresponding recordkeeping Conditon (59) was added.
- A "negative pressure building" was added to the equipment description for Unit IDs 02, 06, 10, 12, 14.
- A "closed loop baghouse system" was added to the equipment description for Unit IDs 06, 07, 08, 09, 10, 11, 14.
- An "equipped with Low NOx burners" was added to the equipment description for Unit ID 11 and Low NOx oxyfuel combustion was added to the equipment description for Unit IDs 07, 08, 09.
- An opacity limit of 10% was added to Unit ID 11 from NSPS Subpart L in the Emissions Limitations Table.
- A facility wide 10/25 tons per year single/combined HAPs limit was added to the Emissions Limitations Table for MACT avoidance. A corresponding monitoring and record keeping condition was also added to the permit.
- A facility wide limit of 12 pounds per year was added to the Emissions Limitations Table. A corresponding monitoring and record keeping condition was also added to the permit.
- Continuous monitoring requirements for CO for Unit IDs 06, 07, 08, 09 and NOx for Unit IDs 06, 07, 08, 09, 11 to Table B. Corresponding monitoring and record keeping conditions were also added to the permit.
- Added H2SO4 stack testing to the Source Test Schedule Table for Unit ID 01. A corresponding stack testing condition was added to the permit.
- An opacity source test was added to Unit ID 11 to the Source Test Schedule Table.
- Stack testing for PM Unit IDs 01, 06, 11, 12, and 14 was added to the Source Test Schedule Table. A corresponding stack testing condition was added to the permit.
- Stack testing for mercury for Unit IDs 06, 07, 08, 09, and 11 was added to the Source Test Schedule Table. A corresponding stack testing condition was added to the permit.
- Stack testing for Unit IDs 06, 07, 08, 09, 11, and 12 was added to the Source Test Schedule Table for the metal HAPS: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Mercury, Nickel, Selenium, and Manganese. A corresponding stack testing condition was added to the permit.
- Stack testing for Unit IDs 03, 07, 08, and 09 was added to the Source Test Schedule Table for the HAPS: Acetaldehyde, Acrolein, Benzene, Ethyl Benzene, Formaldehyde, Propionaldehyde, HCl, Chloroform, 1,3 Butadiene, Vinyl Chloride, Xylene, Styrene, and Toluene. A corresponding stack testing condition was added to the permit.
- Clarifying language that if a control device fails, the facility shall shut down process operations controlled by that air pollution control system in a manner consistent with safe operating practices was added to the general control device monitoring Condition 2. This was also added to the individual control device monitoring conditions.
- The additional description "non-chlorinated" was added to the plastic burning Conditions 13 and 15.
- Unit IDs were added to all the MACT conditions. Unit ID was removed from the MACT condition since Unit ID 02 (building ventilation) is actually what will be monitored to comply. Unit ID 10 was removed from the source testing requirements for the MACT because the smelting furnaces have hoods over all the furnace taps to collect fugitive emissions.
- The PSD avoidance conditions (formerly Conditions 40 and 41) were combined into a single Condition 41. The estimation of emissions during malfunctions requirement was also added to this condition.
- The monitoring frequency for all control device conditions was changed from "daily" to "each shift.
- Clarifying language that stack test results will be used to verify and establish emission factors, verify emissions used in air dispersion modeling, and demonstrate compliance with any facility wide PSD avoidance was added to the stack test conditions.
- Requirement to comply with the GHG Mandatory Reporting Rule was added (Condition 57).
- A condition defining what may be used and what quantities may be used in the refining kettles was added (Condition 60).
- The Standard Condition for generators compliance with NSPS Subpart IIII and NESHAP Subpart ZZZZZ was added (Condition 61).
- The general condition for gauge accessibility was added (Condition 62).
- A separate HEPA filter monitoring Condition for Unit IDs 12 and 14 were added (Condition 63) so the facility would not have to shut down the process if one of these filters failed.

EMISSION UNITS

Unit ID 01 – CX Plant

The battery breaking and desulfurization will take place in the CX plant. Intact automobile and marine batteries will be received via

enclosed tractor trailers. These batteries are inspected for leaks and then warehoused. The batteries are then crushed and separated into plastic, paste, lead parts, and other metal materials. A super desulfurization process removes sulfur from the lead paste. The CX Plant can process 33.1 tons per hour.

Equipment

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
H100	Battery Preparation	FL-530	CS1
H-101	Vibrating Conveyor	FL-530	CS1
ML-101	Precrusher	FL-530	CS1
VS-102	Vibrating Screen Separator	FL-530	CS1
V-102	Paste Slurry Tank	FL-530	CS1
FL-101	Filter Press	FL-530	CS1
R-301a/b/c	Desulferization Reactors	FL-530	CS1
FL-310a/b	Filter Press	FL-530	CS1
FL-311a/b	Polishing Filter	FL-530	CS1
R-311a/b/c	Neutralization Reactors	FL-530	CS1
H-202	Belt Conveyor	FL-530	CS1
H-203	Magnetic Separator	FL-530	CS1
ML-201	Hammer Mill	FL-530	CS1
VS-201	Vibrating Screen Seperator	FL-530	CS1
R-302	Lead Paste Collection	FL-530	CS1
V-280a/b	Paste Slurry Settling Basin	FL-530	CS1
H-280a/b	Scraping Chain	FL-530	CS1
VS-220	Dewatering Screen	FL-530	CS1

Control Device ID	Control Device Description	Capture/Control	Pollutant(s) Controlled
FL-530	Plate Scrubber	100%/90%	PM/PM_{10}, Lead, H_2SO_4

EMISSIONS

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
01	PM/ PM_{10}	3.37	14.75	AP-42 Table 11.19.2-2
01	Pb	0.337	1.48	Manufacturer's Estimate Assuming 10% of PM is Lead
01	H_2SO_4	3.03	13.28	Manufacturer's Estimate Assuming 90% of PM is H_2SO_4

CONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
01	PM/PM_{10} /$PM_{2.5}$	0.28	1.21	Manufacturer's Estimate*, 100% Capture, 90% Control from a scrubber
01	Pb	0.028	0.12	Manufacturer's Estimate* Assuming 10% of PM is Lead, 100% Capture, 90% Control from a scrubber
01	H_2SO_4	0.28	1.21	Manufacturer's Estimate* Assuming 90% of PM is H_2SO_4, 100% Capture, 90% Control

*Manufacturer's estimations based on the airflow to the scrubber and concentrations of the pollutant in the air flow were used rather than the AP-42 factor

Sample Calculations:
Precrusher Operation PM: 0.0054 lb/ton (AP42 Table 11.19.2-2) * 24.8 ton/hr (usage rate of batteries) = 0.13 lb/hr
Controlled PM: 25,000 Nm^3.hr (Flow) * 5mg/N m^3(PM outlet concentration) = 125g/hr = 0.28 1b/hr
Controlled Pb emissions: 0.28 lb/hr (PM emissions) *0.10 (% lead of PM) = 0.028 lb/hr

Unit ID 01 Specific Applicable Regulations
Standard 4 – Section IX (Visible Emissions) limits all operations at a metal refining facility to 20% opacity. Section VIII(Other Manufacturing) limits the PM emissions from this process to 8.81 lbs/hr using the equation $E = (F)(4.10P^{.67})$. An effect factor (F) of 0.25 was used since acid mist will be present. Although the Unit will use a scrubber to control PM emissions, monitoring is not required because the potential PM emissions are less than the limit.

