

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS**

PAGES <b>9</b>	PAGE <b>1</b>
APPL. NO <b>530090</b>	DATE <b>1-19-2012</b>
PROCESSED BY <b>MAP</b>	CHECKED BY

**Rule 1420.1 Plan**

COMPANY NAME AND ADDRESS

Exide Technologies  
2700 South Indiana Street  
Vernon, CA 90058

ID 124838

mailing and equipment address

EQUIPMENT DESCRIPTION

APPLICATION NO. 530090

RULE 1420.1 COMPLIANCE PLAN

HISTORY

Application No. 530090 was received on 12/20/2011. This application is the compliance plan required by Rule 1420.1 (g). This plan was required because the ambient air lead concentrations at one or more fence line monitoring stations at Exide exceeded  $0.12 \text{ ug/m}^3$  on a 30 day average. A/N 530090 supersedes A/N 526785 which was disapproved on 12/1/2011.

Rule 1420.1 was adopted on November 5, 2010. The main purpose of this rule is to ensure that on or after 1/1/2012, the 30 day average ambient lead concentrations at or beyond the fence lines of lead-acid battery recycling facilities in the AQMD do not exceed  $0.15 \text{ ug/m}^3$ . Rule 1420.1 was adopted to ensure compliance with the new National Ambient Air Quality Standard for Lead which requires that the quarterly average lead concentration does not exceed  $0.15 \text{ ug/m}^3$  in accordance with the following EPA timeline:

- States are required to make recommendations for areas to be designated attainment, nonattainment, or unclassifiable by October 2009. If tribes choose to submit recommendations, they must also provide them to EPA by October 2009.
- Final designations of all attainment, nonattainment and unclassifiable areas will be effective no later than January 2012. However, EPA intends to complete initial designations as soon as possible where data are sufficient from existing monitoring network.
- States are required to submit State Implementation Plans outlining how they will reduce pollution to meet the standards no later than June 2013.
- States are required to meet the standards no later than January 2017.

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS**

PAGES <b>9</b>	PAGE <b>2</b>
APPL. NO <b>530090</b>	DATE <b>1-19-2012</b>
PROCESSED BY <b>MAP</b>	CHECKED BY

The following table is a chronology of events since late 2010:

<b>DATE</b>	<b>DESCRIPTION</b>
11/5/2010	Rule 1420.1 is adopted.
8/31/2011	A/N 526785 received at the SCAQMD. This is the initial Rule 1420.1 compliance plan submitted by Exide. The plan was submitted because Exide exceeded an ambient lead concentration 30 day average of 0.12 ug/m <sup>3</sup> at one or more monitoring stations as of 7/31/2011.
12/1/2011	Evaluation completed which shows that the previous Rule 1420.1 compliance plan of A/N 526785 is deficient because it was discovered that the construction of the baghouse area total containment building would not be completed by January 1, 2012, and due to the absence of mitigation measures required by Rule 1420.1 (g) in the event that the 30 day average fence line ambient lead concentration exceeded 0.15 ug/m <sup>3</sup> subsequent to 1/1/2012.
12/1/2011	A/N 526785 is disapproved for the above mentioned reasons.
12/14/2011	An office conference was held at the AQMD with Exide representatives present. Exide presented a draft proposal to comply with Rule 1420.1 (g). The new proposal still lacked the mitigation measures required by Rule 1420.1 (g). It was explained to Exide that secondary HEPA filtration stages need to be proposed for four APC baghouses which do not have secondary controls, in the event that an exceedance of the 30 day average fence line lead concentration occurs. In addition, additional ventilation is required at four locations at this facility in the event of future non-compliance with Rule 1420.1 ambient lead concentration limits. Exide indicated that they would seek approval from their corporate headquarters before submitting their new plan application. Exide was reminded that the new plan application submittal was required by 12/15/2011 pursuant to the Rule 1420.1 disapproval letter dated 12/1/2011.
12/20/2011	A/N 530090 received at the AQMD (email submission 12-15-2011, physical submission 12-16-2011, validation by Permit Services 12/20/2011). This plan application supersedes A/N 526785 which was previously disapproved.

