

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**  
**ENGINEERING AND COMPLIANCE**  
**APPLICATION PROCESSING AND CALCULATIONS**

PAGES 11	PAGE 1
APPL. NO SEE P. 1	DATE 06-18-2010
PROCESSED BY MAP	CHECKED BY EST

P/C

COMPANY NAME AND ADDRESS

Quemetco, Inc. ID 8547  
720 South Seventh Avenue  
City of Industry, CA 91746 mailing and equipment address

EQUIPMENT DESCRIPTION

APPLICATION NOS.	509234	(Previous A/N 460794)
	509235	(Previous A/N 460795)
	509236	(Previous A/N 460796)
	509237	(Previous A/N 460797)
	509238	(Previous A/N 460798)
	509239	(Previous A/N 460799)
	509240	(Previous A/N 460800)

ALTERATION TO THE BURNER EXHAUST SYSTEM OF EACH POT FURNACE BY THE CONNECTION OF THE COMMON POT FURNACE BURNER EXHAUST OUTLET TO THE INTAKE MANIFOLD OF THE WET ELECTROSTATIC PRECIPITATOR AIR POLLUTION CONTROL SYSTEM OF APPLICATION NO. 509241.

APPLICATION NO. 509241 (Previous A/N 456811)

ALTERATION TO THE WET ELECTROSTATIC PRECIPITATOR AIR POLLUTION CONTROL SYSTEM OF A/N 456811 BY THE ADDITIONAL VENTING OF THE COMMON BURNER EXHAUST OUTLET SERVING SEVEN REFINING POT FURNACES.

APPLICATION NO. 509242

RECLAIM/TV FACILITY PERMIT REVISION

HISTORY

Application Nos. 509234-509242 were received on 3/25/2010 to add the venting of the pot furnace burner exhaust system to the Wet Electrostatic Precipitator System (WESP).

Previous A/N 456811 was received on 5/9/2006 as class I Previous A/N's 460793-460800 were received on 10/4/2006. A Permit to Construct was issued in Section H of the Facility Permit for this equipment on 4/19/2007. The main purpose of the previous P/C was to install a new WESP system which would be used to vent the outlets of the air pollution control systems (serving the process equipment at this facility) to the WESP system.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
 ENGINEERING AND COMPLIANCE  
 APPLICATION PROCESSING AND CALCULATIONS

PAGES 11	PAGE 2
APPL. NO SEE P. 1	DATE 06-18-2010
PROCESSED BY MAP	CHECKED BY

The following tables provide relevant permit application history for the pot furnaces.

**Pot Furnace Permit Unit Past History**

A/N	Appl. Date	P/O	P/C Date	Comments
460794	10/4/2006	pending	4/19/2007	D16, current A/N 509234
460795	10/4/2006	pending	4/19/2007	D17, current A/N 509235
460796	10/4/2006	pending	4/19/2007	D18, current A/N 509236
460797	10/4/2006	pending	4/19/2007	D19, current A/N 509237
460798	10/4/2006	pending	4/19/2007	D20, current A/N 509238
460799	10/4/2006	pending	4/19/2007	D99, current A/N 509239
460800	10/4/2006	pending	4/19/2007	D100, current A/N 509240

A/N	Appl. Date	P/O	P/O Date	Comments
C34006	8/22/1980	M30905	5/12/1983	D15, previous A/N 460793, This furnace is removed. A/N 460793 cancelled.
384526	3/20/2001	F44845	10/3/2001	D16, previous A/N 460794
384527	3/20/2001	F44846	10/3/2001	D17, previous A/N 460795
384528	3/20/2001	F44847	10/3/2001	D18, previous A/N 460796
384529	3/20/2001	F44848	10/3/2001	D19, previous A/N 460797
384530	3/20/2001	F44849	10/3/2001	D20, previous A/N 460798
384525	3/20/2001	F44850	10/3/2001	D99, previous A/N 460799
378132	12/21/2000	pending	pending	D100, previous A/N 460800. This furnace is 10 PPMv NOx -P/C issued 5/24/2001

**PROCESS DESCRIPTION**

Quemetco, Inc. recycles spent lead acid batteries to recover lead metal. Metallic lead is the desired product in this operation. A waste material, lead depleted slag, is shipped offsite for proper disposal. The waste slag by-product consists mainly of metal oxides and sulfates, and silica sand which may occur in this material as metal silicates. The metals present in the waste slag are expected to be mostly unrecoverable lead, calcium, iron, sodium, and trace heavy metals. The waste slag may also contain various alkaline earth metals.