Unit ID 01 Specific NonApplicable Regulations
40 CFR 60 Subpart L – Only the rotary furnace at this facility is subject to this Standard.

Unit ID 02 – CX Plant Ventilation
The crushing area has a collection system for collecting and controlling emissions. It is assumed that 1% of the uncontrolled emissions escape the enclosure and are emitted through the roof vents. The ventilation is being included as a Unit since it has specific requirements under 40 CFR 63 Subpart X.

Equipment

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
TBD	CX Plant Fugitives	N/A	BB1-10

EMISSIONS

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
02	$PM/PM_{10}/PM_{2.5}$	0.003	0.015	AP-42 Table 11.19.2-2 Assuming 1% of emissions will escape the crushing process and exhaust through the roof vents
02	Pb	0.000337	0.0015	Manufacturer's Estimate Assuming 10% of PM is Lead.
02	H_2SO_4	0.003	0.013	Manufacturer's Estimate Assuming 90% of PM is H_2SO_4.

Sample Calculation:
Uncontrolled PM: 3.37 lb/hr (Uncontrolled CX emissions) * 0.01 (% escaping enclosure) =0.003 lb/hr

Unit ID 02 Specific Applicable Regulations
40 CFR 63 Subpart X – This process is subject to 40 CFR §63.545 Standards For Fugitive Dust Sources because storage area enclosures and specifically listed

Unit ID 02 Specific NonApplicable Regulations
Standard 4 – The process emissions have already been accounted for in Unit ID 01.
40 CFR 60 Subpart L – Only the smelting furnace at this facility is subject to this Standard.

Unit ID 03 – PP Storage and Extrusion
The raw material for the poly plant is combined stream of plastic and lead parts. The plastic is separated from the lead using a floatation system. Polypropylene is separated from other plastics and is pneumatically conveyed to silos. The silo supplies an extrusion and pelletization process.

Equipment

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
S-221	Separator	N/A	RV1
TBD	Extruder	N/A	RV1

Company Name:	Johnson Controls Inc. – Florence Recycling Plant	**Permit Writer:**	James Myers
Permit Number:	1040-0129-CA	**Date:**	February 5, 2010

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
TBD	Two Silos with integral bin vent filters	N/A	RV1

EMISSIONS

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
03 Storage	PM	0.02	0.07	AP-42 Table 11.12-2 with integral bin vent
03 Storage	PM_{10} /$PM_{2.5}$	0.01	0.04	AP-42 Table 11.12-2 with integral bin vent
03 Storage	Pb	2.43E-05	0.0004	Polypropylene is expected to have less than 0.15% Pb by weight
03 Storage	Antimony	2.08E-08	9.11E-08	Estimated as a fraction of the lead emissions
03 Storage	Arsenic	1.04E-08	4.56E-08	Estimated as a fraction of the lead emissions
03 Storage	Cadmium	1.04E-08	4.56E-08	Estimated as a fraction of the lead emissions
03 Storage	Chromium	2.08E-09	9.11E-09	Estimated as a fraction of the lead emissions
03 Extrusion	PM/PM_{10} /$PM_{2.5}$	2.38	8.64	"Development of Emission Factors for Polypropylene Processing", ISSN 1047-3289, *J. Air & Waste Manage. Assoc*. 49:49-56:
03 Extrusion	VOC	2.98	10.84	"Development of Emission Factors for Polypropylene Processing", ISSN 1047-3289, *J. Air & Waste Manage. Assoc*. 49:49-56:
03 Extrusion	Acetaldehyde	0.06	0.21	"Development of Emission Factors for Polypropylene Processing", ISSN 1047-3289, *J. Air & Waste Manage. Assoc*. 49:49-56:
03 Extrusion	Acrolein	0.00	0.01	"Development of Emission Factors for Polypropylene Processing", ISSN 1047-3289, *J. Air & Waste Manage. Assoc*. 49:49-56:
03 Extrusion	Acrylic Acid	0.06	0.21	"Development of Emission Factors for Polypropylene Processing", ISSN 1047-3289, *J. Air & Waste Manage. Assoc*. 49:49-56:
03 Extrusion	Formaldehyde	0.07	0.25	"Development of Emission Factors for Polypropylene Processing", ISSN 1047-3289, *J. Air & Waste Manage. Assoc*. 49:49-56:
03 Extrusion	Formic Acid	0.01	0.05	"Development of Emission Factors for Polypropylene Processing", ISSN 1047-3289, *J. Air & Waste Manage. Assoc*. 49:49-56:
03 Extrusion	Methyl Ethyl Ketone	0.03	0.13	"Development of Emission Factors for Polypropylene Processing", ISSN 1047-3289, *J. Air & Waste Manage. Assoc*. 49:49-56:
03 Extrusion	Propionaldehyde	0.01	0.02	"Development of Emission Factors for Polypropylene Processing", ISSN 1047-3289, *J. Air & Waste Manage. Assoc*. 49:49-56:

Sample Calculations:
Storage Emissions PM: 0.0089 lb/ton (AP-42 Table 11.12-2 with integral bin vent) * 1.82 tons/hr (production rate) = 0.02 lb/hr
Extrusion Emissions VOC: 0.819 lb/1000 lbs (Air & Waste EF) * 3.64 thousand lbs/hr (production rate) = 2.98 lb/hr

Unit ID 03 Specific Applicable Regulations
Standard 4 – Section IX (Visible Emissions) limits all operations at a metal refining facility to 20% opacity. Section VIII(Other Manufacturing) limits the PM emissions from this process to 11.1 lbs/hr using the equation $E = (F)\ 4.10\ P^{0.67}$. The Seperator, each silo, and extruder will each have their own emission limit since the two silos represent a break in the flow and are a parallel operation. Monitoring is not required for any of the processes because the uncontrolled emissions are less than the limits.

Unit ID 04 – Boiler

Equipment

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
PK-150	6.17 million BTU/hr Fired on Natural Gas	N/A	RV1

EMISSIONS

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
PK-150	$PM/PM_{10}/PM_{2.5}$	0.05	0.21	AP-42 Table 1.4-2
PK-150	SO_2	0.004	0.02	AP-42 Table 1.4-2
PK-150	CO	0.52	2.27	AP-42 Table 1.4-1
PK-150	NOx	0.62	2.70	AP-42 Table 1.4-1
PK-150	VOCs	0.03	0.15	AP-42 Table 1.4-2

Sample Calculation:
Uncontrolled Emission NOx: (6.17 million BTU/hr (Boiler Capacity) /1000 BTU/cf (natural gas heat content)) * 100 lb/million cf (AP-42 Table 1.4-1) = 0.62 lb/hr

Unit ID 04 Specific Applicable Regulations
Standard 1 – This boiler will be subjected to the 20% opacity limit, the 0.6 lb/million BTU PM limit, and the 3.5 lb/million BTU sulfur limit of this Standard. The boiler will only burn natural gas and uncontrolled emissions will comply with the limits.

Unit ID 04 Specific Non Applicable Regulations
Standard 5.2 – Section I(b) exempts any source with a capacity less than 10 Million BTU/hr
40 CFR 60 Subpart Dc – Boilers with a capacity less than 10 Million BTU/hr are not subject to this Standard.
*This Unit could be exempted under 61-62.1 Section II(B)(b) but the facility is taking PSD avoidance limits for NOx and CO so emissions from the boilers will need to be monitored.

Unit ID 05 – Flash Tube Dryer and Silo

The crystallization process consists of two major steps: crystallization of sodium sulfate and drying of the salt cake. Steam from the boiler (ID 04) provides heat to evaporate water and concentrate the sodium sulfate solution. A flash tube dryer removes the remaining water from the crystals and they are pneumatically conveyed to silos.