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS**

PAGES <b>9</b>	PAGE <b>3</b>
APPL. NO <b>530090</b>	DATE <b>1-19-2012</b>
PROCESSED BY <b>MAP</b>	CHECKED BY

EVALUATION/DISCUSSION

The following table itemizes the main changes to the Exide Facility Permit since early 2010 that results in better control of lead emissions:

Facility Permit Section and Revision #	Date	Appl. No.	Description	Device	Process	System
H-3	3/31/2010	500783	Raw Material Preparation System (RMPS) Total Enclosure Building	C175	1	1
H-3	3/31/2010	500784	Add venting of RMPS Total Enclosure Building (C175) and South Corridor Total Enclosure Building (C182) to the dust collectors of devices C156 and C157	C156 C157	1	10
H-3	3/31/2010	501056	Require new permits for existing Smelting and Refining Total Enclosure Building and the attached South Corridor Building (Total Enclosure Buildings) for the purpose of adding special monitoring, record keeping, and reporting requirements associated with building negative pressure gauges.	C179 C182	1	6
H-3	3/31/2010	501057	Replace scrubber (C165) 40-H.P. blower with a 100-H.P. blower.  Add equipment description to HEPA filter mist eliminator (C172) and require new Rule 1420 source tests	C165  C172	1	1
H-3	3/31/2010	501059	New rotary dryer Total Enclosure Building	C177	1	2
H-3	3/31/2010	501060	Add ventilation of rotary dryer Total Enclosure Building (C177) by refining pot baghouse of device C46	C46	1	8
H-3	3/31/2010	501061	Install new truck washing station and partial enclosure building (tunnel)	D178 C180	3	11

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS**

PAGES <b>9</b>	PAGE <b>4</b>
APPL. NO <b>530090</b>	DATE <b>1-19-2012</b>
PROCESSED BY <b>MAP</b>	CHECKED BY

Facility Permit Section and Revision #	Date	Appl. No.	Description	Device	Process	System
H-3	3/31/2010	501062	Permit for new HEPA vacuum floor sweeper	C181	3	12
H-5	5/18/2011	516866	Add HEPA filter dust collector to the outlet of the rotary dryer baghouse	C184	1	2
H-5	5/18/2011	517319	Portable canister type HEPA vacuum for lead dust control	C185	3	12
H-6	6/17/2011	520575	Add HEPA filter dust collector to outlet of North Torit cartridge-type dust collector.	C38 C186 S187	1	6
H-6	6/17/2011	520577	Add HEPA filter dust collector to outlet of South Torit cartridge-type dust collector.	C39 C188 S189	1	6
H-7	6/24/2011	520477	Install total enclosure building for baghouse area.	C190	1	6
H-7	6/24/2011	520478	Install PTFE membrane type filter bags in reverb feed room APCS and increase stack height to clear roof line of new baghouse area total enclosure building.	C156, C157, S158	1	10
H-7	6/24/2011	520501	Increase stack height of rotary dryer APCS to clear roof line of new baghouse area total enclosure building.	S145	1	2
H-7	6/24/2011	520503	Increase stack height of South Torit dust collector to clear roof line of new baghouse area total enclosure building and correct permit description.	C39 S189	1	6
H-7	6/24/2011	520505	Increase stack height of North Torit dust collector to clear roof line of new baghouse area total enclosure building and correct permit description.	C38 S187	1	6

All requirements of the Permits to Construct have been completed with the exception of the construction of the new enclosure building around the "baghouse row" area (device C190). The