In this operation, lead acid batteries are broken into fragments and the liquid sulfuric acid is washed and/or partially neutralized. The solid fragments include process material consisting of lead, rubber, and plastic. The bulk of the plastic is separated and washed, and sold to an external buyer. The remainder of feed material are mixed along with other additives consisting mainly of

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS**

PAGES 11	PAGE 3
APPL. NO SEE P. 1	DATE 06-18-2010
PROCESSED BY MAP	CHECKED BY

calcined carbon coke, lime, iron, borax, and/or silica sand. The shredded and treated raw feed material is stored in piles to drain as much liquid out of the feed piles as possible, and then a skip loader is used to charge buckets of this material to a rotary kiln hopper. Most of the moisture is removed in the rotary kiln and the dehydrated feed mix is charged to a reverberatory furnace. The raw mixture is smelted in this furnace and two streams of molten material are produced. The first stream, lead metal, is tapped from the reverberatory furnace and poured into large molds. The second stream, molten slag, is continuously charged to an adjacent electric resistance heated slag reduction furnace.

The reverberatory furnace operates at high temperatures of about 2400 degrees F. Molten slag floats on top of the denser liquid lead metal. The slag layer insulates the molten lead from further oxidation. The reducing agents chemically react with the slag material and reduce the lead content to metallic lead, which sinks to the bottom of the slag layers. Due to the high temperature, long residence time, and oxidizing atmosphere in the reverberatory furnace chamber, most of the organic gases produced in the reverberatory furnace are destroyed. However, both the reverberatory furnace and rotary dryer emit ROG and CO with the majority of these contaminants coming from the rotary dryer. The rotary dryer is direct fired and is not designed to heat the feed to high temperatures. A regenerative thermal oxidizer, in line between the rotary dryer baghouse and the WESP system is used to control ROG, CO, and toxic organic compounds emitted by the rotary dryer furnace.

Raw lead metal from the reverberatory and slag reduction furnaces, previously cast into lead blocks, is subsequently charged to refining pot furnaces. The lead is re-melted and mixed with various reagents to remove impurities and to adjust alloy composition. Reagents include sodium nitrate, elemental sulfur, sodium hydroxide, antimony, arsenic, calcium metal, sodium metal, red phosphorus, and petroleum coke. The chemical fumes and gases produced in the refining process are vented to an air pollution control baghouse, which filters the emissions existing as particulates. The exhaust outlet of this baghouse is vented to the WESP.

The pot furnaces are indirectly fired with natural gas. The burner compartments from the pot furnaces vent directly to atmosphere. Previously, each burner compartment had its own dedicated stack. Subsequent to the WESP installation, the individual burner stacks were manifolded into one common stack served by a NOx CEMS, for Rule 2012 compliance.

**PROPOSED PROCESS CHANGES**

Quemetco is proposing to vent the common pot furnace burner exhaust stack to the new WESP. The pot furnace burner exhaust systems are currently manifolded to a common, uncontrolled exhaust stack. This stack is suspected of being periodically a small source of lead emissions. Emissions of lead, if any, may occur if there is the presence of one or more cracks in the lead pot vessels in the pot furnaces. Normally, the pot furnace burners are not sources of lead emissions. However, lead emissions can periodically occur if the pot vessels malfunction. The addition of a

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS**

PAGES 11	PAGE 4
APPL. NO SEE P. 1	DATE 06-18-2010
PROCESSED BY MAP	CHECKED BY

particulate control system to the pot furnace burners will enhance compliance with Rule 1420 and the State and Federal Ambient Air Quality Standards for lead. This project is intended as a preventative measure to lower the probability of releases of fugitive lead emissions from the pot furnace burners.

The subject permit applications are being processed in conjunction with the change in the Federal National Ambient Air Quality Standard for lead which has been reduced from 1.5 ug/m<sup>3</sup> to 0.15 ug/m<sup>3</sup> which will be effective in the near future. This facility is also in the process of upgrading and/or improving different equipment and procedures to enhance the control of all possible sources of lead emissions at this facility in conjunction with this new standard, and in conjunction with the requirements of proposed Rule 1420.1, which updates Rule 1420 requirements of large lead acid battery recyclers to ensure compliance of these sources with the more stringent NAAQS for lead.