Equipment

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
FL-421	2.05 million BTU/hr Fired on Natural Gas	N/A	FT1
SI	(2) Sodium Sulfate Storage Silos with Integral Bin Vent Filters	N/A	FT1

Emissions

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
FL-421 and SI	PM	0.06	0.26	AP-42 Table 1.4-2 and AP-42 Table 11.12-2 with inherent bin vent filter
FL-421 and SI	$PM_{10}/PM_{2.5}$	0.04	0.18	AP-42 Table 1.4-2 and AP-42 Table 11.12-2 with inherent bin vent filter
FL-421	SO_2	0.002	0.01	AP-42 Table 1.4-2
FL-421	CO	0.17	0.75	AP-42 Table 1.4-1

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
FL-421	NOx	0.20	0.90	AP-42 Table 1.4-1
FL-421	VOCs	0.01	0.05	AP-42 Table 1.4-2
FL-421 and SI	Pb	3.02E-7	4.49E-06	AP-42 Table 1.4-2, 5 ppm of Sodium Sulfate Engineering Estimate*
FL-421 and SI	Antimony	4.79E-06	3.47E-06	5 ppm of Sodium Sulfate Engineering Estimate
FL-421 and SI	Arsenic	4.79E-06	3.47E-06	5 ppm of Sodium Sulfate Engineering Estimate
FL-421 and SI	Cadmium	4.79E-06	3.47E-06	5 ppm of Sodium Sulfate Engineering Estimate
FL-421 and SI	Chromium	4.79E-06	3.47E-06	5 ppm of Sodium Sulfate Engineering Estimate

Sample Calculation:
Dryer and Silo Emission PM: Combustion Emissions (2.05 million BTU/hr (Boiler Capacity) /1000 BTU/cf (natural gas heat content)) * 7.6 lb/million cf (AP-42 Table 1.4-2) = 0.016 lb/hr
Process Silo Emissions 0.0089 lb PM/ton (AP-42 Table 11.12-2 with inherent bin vent filter) * 5.04 tons/hr (production rate) = 0.0449 lb/hr Combustion + Process emissions = 0.0449+0.016 = 0.06 lb/hr

Unit ID 05 Specific Applicable Regulations
Standard 4 – Section IX (Visible Emissions) limits all operations at a metal refining facility to 20% opacity. Section VIII(Other Manufacturing) limits the PM emissions from this process to 12.12 lbs/hr using the equation $E = (F)\ 4.10\ P^{0.67}$. The dryer and each silo will have their own emission limit since the two silos represent a break in the flow and are a parallel operation. The process weight rate is based on 5.04 tons per hour of dry sodium sulfate being able to be processed. Monitoring is not required for any of the processes because the uncontrolled emissions are less than the limits.
Unit ID 05 Specific NonApplicable Regulations
Standard 1 – The dryer is direct fired and not subject to this regulation.
Standard 5.2 - Section I(b) exempts any source with a capacity less than 10 Million BTU/hr

Unit ID 06 – Melter and Charge Prep
Washed lead parts from the battery breaking and separation process are screened to separate fine lead parts from larger ones. The large parts are loaded into a rotary furnace for melting while the fine parts are sent to the charge prep. The smelting operation used a variety of materials including anthracite, lead paste, iron, refinery recycle materials and sodium bicarbonate. The raw materials are received by trucks and the charge prep area enclosed building equipped with air locks.
Equipment

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
KL-603	Rotary Lead Melting Furnace rated at 3.85 million BTU/hr using natural gas	PK-730	CB1
PK7a/b	Charge Preparation	PK-730	CB1

Control Device ID	Control Device Description	Capture/Control	Pollutant(s) Controlled
PK-730	Baghouse and HEPA Filter *	99%/99.97%	PM/PM_{10}, HAP/TAP, Lead

*The two control devices are in series

Company Name:	Johnson Controls Inc. – Florence Recycling Plant	**Permit Writer:**	James Myers
Permit Number:	1040-0129-CA	**Date:**	February 5, 2010

EMISSIONS

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
KL-603 & PK7a/b	$PM/PM_{10}/PM_{2.5}$	13.22	57.89	Total inlet flow of 200,000 Nm^3 (20,000 Melter, 180,000 Hygiene) and an inlet concentration of 0.03 g/Nm^3(manufacturer specification)
KL-603 & PK7a/b	SO_2	1.98	8.68	Total inlet flow of 200,000 Nm^3 (20,000 Melter, 180,000 Hygiene) and an inlet concentration of 45.0 mg/m^3(manufacturer specification- More Conservative than AP42)
KL-603 & PK7a/b	CO	5.73	25.08	Total inlet flow of 200,000 Nm^3 (20,000 Melter, 180,000 Hygiene) and an inlet concentration of 130.0 mg/m^3(manufacturer specification More Conservative than AP42)
KL-603 & PK7a/b	NOx	5.51	24.12	Total inlet flow of 200,000 Nm^3 (20,000 Melter, 180,000 Hygiene) and an inlet concentration of 125.0 mg/m^3(manufacturer specification More Conservative than AP42)
KL-603 & PK7a/b	VOCs	0.44	1.93	Total inlet flow of 200,000 Nm^3 (20,000 Melter, 180,000 Hygiene) and an inlet concentration of 10.0 mg/m^3(manufacturer specification More Conservative than AP42)
KL-603 & PK7a/b	Pb	13.22	57.89	Assumption that almost of particulate matter emitted is lead.
KL-603 & PK7a/b	Antimony	0.132	0.579	Engineering Assumption 10% of particulate
KL-603 & PK7a/b	Arsenic	0.0661	0.290	Engineering Assumption 5% of particulate
KL-603 & PK7a/b	Cadmium	0.0661	0.290	Engineering Assumption 5% of particulate
KL-603 & PK7a/b	Chromium	0.0132	0.0579	Engineering Assumption 1.0% of particulate
KL-603 & PK7a/b	Mercury	1.06E-4	4.63e-4	Based on source test from similar facility

CONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
KL-603 & PK7a/b	$PM/PM_{10}/PM_{2.5}$	0.04	0.19	Baghouse & Hepa Filter in line 100% Capture and 99.7% Efficient
KL-603 & PK7a/b	Pb	0.04	0.19	Baghouse & Hepa Filter in line 100% Capture and 99.7% Efficient
KL-603 & PK7a/b	Antimony	4.41E-03	1.93E-02	Baghouse & Hepa Filter in line 100% Capture and 96.7% Efficient
KL-603 & PK7a/b	Arsenic	2.20E-03	9.65E-03	Baghouse & Hepa Filter in line 100% Capture and 96.7% Efficient
KL-603 & PK7a/b	Cadmium	2.20E-03	9.65E-03	Baghouse & Hepa Filter in line 100% Capture and 96.7% Efficient
KL-603 & PK7a/b	Chromium	4.41E-04	1.93E-03	Baghouse & Hepa Filter in line 100% Capture and 96.7% Efficient
KL-603 & PK7a/b	Mercury	1.06E-4	4.63E-4	Based on source test from similar facility

Sample Calculation:
Uncontrolled Emissions Pb: (20,000 Nm^3/hr (Melter Flow) + 180,000 Nm^3/hr (Hygiene Flow)) * 0.03 g/ Nm^3 (manufacturer specified concentration) = 6000 g/hr = 13.22 lb/hr

Unit ID 06 Specific Applicable Regulations

Standard 4 – IX (Visible Emissions) limits all operations at a metal refining facility to 20% opacity. Section VIII(Other Manufacturing) limits the PM emissions from this process to 17.8 using the equation $E = (F)\ 4.10\ P^{0.67}$. The process weight rate for the rotary furnace (8.93 TPH) is based on how much lead the furnace can process per hour. The process weight rate for the charge prep is based on the fines lead, lead paste, and fluxes. Since both of these processes exhaust through the same stack, the more conservative process weight rate will be used to calculate the emission limit. Monitoring is not required for any of the processes because the uncontrolled emissions are less than the limits.