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS**

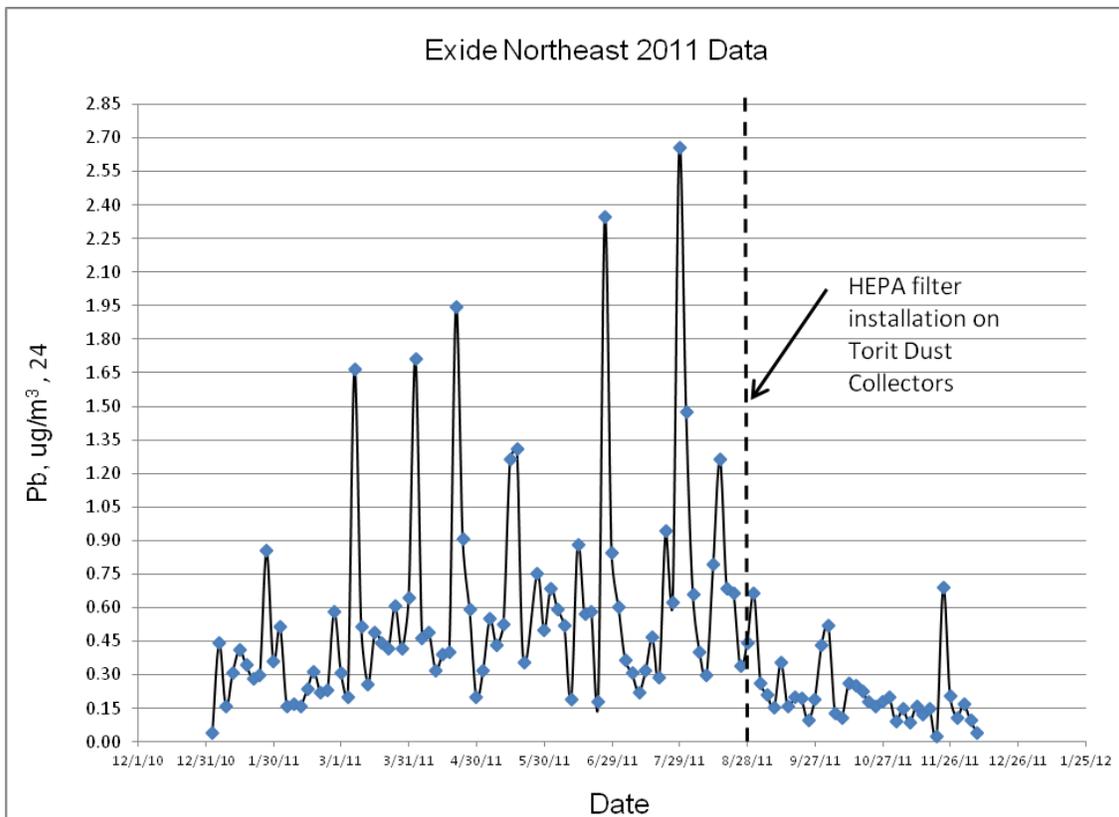
PAGES <b>9</b>	PAGE <b>5</b>
APPL. NO <b>530090</b>	DATE <b>1-19-2012</b>
PROCESSED BY <b>MAP</b>	CHECKED BY

initial projection for completion of this building was around the end of 2011. The latest estimate is March of 2012. The realization of the benefits of all control measures will be apparent after this building is complete.

Exide has made significant progress in improving housekeeping measures to control miscellaneous sources of fugitive emissions. The new building is expected to greatly help in this effort, since many sources of fugitive emissions occur outdoors in the equipment area known as baghouse row.

Recently, Exide installed secondary HEPA filters on the outlets of the rotary dryer baghouse, North Torit dust collector and South Torit dust collector to comply with equipment requirements in Rule 1420.1. While it is very difficult to exactly pinpoint the exact cause of any change in the emissions profile of this facility, due to countless possible sources of fugitive emissions and/or leaks, monitoring data strongly implies that the installation of the new secondary controls has had a beneficial impact on reducing ambient lead emissions.

The most prominent effect has been recorded at the North East monitoring station which is located at the corner of the smelter/warehouse building. The following chart illustrates the apparent effect of the HEPA filter installations on the rotary dryer baghouse outlet and the two outlets of the Torit room ventilators.



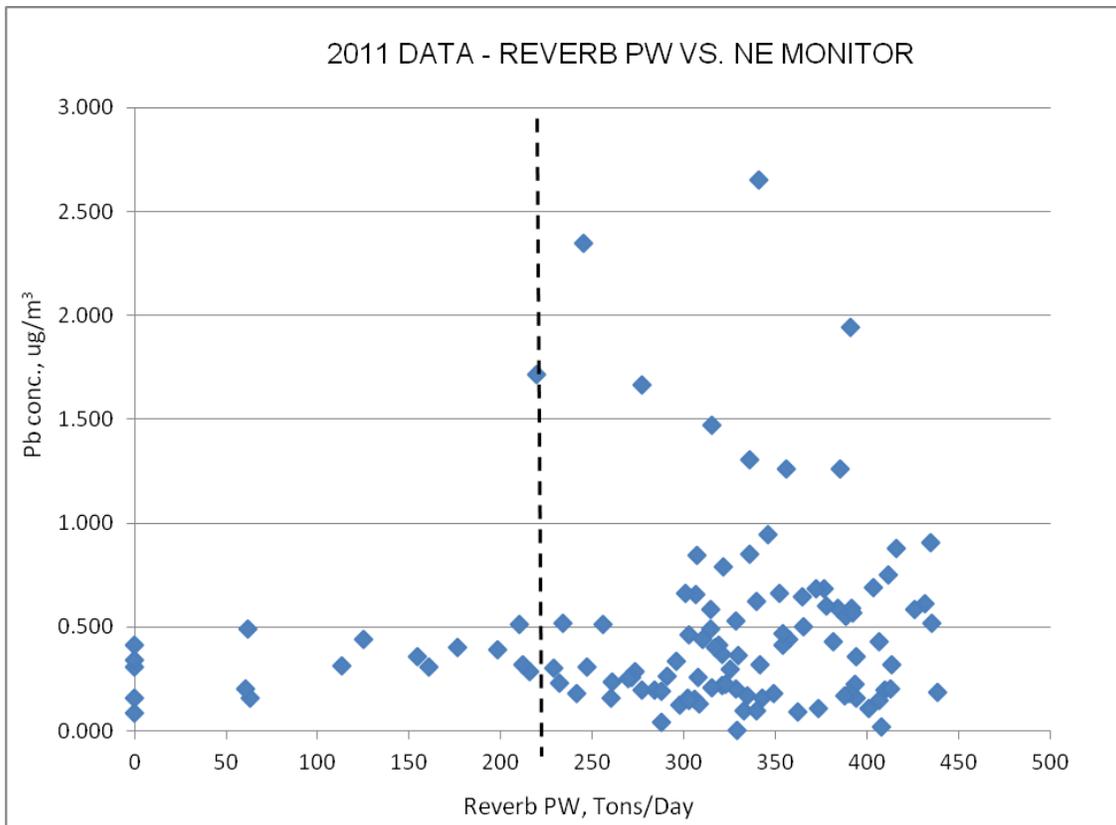
**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS**