**REFINERY FURNACE EQUIPMENT DESCRIPTIONS**

**APPLICATION NO. 509234 (Previous A/N 460794)**

FURNACE LEAD MELTING AND REFINING, POT TYPE, 180 TON MAXIMUM CAPACITY, WITH A NORTH AMERICAN MODEL 4422-8A BURNER, 4,240,000 BTU PER HOUR NATURAL GAS- OR PROPANE-FIRED, WITH A 5-H.P. COMBUSTION AIR BLOWER.

**APPLICATION NO. 509235 (Previous A/N 460795)**

FURNACE LEAD MELTING AND REFINING, POT TYPE, 180 TON MAXIMUM CAPACITY, WITH A NORTH AMERICAN MODEL 4422-8A BURNER, 4,240,000 BTU PER HOUR NATURAL GAS- OR PROPANE-FIRED, WITH A 5-H.P. COMBUSTION AIR BLOWER.

**APPLICATION NO. 509236 (Previous A/N 460796)**

FURNACE LEAD MELTING AND REFINING, POT TYPE, 180 TON MAXIMUM CAPACITY, WITH A NORTH AMERICAN MODEL 4422-8A BURNER, 4,240,000 BTU PER HOUR NATURAL GAS- OR PROPANE-FIRED, WITH A 5-H.P. COMBUSTION AIR BLOWER.

**APPLICATION NO. 509237 (Previous A/N 460797)**

FURNACE LEAD MELTING AND REFINING, POT TYPE, 180 TON MAXIMUM CAPACITY, WITH A NORTH AMERICAN MODEL 4422-8A BURNER, 4,240,000 BTU PER HOUR NATURAL GAS- OR PROPANE-FIRED, WITH A 5-H.P. COMBUSTION AIR BLOWER.

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**  
**ENGINEERING AND COMPLIANCE**  
**APPLICATION PROCESSING AND CALCULATIONS**

PAGES 11	PAGE 5
APPL. NO SEE P. 1	DATE 06-18-2010
PROCESSED BY MAP	CHECKED BY

APPLICATION NO. 509238 (Previous A/N 460798)

FURNACE LEAD MELTING AND REFINING, POT TYPE, 180 TON MAXIMUM CAPACITY, WITH A NORTH AMERICAN MODEL 4422-8A BURNER, 4,240,000 BTU PER HOUR NATURAL GAS- OR PROPANE-FIRED, WITH A 5-H.P. COMBUSTION AIR BLOWER.

APPLICATION NO. 509239 (Previous A/N 460799)

FURNACE LEAD MELTING AND REFINING, POT TYPE, 180 TON MAXIMUM CAPACITY, WITH A NORTH AMERICAN MODEL 4422-8A BURNER, 4,240,000 BTU PER HOUR NATURAL GAS- OR PROPANE-FIRED, WITH A 5-H.P. COMBUSTION AIR BLOWER.

APPLICATION NO. 509240 (Previous A/N 460800)

FURNACE, LEAD MELTING AND REFINING, POT TYPE, 180 TON MAXIMUM CAPACITY, WITH ONE LOW NOX BURNER, ECLIPSE, MODEL WX300, TYPE WINNOX, 3,600,000 BTU PER HOUR NATURAL GAS- OR PROPANE-FIRED, WITH A 7-1/2-H.P. COMBUSTION AIR BLOWER.

The subject equipment is operated 24 hours/day, 7 days/week, and 52 weeks/year, maximum

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS

PAGES 11	PAGE 6
APPL. NO SEE P. 1	DATE 06-18-2010
PROCESSED BY MAP	CHECKED BY

CALCULATIONS

Refining pot kettle emissions (each of 4 pots)  
(Only 4 pots are assigned emissions in NSR)

Refer to Appendix A for data and calculations not shown.