40 CFR 63 Subpart X – This process is subject to 40 CFR §63.544 Standards For Process Fugitive Sources because charge hoppers are specifically listed.

Unit ID 06 Specific NonApplicable Regulations

Standard 1 – The melter is direct fired and not subject to this regulation.

Standard 5.2 - Section I(b) exempts any source with a capacity less than 10 Million BTU/hr

40 CFR 60 Subpart L – Only the smelting furnace and refining kettles at this facility are subject to this Standard.

Unit IDs 07, 08, 09 – Smelting Furnaces

The smelting furnaces process lead paste along with other materials assembled in the charge preparation area. Each furnace receives heat from a 25.64 Million BTU/hr natural gas burner. The furnace also receives air and oxygen for combustion and processing. The vent gases will go through an afterburner to reduce CO and VOC emissions. The emissions from the afterburner pass through a baghouse and then a wet scrubber.

Equipment – Unit 07

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
KL-710a	Rotary Smelting Furnace #1 25.64 Million BTU/hr natural gas	PK-722a PK-720a PK-719a	F1

Control Device ID	Control Device Description	Capture/Control	Pollutant(s) Controlled
PK-722a	Smelter #1 Afterburner 8.55 Million BTU/hr natural gas	100%/50%	CO
PK-720a	Smelter #1Baghouse/HEPA Filter	100%/99.7%	$PM/PM_{10}/PM_{2.5}$ Metal HAPs
PK-719a	Smelter #1 Wet Scrubber	100%/90%	SO_2

Equipment – Unit 08

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
KL-710b	Rotary Smelting Furnace #2 25.64 Million BTU/hr natural gas	PK-722b PK-720b PK-719b	F2

Control Device ID	Control Device Description	Capture/Control	Pollutant(s) Controlled
PK-722b	Smelter #2 Afterburner 8.55 Million BTU/hr natural gas	100%/50%	CO
PK-720b	Smelter #2Baghouse/HEPA Filter	100%/99.7%	$PM/PM_{10}/PM_{2.5}$ Metal HAPs
PK-719b	Smelter #2 Wet Scrubber	100%/90%	SO_2

Equipment – Unit 09

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
KL-710c	Rotary Smelting Furnace #3 25.64 Million BTU/hr	PK-722c PK-720c PK-719c	F3

Control Device ID	Control Device Description	Capture/Control	Pollutant(s) Controlled
PK-722c	Smelter #3 Afterburner 8.55 Million BTU/hr natural gas	100%/50%	CO
PK-720c	Smelter #3Baghouse/HEPA Filter	100%/99.7%	$PM/PM_{10}/PM_{2.5}$ Metal HAPs
PK-719c	Smelter #3 Wet Scrubber	100%/90%	SO_2

Emissions

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
KL-710a	$PM/PM_{10}/PM_{2.5}$	793	3473	Mass Balance
KL-710a	SO_2	23.39	101.99	Mass Balance. See Note 1
KL-710a	CO	9.58	41.96	Manufacturer Specification. See Note 2
KL-710a	NOx	4.19	18.35	Manufacturer Specification. See Note 3
KL-710a	VOCs	0.55	2.41	Manufacturer Specification. See Note 4
KL-710a	Pb	793	3473	Assumption that almost of particulate matter emitted is lead.
KL-710a	Antimony	79.3	347	Engineering Assumption 10% of particulate
KL-710a	Arsenic	39.6	174	Engineering Assumption 5% of particulate
KL-710a	Cadmium	39.6	174	Engineering Assumption 5% of particulate
KL-710a	Chromium	7.93	34.7	Engineering Assumption 1.0% of particulate
KL-710a	Mercury	23E-4	1.85E-3	Based on source test from similar facility
KL-710a	HCl	0.337	1.48	Mass balance based on expected amount of chlorinated plastics burned
KL-710b	$PM/PM_{10}/PM_{2.5}$	793	3473	Mass Balance
KL-710b	SO_2	23.39	101.99	Mass Balance. See Note 1
KL-710b	CO	9.58	41.96	Manufacturer Specification. See Note 2
KL-710b	NOx	4.19	18.35	Manufacturer Specification. See Note 3
KL-710b	VOCs	0.55	2.41	Manufacturer Specification. See Note 4
KL-710b	Pb	793	3473	Assumption that almost of particulate matter emitted is lead.
KL-710b	Antimony	79.3	347	Engineering Assumption 10% of particulate
KL-710b	Arsenic	39.6	174	Engineering Assumption 5% of particulate
KL-710b	Cadmium	39.6	174	Engineering Assumption 5% of particulate
KL-710b	Chromium	7.93	34.7	Engineering Assumption 1.0% of particulate
KL-710b	Mercury	23E-4	1.85E-3	Based on source test from similar facility
KL-710b	HCl	0.337	1.48	Mass balance based on expected amount of chlorinated plastics burned
KL-710c	$PM/PM_{10}/PM_{2.5}$	793	3473	Mass Balance
KL-710c	SO_2	23.39	101.99	Mass Balance. See Note 1
KL-710c	CO	9.58	41.96	Manufacturer Specification. See Note 2
KL-710c	NOx	4.19	18.35	Manufacturer Specification. See Note 3
KL-710c	VOCs	0.55	2.41	Manufacturer Specification. See Note 4

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
KL-710c	Pb	793	3473	Assumption that almost of particulate matter emitted is lead.
KL-710c	Antimony	79.3	347	Engineering Assumption 10% of particulate
KL-710c	Arsenic	39.6	174	Engineering Assumption 5% of particulate
KL-710c	Cadmium	39.6	174	Engineering Assumption 5% of particulate
KL-710c	Chromium	7.93	34.7	Engineering Assumption 1.0% of particulate
KL-710c	Mercury	23E-4	1.85E-3	Based on source test from similar facility
KL-710c	HCl	0.337	1.48	Mass balance based on expected amount of chlorinated plastics burned

1. The SO_2 emissions can come from two sources, the sulfur containing lead paste and the anthracite coal. The sulfur content in the lead paste is 0.50% and the sulfur content in the anthracite will be a maximum of 0.65%.
2. The CO emissions using AP42 factors are considerably lower than the manufacturer specifications. The operating characteristics of the smelter cause an increase in CO. The afterburner is added to help complete combustion.
3. The NOx emissions using AP42 factors are considerably higher than the manufacturer specifications. The furnace uses pure oxygen so NOx is expected to be less than when using ambient air. Lox NOx burners are also used.
4. The VOC emissions using AP42 factors are slightly lower than the manufacturer specifications. The facility is not taking credit for the destruction of VOCs by the afterburner.

CONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
KL-710a	$PM/PM_{10}/PM_{2.5}$	0.18	0.77	99.98% manufacturer's estimated control efficiency
KL-710a	SO_2	2.33	10.199	90% estimated scrubber control
KL-710a	CO	4.79	20.98	50% efficiency from afterburner
KL-710a	Pb	0.18	0.77	Assumption that almost of particulate matter emitted is lead.
KL-710a	Antimony	0.0176	0.077	Engineering Assumption 10% of particulate
KL-710a	Arsenic	0.0088	0.0386	Engineering Assumption 5% of particulate
KL-710a	Cadmium	0.0088	0.0386	Engineering Assumption 5% of particulate
KL-710a	Chromium	0.00176	0.0077	Engineering Assumption 1.0% of particulate
KL-710a	Mercury	4.23E-4	1.85E-3	Based on source test from similar facility
KL-710b	$PM/PM_{10}/PM_{2.5}$	0.18	0.77	99.98% manufacturer's estimated control efficiency
KL-710b	SO_2	2.33	10.199	90% estimated scrubber control
KL-710b	CO	4.79	20.98	50% efficiency from afterburner
KL-710b	Pb	0.18	0.77	Assumption that almost of particulate matter emitted is lead.
KL-710b	Antimony	0.0176	0.077	Engineering Assumption 10% of particulate
KL-710b	Arsenic	0.0088	0.0386	Engineering Assumption 5% of particulate
KL-710b	Cadmium	0.0088	0.0386	Engineering Assumption 5% of particulate
KL-710b	Chromium	0.00176	0.0077	Engineering Assumption 1.0% of particulate
KL-710b	Mercury	4.23E-4	1.85E-3	Based on source test from similar facility
KL-710c	$PM/PM_{10}/PM_{2.5}$	0.18	0.77	99.98% manufacturer's estimated control efficiency
KL-710c	SO_2	2.33	10.199	90% estimated scrubber control
KL-710c	CO	4.79	20.98	50% efficiency from afterburner
KL-710c	Pb	0.18	0.77	Assumption that almost of particulate matter emitted is lead.
KL-710c	Antimony	0.0176	0.077	Engineering Assumption 10% of particulate
KL-710c	Arsenic	0.0088	0.0386	Engineering Assumption 5% of particulate

CONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
KL-710c	Cadmium	0.0088	0.0386	Engineering Assumption 5% of particulate
KL-710c	Chromium	0.00176	0.0077	Engineering Assumption 1.0% of particulate
KL-710c	Mercury	4.23E-4	1.85E-3	Based on source test from similar facility

Sample Calculations:
Uncontrolled Emissions NOx: 25,000 Nm^3/hr (Furnace Flow) * 76 mg/ Nm^3 (manufacturer specified concentration) =1900000 mg/hr = 4.19 lb/hr
Controlled Emissions SO2: From paste: 8818 lb/hr(lead paste processing rate) * 0.005 (%sulfur in paste) * .20 (%capture in flux) *2 lb SO2/lb S (Sulfur to SO2 conversion = 17.64 lb/hr From anthracite 434 lb/hr(anthracite processing rate) * 0.0065 (%sulfur in anthracite) * .20 *2 lb SO2/lb S (Sulfur to SO2 conversion = 6 lb/hr
Paste + Anthracite = (17.64 lb/hr + 6 lb/hr) * .10 (Control from Scrubber) = 2.33 lb/hr

Unit ID 07, 08, 09 Specific Applicable Regulations
Standard 3- The furnaces will burn a small amount of plastic generated on-site. The heat input of the waste plastic will be less than 10% of the total heat input. Each furnace will be exempt from the requirements of Standard 3 in accordance with Section III(L)(5) with the exception of the requirements of Section III(L)(5)(a-c). The waste input is limited to 3.26 Million BTU/hr since the total heat input is 54.37 Million BTU/hr (34.19 Natural gas, 20.18 Anthracite).
The afterburners are subject to the requirements for Industrial Incinerators.
Standard 4 – IX (Visible Emissions) limits all operations at a metal refining facility to 20% opacity. Section VIII(Other Manufacturing) limits the PM emissions from this process to 14.6 lbs/hr for each smelting furnace using the equation E = (F) 4.10 $P^{0.67}$. The process weight rate for each smelting furnace is (6.65 TPH) is based on how much lead the furnace can process per hour. The process weight rate is based on the scrap lead, lead paste, and fluxes. A baghouse on each furnace will be used to comply with the PM limit of this regulation
Standard 5.2 – Each burner for the smelting furnace is subject to the 30% reduction for "Fuel Combustion Sources Not Otherwise Specified". Based on AP42 factors for natural gas and anthracite combustion, the furnaces are predicted to be over 50% lower than the uncontrolled NOx emission rates. The uncontrolled NOx emissions based on burning anthracite and natural gas is 9.82 lb/hr. The natural gas combustion emissions from the afterburner are not included. A 30% reduction would be 6.87 lb/hr. The afterburners are not required to comply with this regulation since they are functioning as a combustion control device in accordance with Section I(b)(4).
40 CFR 60 Subpart L – Each furnace is subject to the following PM limit: a)(1) Contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf) and the following opacity limit: (a)(2) Exhibit 20 percent opacity or greater.
A source test for opacity and PM will be performed within 180 days of startup.
40 CFR 63 Subpart X – This process is subject to 40 CFR §63.543 Standards For Process Sources and has the following limit: a) No owner or operator of a secondary lead smelter shall discharge or cause to be discharged into the atmosphere from any existing, new, or reconstructed blast, reverberatory, rotary, or electric smelting furnace any gases that contain lead compounds in excess of 2.0 milligrams of lead per dry standard cubic meter (0.00087 grains of lead per dry standard cubic foot). The scrubbers on these Units have no requirement under this Standard because they are being installed only to control SO_2. The afterburner has no requirements under this Standard because it is being installed to control CO emissions by completing the combustion.
Unit ID 07, 08, 09 Specific NonApplicable Regulations
Standard 1 – The smelting furnaces are direct fired and not subject to this regulation.

Unit ID 10 – Foundry Ventilation
The smelting furnaces and slag cooling systems are contained in a single building. The air from this building is exhausted through a baghouse and HEPA filtration system. The ventilation is being included as a Unit since it has specific requirements under 40 CFR 63 Subpart X.

Equipment

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
TBD	Smelting and Slag Cooling Fugitives	PK-721	FB1

Control Device ID	Control Device Description	Capture/Control	Pollutant(s) Controlled
PK-721	Baghouse/HEPA Filter	100%/96.7%	$PM/PM_{10}/PM_{2.5}$ Metal HAPs

Emissions

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
10	$PM/PM_{10}/PM_{2.5}$	7.93	34.73	Manufacturer Specifications
10	Pb	7.93	34.73	Assumed to be 100% of particulate
10	Antimony	0.792	3.47	Assumed to be 10% of particulate
10	Arsenic	0.397	1.74	Assumed to be 5% of particulate
10	Cadmium	0.397	1.74	Assumed to be 5% of particulate
10	Chromium	0.0799	0.35	Assumed to be 1% of particulate

*The Metal HAPs emissions are higher than the total PM because the HAPs have been conservatively estimated.

CONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
10	PM/PM_{10}	0.26	1.16	96.7% Baghouse and HEPA Filter Efficiency
10	Pb	0.26	1.16	Assumed to be 100% of particulate
10	Antimony	0.0264	0.16	Assumed to be 10% of particulate
10	Arsenic	0.0132	0.06	Assumed to be 5% of particulate
10	Cadmium	0.0132	0.06	Assumed to be 5% of particulate
10	Chromium	0.000264	0.02	Assumed to be 1% of particulate

Sample Calculation:
Uncontrolled PM: 120000 lb/hr (Foundry Building Flow) * 0.03 mg/Nm^3 (PM concentration) = 3600 g/hr = 8 lb/hr

Unit ID 10 Specific Applicable Regulations
40 CFR 63 Subpart X – This process is subject to 40 CFR §63.545 Standards For Process Fugitive Dust Sources because the building contains the smelting process.
Unit ID 10 Specific NonApplicable Regulations
Standard 4 – The process emissions have already been accounted for.
40 CFR 60 Subpart L – Only the smelting furnace and refining kettles at this facility is subject to this Standard.

Unit ID 11 – Refining Kettles and Casting
Molten lead from the rotary melting furnaces and smelting furnaces are the primary raw materials for the refining kettles. A total of nine kettles will be used for lead refining. Each kettle will be equipped with a natural gas burner. After refining the molten lead will be poured into casting ingots.

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
KT-810a-i	(9) Refining Kettles 8.55 Million BTU/hour each	PK-820	RB1
PK-850	Ingot Casting	PK-820	RB1

Control Device ID	Control Device Description	Capture/Control	Pollutant(s) Controlled
PK-820	Baghouse/HEPA Filter	100%/96.7%	$PM/PM_{10}/PM_{2.5}$ Metal HAPs

Emissions

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
KT-810a-i	PM /PM_{10}	14.74	64.54	Manufacturer Specifications
KT-810a-i	SO_2	4.52	19.78	Mass balance estimates from similar operations
KT-810a-i	CO*	1.10	4.82	Manufacturer Specifications
KT-810a-i	NOx*	3.30	14.47	Manufacturer Specifications
KT-810a-i	VOCs	0.44	1.93	Manufacturer Specifications
KT-810a-i	Pb	14.74	64.54	Assumed to be 100% of particulate
KT-810a-i	Antimony	1.47	6.45	Assumed to be 10% of particulate
KT-810a-i	Arsenic	0.737	3.23	Assumed to be 5% of particulate
KT-810a-i	Cadmium	0.737	3.23	Assumed to be 5% of particulate
KT-810a-i	Chromium	0.147	0.645	Assumed to be 1% of particulate

*The emissions estimated using manufacturer's information were slightly lower for NOx and significantly lower for CO than the AP 42 factors for natural gas combustion. A source test will be necessary to confirm these estimates.
** The Metal HAPs emissions are higher than the total PM because the HAPs have been conservatively estimated.

CONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
KT-810a-i	PM /PM_{10}	0.49	2.15	96.7% Baghouse and HEPA Filter Efficiency
KT-810a-i	Pb	0.49	2.15	Assumed to be 100% of particulate
KT-810a-i	Antimony	0.00275	0.0120	Assumed to be 10% of particulate
KT-810a-i	Arsenic	0.000639	0.0028	Assumed to be 5% of particulate
KT-810a-i	Cadmium	0.000835	0.00366	Assumed to be 5% of particulate
KT-810a-i	Chromium	0.000491	0.00215	Assumed to be 1% of particulate

Sample Calculation:
Uncontrolled Emissions Pb: (223000 Nm^3/hr (Total Flow) * 0.03 g/ Nm^3 (manufacturer specified outlet concentration) = 6690 g/hr = 15 lb/hr

Unit ID 11 Specific Applicable Regulations
Standard 1 – Each kettle is indirectly fired and will be subjected to the 20% opacity limit, the 0.6 lb/million BTU PM limit, and the 3.5 lb/million BTU sulfur limit of this Standard. The kettles will only burn natural gas and uncontrolled emissions will comply with the limits.
Standard 4 – Section VII (Metal Refining) limits all operations at a metal refining facility to 20% opacity. Section VIII(Other Manufacturing) limits the PM emissions from this process to 29.11 lbs/hr using the equation $E = (F)\ 4.10\ P^{0.67}$. The process weight rate is based on how much lead the kettles can process per hour. The process weight rates for all the kettles were combined since they are controlled by a common control device. Each kettle has an output of <10 tons per hour so they are not subject to the periodic testing requirements of Section XII.
40 CFR Subpart L-This unit is subject to the 10% opacity limit for pot kettles.
40 CFR 63 Subpart X – This process is subject to 40 CFR §63.544 Standards For Process Fugitive Dust Sources because the refining kettles are specifically listed.
Unit ID 11 Specific NonApplicable Regulations
Standard 5.2 - Section I(b) exempts any source with a capacity less than 10 Million BTU/hr

Unit ID 12 – Refining Ventilation
The refining kettles and casting operation are located in a single building. The building ventilators are equipped with a HEPA filtration system. No control efficiency was assumed because of the low concentration of lead and particulate in the air. The ventilation is being included as a Unit since it has specific requirements under 40 CFR 63 Subpart X.

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
TBD	Refining and Casting Fugitives	PK-821a-e	RE1-5

Control Device ID	Control Device Description	Capture/Control	Pollutant(s) Controlled
PK-821a-e	HEPA Filter*	100%/0%	$PM/PM_{10}/PM_{2.5}$ Metal HAPs

Emissions

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
12	$PM/PM_{10}/PM_{2.5}$	0.057	0.25	Manufacturer Specifications
12	Pb	0.057	0.25	Assumed to be 100% of particulate
12	Antimony	0.0046	0.02	Assumed to be 10% of particulate
12	Arsenic	0.0023	0.01	Assumed to be 5% of particulate
12	Cadmium	0.0023	0.01	Assumed to be 5% of particulate
12	Chromium	0.00056	0.0025	Assumed to be 1% of particulate

* The Metal HAPs emissions are higher than the total PM because the HAPs have been conservatively estimated.

Sample Calculation:
Uncontrolled Emissions PM: (50971 Nm^3/hr (Total Flow) * 100 ug/ Nm^3 (manufacturer specified concentration) = .0113E-6 ug/hr = 0.0112 lb/hr

Unit ID 12 Specific Applicable Regulations
40 CFR 63 Subpart X – This process is subject to 40 CFR §63.544 Standards For Process Fugitive Dust Sources because the building contains the refining process.
Unit ID 12 Specific NonApplicable Regulations
Standard 4 – The process emissions have already been accounted for.
40 CFR 60 Subpart L – Only the smelting furnace at this facility is subject to this Standard.

Unit ID 13 – Emergency Generators
Two 150 kW natural gas generators will be used to supply electricity for the support of operations when there is an outage of the normal supply.

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
EG1	No. 1 Emergency Natural Gas Generator 150 kW	N/A	EG1
EG2	No. 2 Emergency Natural Gas Generator 150 kW	N/A	EG2

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
EG1, EQ2	$PM/PM_{10}/PM_{2.5}$	0.0493	0.216	AP42 Section 3.2
EG1, EQ2	SO_2	0.0006	0.0026	AP42 Section 3.2
EG1, EQ2	NOx	2..32	10.16	AP42 Section 3.2
EG1, EQ2	CO	3.58	15.7	AP42 Section 3.2
EG1, EQ2	VOCs	0.53	2.32	AP42 Section 3.2

LIMITED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
EG1, EQ2	PM/PM_{10}	0.0393	0.006	AP42 Section 3.2 250 Hours per year
EG1, EQ2	SO_2	0.0006	0.00008	AP42 Section 3.2 250 Hours per year

LIMITED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
EG1, EQ2	NOx	2..32	0.29	AP42 Section 3.2 250 Hours per year
EG1, EQ2	CO	3.59	0.449	AP42 Section 3.2 250 Hours per year
EG1, EQ2	VOCs	0..123	0.015	AP42 Section 3.2 250 Hours per year

Unit ID 13 Specific Applicable Regulations
Standard 7 – These generators will be limited to 250 hours per year of operation to maintain facility wide emissions to less than 100 TPY for NOx and CO.