PAGES <b>9</b>	PAGE <b>6</b>
APPL. NO <b>530090</b>	DATE <b>1-19-2012</b>
PROCESSED BY <b>MAP</b>	CHECKED BY

Notice that the amount of high concentration spikes almost completely disappears after the HEPA filter installation. While this did not solve the problem completely, significant progress was made. The full extent of the improvements will not be apparent until the baghouse area total containment building is completed. Secondary filter stages are important because they capture transient emission spikes due to breaches of the primary filter media and due to other transient effects such as the pulse jet cleaning of baghouses and dust collectors.

Another mitigation measure which has been controversial in the past is the reduction of process feed rate. Previously, this measure was controversial because it was very difficult to make a correlation using a well behaved function from monitoring data which is very "noisy". However, in 2011, following the implementation of control measures previously discussed, many variables have been eliminated which now allow the clearer manifestation of process rate related correlations regarding this operation. Specifically, it has been discovered that the process feed rate of the reverberatory furnace in 2011 indicates that spikes in the 24 hour average ambient lead concentrations at the Northeast monitoring station tend to occur more frequently above a certain feed rate. It is speculated that this phenomena is visible only now because in previous years there were too many degrees of freedom with regards to the release of fugitive emissions. The following chart illustrates this effect following the implementation of many fugitive dust control measures.



**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS**

PAGES <b>9</b>	PAGE <b>7</b>
APPL. NO <b>530090</b>	DATE <b>1-19-2012</b>
PROCESSED BY <b>MAP</b>	CHECKED BY

The lead concentration data is "quiet" until a process rate of about 225 tons/day, corresponding to approximately 50% of permit limit process rate. Above this level, there are many recorded spikes in the lead concentration at the Northeast monitoring station. While it is very clear that a well behaved function cannot be correlated to this data, it is also very clear that above 50 percent of maximum process rate for the reverb and rotary dryer, the lead concentration measurements tend to exhibit a significant number of high concentrations. It is speculated that at higher process rates, the handling of larger feed amounts, anomalies such as periodic clogging of the feed conveyor system, and possible effects on the rotary dryer baghouse filter media could occur. The installation of the secondary stage HEPA filter on this baghouse should resolve problems related to transient malfunctions of the filter bag media but it will not address any feed system instabilities which may occur.

It should be noted that the rotary dryer and the feed system are totally enclosed by containment buildings. However, periodic disruptions in the feed system operation at higher throughputs may lead to increased traffic in and out of these containment buildings. This may periodically lead to higher ambient lead concentrations due to the tracking of small amounts of lead bearing material in and out of these buildings.

It should be noted that Exide has proposed to install six boot wash stations at various locations to prevent the tracking of fugitive lead dust into and out of the containment buildings. This may partially help to alleviate the previously mentioned problems.

So far, only the Northeast monitor data has been discussed. The reason for data correlation with this monitor is that it is located almost directly downwind of the process equipment at this facility.