FINAL EMISSIONS SUMMARY (post WESP)

TAC	Total R1, LBS/HR	Total R1, LBS/DAY	Total R2, LBS/HR	Total R2, LBS/DAY	Total R2, LBS/YEAR	Total R2, TONS/YEAR
1,1,DCE	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
1,3 Butadiene	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
14DIOXANE	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Acetaldehyde	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
As	3.349E-01	8.038E+00	7.857E-05	1.886E-03	6.883E-01	3.441E-04
Be	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
C6H6	3.259E-03	7.821E-02	3.259E-03	7.821E-02	2.855E+01	1.427E-02
CCL4	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cd	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CDD+CDF	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CH2CL2	1.248E-02	2.996E-01	1.248E-02	2.996E-01	1.093E+02	5.467E-02
Cr+6	2.304E-03	5.529E-02	5.405E-07	1.297E-05	4.735E-03	2.367E-06
Formaldehyde	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ni	4.878E-02	1.171E+00	1.144E-05	2.747E-04	1.003E-01	5.013E-05
PAH's	7.151E-04	1.716E-02	7.151E-05	1.716E-03	6.264E-01	3.132E-04
Pb	3.025E+00	7.261E+01	7.098E-04	1.703E-02	6.218E+00	3.109E-03
TETRA-CE	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total PCB's	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Vinyl Chloride	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total VOC's	0.0297	0.7123	0.0297	0.7123	259.9968	0.13
NOx	1.4322	34.3721	1.4322	34.3721	12545.8093	6.273
SOx	0.7577	18.1855	0.7577	18.1855	6637.7148	3.319
CO	0.1399	3.3581	0.1399	3.3581	1225.6992	0.613
PM10	14.8352	356.0450	0.0148	0.3560	129.9564	0.065

**Note:**

The preceding emissions summary is an estimate used only for purposes of the Permit to Construct evaluation. This emissions summary will be updated at the Permit to Operate stage to incorporate results of recent and pending source tests on the WESP stack outlet. Refer to Appendix A for detailed PM10 calculations for the pot furnaces with regards to post WESP NSR emissions history.



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS

PAGES 11	PAGE 8
APPL. NO SEE P. 1	DATE 06-18-2010
PROCESSED BY MAP	CHECKED BY

\* The pot furnace emissions are allocated as previously exists in the NSR database to correctly account for emission rates and correct math rounding.

Previous permit conditions limited the maximum number of pot furnaces which can be operated to a maximum of 4 at any one time. Therefore, emissions from all pot furnaces were recorded under four furnace applications. In order to ensure correct emissions balancing in the NSR record, the emissions will continue to be allocated to four pot furnaces as indicated above. It should be noted that the current Facility Permit allows the operation of up to eight pot furnaces. However, there will be no emissions increases as a result of these permit applications. All fuel and material usage limits will remain the same as on the existing Facility Permit.

In this evaluation, a small correction is being made to the WESP stack emission limit for PM10. Specifically, the limit is being changed from 7 lbs/day to 8 lbs/day to incorporate a minor correction to the pot furnace post WESP PM10 emission rate. The emission rate has previously been calculated to be approximately 1.4 lbs/day. However, refined calculations based on all available source test information indicate that this emission rate can be as high as 2.06 lbs/day, due to mathematical uncertainty. Overall, the WESP project results in a significant amount of PM10 reduction. The change in the emission limit accounts for the mathematical uncertainty and is not an emission increase. In fact, there is a small, unquantifiable, reduction in lead and particulate emissions as a result of the current set of permit applications. This mathematical accounting correction is reflected in the value of 1 lb/day PM10 being added to the NSR record for A/N's 460797/509237. The recorded net change is zero.

Refer to Appendix A for detailed calculations relating to this correction.

RULE 1401

There will be no <sup>increase</sup> ~~significant change~~ in emissions of toxic air contaminants as a result of this modification. Therefore, there will be no increase in health risk and a Rule 1401 evaluation is not required in this case.

DISCUSSION

The proposed project consists of connecting the common exhaust outlet of the pot furnace burners to the WESP exhaust gas intake manifold. A negligible reduction in lead emissions is expected. In the worst case, there will be zero net change in emissions since there is a damper valve to allow the exhaust gas from the pot furnace burners to be diverted to the existing common burner exhaust stack outlet.

Compliance with all Rules and Regulations has been previously demonstrated. Therefore, continued compliance is expected.

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**  
**ENGINEERING AND COMPLIANCE**  
**APPLICATION PROCESSING AND CALCULATIONS**

PAGES 11	PAGE 9
APPL. NO SEE P. 1	DATE 06-18-2010
PROCESSED BY MAP	CHECKED BY

Since the purpose of the proposed modification is to reduce the possibility of uncontrolled lead emissions due to equipment malfunction, a permit condition will require that during normal operation, the exhaust gas stream from the pot burner exhaust will be controlled by the WESP which has been demonstrated in recent source tests to have metal control efficiencies greater than 99%. The venting of the pot furnace exhaust gas stream directly to atmosphere will be considered as an abnormal operation mode to be performed only under WESP malfunction and/or shutdown in an emergency situation. Permit conditions will explicitly require notification under Rule 430 breakdown provisions when the burner exhausts are not vented to the WESP.