Unit ID 13 Specific Non Applicable Regulations
Standard 5.2 – Emergency generators that operate less than 250 hours per year are exempt from the requirements of this Standard per Section (I)(b)(2).

Unit ID 14 – Slag Warehouse
The slag warehouse is used to store the slag from the smelting process. A conveyor system is used to transfer the slag. This building has its own ventilation system and filtration system.

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
SW1	Slag Warehouse	SWC1	SW1

Control Device ID	Control Device Description	Capture/Control	Pollutant(s) Controlled
SWC1	Baghouse and HEPA Filter	100%/99%	$PM/PM_{10}/PM_{2.5}$ Metal HAPs

Emissions

UNCONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
SW1	PM	0.0336	0.1472	AP42 Table 11.12-2 (aggregate transfer)
SW1	PM_{10}	0.0239	0.1045	AP42 Table 11.12-2 (aggregate transfer)
SW1	Pb	0.0336	0.1472	Assumed to be 100% of particulate
SW1	Antimony	0.00336	0.01472	Assumed to be 10% of particulate
SW1	Arsenic	0.00168	0.00736	Assumed to be 5% of particulate
SW1	Cadmium	0.00168	0.00736	Assumed to be 5% of particulate
SW1	Chromium	0.000336	0.00147	Assumed to be 1% of particulate

* The Metal HAPs emissions are higher than the total PM because the HAPs have been conservatively estimated.

CONTROLLED POTENTIAL EMISSIONS (PROJECT ONLY)				
ID	**Pollutant**	**lb/hr**	**TPY**	**Method for Estimating Emissions**
SW1	PM	0.0003	0.0015	99% Baghouse and HEPA Filter Efficiency
SW1	PM_{10}	0.0002	0.0010	99% Baghouse and HEPA Filter Efficiency
SW1	HAP	0.00041	0.00181	Total of all Metal HAPs
SW1	Pb	0.0003	0.0015	Assumed to be 100% of particulate
SW1	Antimony	0.00000336	0.000147	Assumed to be 10% of particulate
SW1	Arsenic	0.0000168	0.000074	Assumed to be 5% of particulate
SW1	Cadmium	0.0000168	0.000074	Assumed to be 5% of particulate
SW1	Chromium	0.00000336	0.0000147	Assumed to be 1% of particulate

Sample Calculation:
Controlled Emissions PM: 0.0069 lb/ton (AP42 Table 11.12-2) * 1.62 ton/hr (slag processing) * .01 (control) * 3 (Number of times handles) = 0.0003 lb/hr

Unit ID 14 Specific Applicable Regulations

Standard 4 - Standard 4 – IX (Visible Emissions) limits all operations at a metal refining facility to 20% opacity. Section VIII(Other Manufacturing) limits the PM emissions from this process to 5.66 lbs/hr using the equation $E = (F)\ 4.10\ P^{0.67}$. The process weight rate is based on how slag is produced per hour.

40 CFR 63 Subpart X – This process is subject to 40 CFR §63.545 Standards For Fugitive Dust Sources because slag is listed in the definition of material handling.

Unit ID 14 Specific NonApplicable Regulations

40 CFR 60 Subpart L – Only the smelting furnace at this facility is subject to this Standard.

FACILITY WIDE EMISSIONS		
Pollutant	**Uncontrolled Emissions**	**Controlled Emissions**
	TPY	**TPY**
PM	10602	16.578
$PM_{10}/PM_{2.5}$	10567	16.257
SO_2	334.5	38.69
CO	169.0	96.15
NOx	112.94	97.689
VOC	24.45	22.15
Pb	10579	6.1939
Total HAPs	12795	13.73
Antimony	1051.5	0.44245
Arsenic	527.28	0.19833
Cadmium	527.28	0.19919
Chromium	105.16	0.049698
Mercury	0.006013	0.006013
H_2SO_4	13.3	1.33
Acetaldehyde	0.21	0.21
Acrolein	0.01	0.01
Acrylic Acid	0.21	0.21
Formaldehyde	0.25	0.25
Formic Acid	0.05	0.05
Methyl Ethyl Ketone	0.13	0.13
Propionaldehyde	0.02	0.02
HCl	4.44	4.44

PROJECT REGULATORY APPLICABILITY REVIEW			
Regulation	**Applicable**		**Comments**
	Yes	**No**	
South Carolina Regulation 61-62.1 through 62.99: Air Pollution Regulations (PROJECT ONLY)			
Section II(E): Synthetic Minor	X		The facility wide emissions for PM, PM_{10}, $PM_{2.5}$, SO_2, NOx, and CO are each greater than the major source threshold for PSD of 100 TPY. The facility must operate and monitor control devices and limit emergency generator usage to keep each pollutant below the major source threshold. The lead emissions are <100 TPY after comply with 40 CFR 63, Subpart X. so a PSD avoidance limit is not required since there are federally enforceable limits to operate control devices keeping the potential to emit below the major source limit.
Section II(G): Conditional Major		X	The facility will be required by 40 CFR 63 Subpart X to apply for a TV permit upon start-up.

Company Name:	Johnson Controls Inc. – Florence Recycling Plant	**Permit Writer:**	James Myers
Permit Number:	1040-0129-CA	**Date:**	February 5, 2010