Based on available monitoring data, it appears that another significant source of periodic fugitive emissions at this facility is the "RMPS" building where batteries are crushed and trucks are loaded and unloaded. It is expected that additional ventilation for the RMPS building will ensure the adequate control of fugitive emissions at this facility. The main reason for this conclusion is that the air flow capacity from the MAC baghouses which have historically vented the reverb feed room in this building were extended to the battery crusher location, resulting in lower ventilation air flow rate for the other parts of this building, especially the truck unloading section on the south side of this building.

In summary, it is concluded that additional ventilation will help to mitigate fugitive emissions at the following locations:

1. The battery crusher room in the North end of the RMPS building.
2. The truck loading and unloading dock on the South end of the RMPS building.
3. The furnace room in the smelter building.
4. The cupola feed room in the south end of the smelter building.

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS**

PAGES <b>9</b>	PAGE <b>8</b>
APPL. NO <b>530090</b>	DATE <b>1-19-2012</b>
PROCESSED BY <b>MAP</b>	CHECKED BY

Permit conditions will require the installation of additional room ventilation APC systems for these four areas as a possible mitigation measure.

Due to the apparent beneficial effect of secondary stage filtration on the rotary dryer baghouse and the North and South Torit dust collectors, secondary HEPA filtration will be required as a possible mitigation measure for the following APC systems:

5. The hard lead pot furnace baghouse.
6. The soft lead pot furnace baghouse.
7. The MAC baghouses venting the RMPS building.
8. The cupola furnace feed room baghouse.
9. Any new room ventilation APC systems installed.

The preceding mitigation measures will be required only if violations of the 0.15 ug/m<sup>3</sup> Rule 1420.1 30-day average ambient lead concentration limit occur after construction of the baghouse area total containment building is completed in 2012.

The following mitigation measures were proposed by Exide in a December 15, 2011 meeting with AQMD staff:

10. Installation of boot wash stations.
11. Use of forklifts dedicated to indoor operation.

Mitigation measures nos. 10 and 11 will be required independent of the Rule 1420.1 ambient air monitoring compliance status of this facility.

Finally, Exide has also proposed the following mitigation measures:

Install an additional total or partial enclosure of one or more of the following locations:

12. Reverberatory (Reverb) furnace A-pipe.
13. Cupola (Blast) furnace A-pipe.
14. Additional area enclosure to be determined.

Measures nos. 12, 13, and 14 can only be used as mitigation measures for the purpose of this compliance plan after mitigation measure nos. 1 through 9, inclusive, have been completed. However, the proposed enclosures can be voluntarily installed at any time by Exide without receiving credit as a compliance plan mitigation measure, unless a leak in an A-pipe has been determined to be the cause of an exceedance. The reason for this designation is that it is an existing requirement for Exide to properly maintain the furnace A-pipe exhaust ducts.

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**ENGINEERING AND COMPLIANCE  
APPLICATION PROCESSING AND CALCULATIONS**

PAGES <b>9</b>	PAGE <b>9</b>
APPL. NO <b>530090</b>	DATE <b>1-19-2012</b>
PROCESSED BY <b>MAP</b>	CHECKED BY

The subject ducts have historically been subject to developing periodic leaks. The good engineering practice with regards to this equipment is to replace these ducts before they develop leaks. The ducts are subject to developing leaks with age because the gases inside these ducts contains vaporized sulfuric acid and corrosive, hot gases. Any moisture condensation inside of these ducts results in the formation of liquid acid which attacks the inside metal of the ducts.

If the ducts become old enough and become likely to develop periodic leaks, it is the responsibility of Exide to replace them before the probability of corrosion failure becomes high enough to render them unreliable.

One additional major mitigation measure will also be required: Curtailment of the feed rate of the reverb furnace's previously existing feed rate if exceedances of the 0.15 ug/m<sup>3</sup> standard occur. Exide has previously proposed a maximum cut of 25%. However, best available data shows that the significant exceedances occur mainly at curtailments of 50% or higher, based on maximum process weight limits, and based most strongly on the operation of the reverberatory furnace. To address both Exide's and the AQMD's concerns, a multi-tiered curtailment schedule is proposed in the conditions.

Finally, the most recently available ambient air monitoring data for December, 2011, indicates that beginning with 12/2011, the 30 day averages for all ambient air monitors in the vicinity of this facility are below 0.15 ug/m<sup>3</sup>, showing significantly increased efforts at this facility to control lead emissions.

**RECOMMENDATION**

Approve Rule 1420.1 compliance plan with the conditions stated in the plan approval letter issued under A/N 530090.