Finally, the PM10 emission limit in permit conditions for the WESP stack is updated to reflect the correct value of 8 lbs/day, as opposed to the previous limit of 7 lbs/day. This is not an emission increase - this is a computational correction.

RECOMMENDATION

APPLICATION NO. 509242

APPROVE RECLAIM/TV PERMIT REVISION

APPLICATION NOS. 509234, 509235, 509236, 509237, 509238, 509239, 509240, 509241

Approve revisions to the Facility Permit as indicated below:

**Changes to section H**

**1. Add device connections between pot furnaces and WESP Manifold**

- D16 to B138
- D17 to B138
- D18 to B138
- D19 to B138
- D20 to B138
- D99 to B138
- D100: to B138

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
 ENGINEERING AND COMPLIANCE  
 APPLICATION PROCESSING AND CALCULATIONS

PAGES 11	PAGE 10
APPL. NO SEE P. 1	DATE 06-18-2010
PROCESSED BY MAP	CHECKED BY

2. Add New and/or Update Existing Permit Conditions

(Changes are in bold type and highlighted.)

**MODIFIED**

A63.6 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
VOC	Less than or equal to 259 LBS IN ANY ONE DAY
CO	Less than or equal to 230 LBS IN ANY ONE DAY
PM10	Less than or equal to <b>8 LBS</b> IN ANY ONE DAY

[RULE 1303(a)(1)-BACT, RULE 1303(b)(2)-Offset,]

[Devices subject to this condition : S159]

**NEW**

**E448.4 The operator shall comply with the following requirements:**

- A) The connections between the pot furnaces (device nos. D16, D17, D18, D19 ,D20, D99, and D100) and the wet electrostatic precipitator (WESP) exhaust intake manifold (device no. B138) shall be defined as the connection between the pot furnace burner exhaust stack and the WESP system.**
- B) The connection between the pot furnace burner exhaust stack and the WESP exhaust intake manifold shall be located downstream of the pot furnace burner exhaust system NOx continuous emissions monitoring system (CEMS).**
- C) The operator shall maintain RECLAIM certification of both the pot furnace burner exhaust CEMS and the WESP stack CEMS.**
- D) The burner exhaust gas stream from the refining pot furnaces shall be diverted, by means of a damper system, to the WESP exhaust intake manifold at all times that the WESP system is in operation.**
- E) A monitoring and recording device shall be installed and maintained which indicates and records the positions (open or closed) of the pot furnace burner exhaust stack damper.**

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS

PAGES 11	PAGE 11
APPL. NO SEE P. 1	DATE 06-18-2010
PROCESSED BY MAP	CHECKED BY

- F) When the pot furnace combustion gas stack outlet damper is closed, and the exhaust gas damper from the pot furnace burner stack to the WESP exhaust intake manifold is open, the RECLAIM NO<sub>x</sub> emissions recorded by the pot furnace burner exhaust CEMS shall be deducted from the total facility RECLAIM NO<sub>x</sub> emissions recorded by the WESP stack certified NO<sub>x</sub> CEMS.
- G) When the pot furnace burner exhaust stack damper is open to the atmosphere, the RECLAIM NO<sub>x</sub> emissions for the pot furnaces shall be reported via the certified pot furnace burner exhaust NO<sub>x</sub> CEMS.
- H) Upon connection of the pot furnace burner exhaust stack to the WESP exhaust intake manifold, any period of time involving operation of the pot furnaces with the burner exhaust gas vented directly to atmosphere, shall be defined to be a period of abnormal operation.
- I) During each event of abnormal operation, as defined in this condition, and/or during each event when the WESP system malfunctions and/or is not in full operation, the operator shall record the reason(s) for each event.
- J) The operator shall keep and maintain all records required by this condition for a minimum of five years and shall make these records available to AQMD personnel upon request. These records shall be kept onsite and shall include, but not be limited to, monitoring records of each stack damper position (open and closed), and reasons.

[RULE 1420, RULE 1407, RULE 2012, 40CFR 63 Subpart X]

[Devices subject to this condition : D16, D17, D18, D19 ,D20, D99, D100, B138, S159]