PROJECT REGULATORY APPLICABILITY REVIEW

<table>
<tr><th rowspan="2">Regulation</th><th colspan="2">Applicable</th><th rowspan="2">Comments</th></tr>
<tr><th>Yes</th><th>No</th></tr>
<tr><td>Standard 1: Fuel Burning Operations</td><td>X</td><td></td><td>The following sources are subject to the Opacity, PM, and Sulfur Dioxide limits of this Standard.
<table>
<tr><th rowspan="2">Unit ID</th><th rowspan="2">Opacity (%)</th><th rowspan="2">PM Allowable (0.6 lb/10^6 BTU) lb/hr</th><th rowspan="2">SO_2 Allowable (3.5 lb/10^6 BTU) lb/hr</th><th colspan="2">Uncontrolled Emissions (lb/hr)</th></tr>
<tr><th>PM</th><th>SO_2</th></tr>
<tr><td>04</td><td>20</td><td>3.70</td><td>21.6</td><td>0.05</td><td>0.004</td></tr>
<tr><td>11 (each kettle)</td><td>20</td><td>5.13</td><td>29.9</td><td>1.67</td><td>0.502</td></tr>
</table>
Monitoring will not be required.</td></tr>
<tr><td>Standard 2: Ambient Air Quality Standards</td><td>X</td><td></td><td>This facility has demonstrated compliance through modeling; see modeling summary dated 07/29/09. Modeling was demonstrated for lead using the federal NAAQS standard.</td></tr>
<tr><td>Standard 3: Waste Combustion/Reduction (state only)</td><td>X</td><td></td><td>The lead smelters (07, 08, 09) will burn a small amount of waste plastic. See Emission Unit Descriptions for more details.</td></tr>
<tr><td>Standard 3.1: HMI Waste Incinerators</td><td></td><td>X</td><td>No medical waste incineration.</td></tr>
<tr><td>Standard 4: Emissions from Process Industries</td><td>X</td><td></td><td>The following sources are subject to this standard:
<table>
<tr><th>Process</th><th>Opacity</th><th>Process Weight (TPH)</th><th>PM Limit (lb/hr)</th><th>Uncontrolled PM (Lb/hr)</th><th>Monitoring</th></tr>
<tr><td>01</td><td>20%</td><td>24.8</td><td>8.81</td><td>3.37</td><td>Not Req.</td></tr>
<tr><td>03 Each Silo</td><td>20%</td><td>1.82</td><td>6.12</td><td>0.02</td><td>Not Req.</td></tr>
<tr><td>03 Extruder</td><td>20%</td><td>1.82</td><td>6.12</td><td>2.38</td><td>Not Req.</td></tr>
<tr><td>05</td><td>20%</td><td>5.04</td><td>12.12</td><td>0.059</td><td>Not Req.</td></tr>
<tr><td>06</td><td>20%</td><td>8.93</td><td>17.8</td><td>13.22</td><td>Not Req.</td></tr>
<tr><td>07</td><td>20%</td><td>6.65</td><td>14.6</td><td>793</td><td>Required</td></tr>
<tr><td>08</td><td>20%</td><td>6.65</td><td>14.6</td><td>793</td><td>Required</td></tr>
<tr><td>09</td><td>20%</td><td>6.65</td><td>14.6</td><td>793</td><td>Required</td></tr>
<tr><td>11</td><td>20%</td><td>19.11</td><td>29.6</td><td>15</td><td>Not Req.</td></tr>
<tr><td>14</td><td>20%</td><td>1.62</td><td>5.66</td><td>0.147</td><td>Not Req.</td></tr>
</table>
The smelting furnaces process less than 10 tons per hour so they are not subject to the periodic testing requirements.</td></tr>
<tr><td>Standard 5: Volatile Organic Compounds</td><td></td><td>X</td><td>The process was not in existence in 1979 or 1980.</td></tr>
<tr><td>Standard 5.1: BACT/LAER For VOC (state only)</td><td></td><td>X</td><td>The facility wide VOC emissions will remain <100 TPY with this project.</td></tr>
<tr><td>Standard 5.2: Control of Oxides of Nitrogen</td><td>X</td><td></td><td>Unit IDs 07, 08, 09 are subject to the requirements of this Standard. See “Emission Units” fro details.</td></tr>
</table>

PROJECT REGULATORY APPLICABILITY REVIEW

Regulation	Applicable		Comments
	Yes	No	
Standard 7: Prevention of Significant Deterioration		X	The facility wide emissions for PM, PM_{10}, $PM_{2.5}$, SO_2, NOx, and CO are each greater than the major source threshold for PSD of 100 TPY. The facility must operate and monitor control devices and limit emergency generator usage to keep each pollutant below the major source threshold. The facility is considered a secondary metal production plant and must count fugitive emissions when determining whether the facility wide total for each emission is greater than 100 TPY. The lead emissions are <100 TPY after comply with 40 CFR 63, Subpart X. so a PSD avoidance limit is not required since there are federally enforceable limits to operate control devices keeping the potential to emit below the major source limit.
Standard 7(II): Minor Source Increment Analysis	X		This facility has demonstrated compliance through modeling; see modeling summary dated 07/29/09.
Standard 7.1: Standards for Non Attainment Areas		X	This facility is not located in a nonattainment area.
Standard 8: Toxic Air Pollutants (state only)	X		This facility has demonstrated compliance through modeling for all TAPs; see modeling summary dated 07/29/09.
Regulation 61-62.6: Control of Fugitive Particulate Matter	X		The fugitive PM (Dust) emissions are controlled in a manner that should not produce undesirable levels of PM (Dust) emissions.
Regulation 61-62.60: New Source Performance Standards	X		Unit ID 07, 08, 09 are subject to the requirements of Subpart L. See "Emission Units" for details. The facility does not produce storage batteries so it is not subject to Subpart KK. The facility will not process lead from ore so it will not be subject to subpart LL (Metallic Mineral Processing) There are several New Source Performance Standards (NSPS) that could potentially apply to the smelting ovens since they burn waste plastic. NSPS Subpart EEEE only applies to facilities that are institutional facilities or burn municipal solid waste. The on-site generated plastic does not meet the definition of municipal solid waste. NSPS Subpart CCCC applies to facilities that burn over 35 tons per day of commercial or industrial waste. The furnaces do not have the capacity to combust that amount of plastic. All of the other NSPS apply to municipal solid waste incinerators of which the melter, smelting furnaces, and kettles do not meet the definition.
Regulation 61-62.61: National Emission Standards for Hazardous Air Pollutants	X		This process does not emit the pollutants subject to this standard (asbestos, benzene, beryllium, coke oven emissions, radio nuclide, radon, or vinyl chloride). The facility does emit arsenic and mercury but there are no applicable standards for any of the processes.
Regulation 61-62.63: NESHAP For Source Categories	X		The facility is a secondary lead smelter and subject to the requirements of Subpart X. See "Emission Units" for details.
Regulation 61-62.68: Chemical Accident Prevention		X	This process does not use chemicals subject to this Regulation.
Regulation 61-62.70: Title V	X		The facility is required by 40 CFR 63 Subpart X to apply for a Title V permit.

PROJECT REGULATORY APPLICABILITY REVIEW			
Regulation	**Applicable**		**Comments**
	Yes	**No**	
Regulation 61-62.72: Acid Rain		X	This project contains no equipment described by this Regulation.
Regulation 61-62.96: Nitrogen Oxides (NO_X) Budget Trading Program		X	This project does not involve any sources described by this Regulation.
Regulation 61-62.99: Nitrogen Oxides (NO_X) Budget Program Requirements for Stationary Sources Not In the Trading Program		X	This Regulation only applies to kilns.
Federal Regulations (PROJECT ONLY)			
NSPS (Part 60) Subpart(s)	X		Unit ID 07, 08, 09 are subject to the requirements of Subpart L. See "Emission Units" for details. The facility does not produce storage batteries so it is not subject to Subpart KK. The facility will not process lead from ore so it will not be subject to subpart LL (Metallic Mineral Processing) There are several New Source Performance Standards (NSPS) that could potentially apply to the smelting ovens since they burn waste plastic. NSPS Subpart EEEE only applies to facilities that are institutional facilities or burn municipal solid waste. The on-site generated plastic does not meet the definition of municipal solid waste. NSPS Subpart CCCC applies to facilities that burn over 35 tons per day of commercial or industrial waste. The furnaces do not have the capacity to combust that amount of plastic. All of the other NSPS apply to municipal solid waste incinerators of which the melter, smelting furnaces, and kettles do not meet the definition.
NESHAP (Part 61) Subpart(s)	X		This process does not emit the pollutants subject to this standard (asbestos, benzene, beryllium, coke oven emissions, radio nuclide, radon, or vinyl chloride). The facility does emit arsenic and mercury but there are no applicable standards for any of the processes.
MACT (Part 63) Subpart(s)	X		The facility is a secondary lead smelter and subject to the requirements of Subpart X. See "Emission Units" for details.
Area Source Standards (Part 63) Subpart(s)		X	There are no area sources for secondary lead smelters.
Compliance Assurance Monitoring (CAM) (Part 64)		X	The facility will be required to complete a CAM plan for each affected Unit with the submission of the Title V application.
Ambient Air Quality Surveillance (Part 58)	X		The facility emits greater than 1 ton per year of lead and will install an ambient air monitor.

SUMMARY AND CONCLUSIONS

It has been determined that this source, if operated in accordance with the submitted application, will meet all applicable requirements and emission standards.