

**RESPONSE TO COMMENTS RECEIVED CONCERNING
THE COLLIN COUNTY ATTAINMENT DEMONSTRATION
STATE IMPLEMENTATION PLAN (SIP) FOR THE 2008
LEAD NATIONAL AMBIENT AIR QUALITY STANDARD
(NAAQS) AND AGREED ORDER BETWEEN THE TEXAS
COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ)
AND EXIDE TECHNOLOGIES (EXIDE)**

**PROPOSED JUNE 22, 2011
ADOPTED AUGUST 8, 2012**

The TCEQ conducted a public hearing for the proposed Collin County Lead Attainment Demonstration SIP revision and the Agreed Order between the TCEQ and Exide in Frisco, Texas, on July 28, 2011, at 6:00 p.m. During the comment period, which closed on August 8, 2011, the commission received comments from Downwinders at Risk, the United States Environmental Protection Agency (EPA), Exide, Texas Campaign for the Environment, and 23 individuals.

Comments related to the proposed Collin County Lead Attainment Demonstration SIP revision (Project No. 2011-001-SIP-NR) and the Agreed Order between the TCEQ and Exide (Project No. 2011-0240-MIS-NR) are incorporated in the following Response to Comments.

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GENERAL COMMENTS

An individual commented that the proposal submitted by Get the Lead Out be considered and that the TCEQ should follow its own standard practices and procedures in designing a solution to this serious public health problem.

The commission did not receive comments on the proposed SIP and Agreed Order from Get the Lead Out. The commission follows practices and procedures in

accordance with the EPA's guidance and Federal Clean Air Act (FCAA) requirements to develop plans to demonstrate attainment of the NAAQS. The FCAA requires the EPA to set NAAQS for pollutants from sources considered harmful to public health and the environment. The FCAA establishes the primary NAAQS to set limits to protect public health with an adequate margin of safety including the most sensitive part of the population. The purpose of this SIP revision and Agreed Order is to attain the 2008 lead NAAQS as expeditiously as possible.

An individual pointed out the protections that were lost when Senator Shapiro decided to vacate her bill during the legislative session.

This comment is outside the scope of this analysis. The commission points out that while there were some requirements in Senator Shapiro's bill (Senate Bill 1475, 82nd Texas Legislature) that were more stringent than the proposed Agreed Order, modeling of the controls in the SIP and Agreed Order demonstrates compliance and attainment of the 2008 lead NAAQS.

An individual questioned what has already been done and what actions are being taken by the TCEQ, Exide, and the government. The individual questioned what precautions regarding the transporting of chemicals are being taken to avoid a chemical spill.

The FCAA requires states to develop a targeted plan to reduce air pollution in order to meet the health-based lead standard. When the EPA reduced the lead standard or NAAQS in 2008 to 0.15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) and a portion of Collin County was designated as nonattainment for the new 2008 standard, the TCEQ began the process of developing the state's plan. During this process, the TCEQ and Exide developed control strategies to reduce lead emissions. The development of the SIP is described in the SIP "narrative," which elaborates on how this plan meets the FCAA requirements. Throughout this process, the TCEQ has been involved in monitoring air quality and SIP compliance in Collin County.

The new control measures needed to demonstrate attainment for the 2008 lead NAAQS in the Collin County nonattainment area are made enforceable by Agreed Order 2011-0521-MIS. For a complete list of control strategies already implemented by Exide as well as those measures that will be implemented by January 2014, please see Section 4.4: *New Control Measures* of the SIP revision.

Precautions involving chemical spills during transport beyond the plant boundaries fall outside the scope of this SIP revision and Agreed Order. The TCEQ's Office of Compliance and Enforcement is involved with coordinating responses to reported chemical spills.

Downwinders at Risk commented that the cement kilns in Midlothian still don't have state-of-the-art controls that are being used in Europe even though its organization has been pushing for these types of controls for years.

Comments regarding controls for cement kilns are beyond the scope of this SIP revision and Agreed Order.

Downwinders at Risk commented that the TCEQ has never written a successful SIP with regard to air quality.

The commission does not agree with this comment. With regard to lead, the EPA designated a portion of Collin County as a lead nonattainment area for the 1978 Lead NAAQS on November 6, 1991. The EPA approved the commission's Collin County lead attainment demonstration SIP revision for the 1978 NAAQS on November 29, 1994. Because of the successful control strategies implemented through the attainment demonstration SIP, the area attained the 1978 lead NAAQS and was redesignated by the EPA to attainment on October 15, 1999. The area remained in attainment of the lead NAAQS until the EPA lowered the standard in 2008. Many other SIPs have also resulted in the lowering of air pollutants and thus improved air quality in Texas.

Downwinders at Risk suggested that individuals who lived in Frisco should become involved with an environmental organization in order to help do more for the community.

The commission encourages public participation and is committed to working with local entities and all interested parties regarding each aspect of the SIP revision process.

An individual commented that the lead NAAQS was up for periodic review and that the EPA would probably lower the standard in the next three years.

The commission is committed to attaining the 2008 lead NAAQS as expeditiously as possible in accordance with the EPA's guidance and FCAA requirements. The commission is not in a position to comment on potential future EPA actions.

The EPA commented that access to Exide's property was not properly secured such that public exposure was limited, so that all of Exide's property can be treated as non-ambient air.

Exide has agreed to additional fencing and surveillance monitoring to limit public access to its property if the plant continues manufacturing operations. This commitment is included in Exide's Agreed Order with the commission.

AIR QUALITY CONCERNS

Five individuals commented that they are in favor of Exide's relocation. One noted that their quality of life had diminished tremendously since Exide has been in the news and that no amount of mediation would lay their concerns to rest except for the relocation of the plant. One commented that Exide should be shut down until the company has agreed to install pollution controls comparable to those of its facility in California. Another commented that if people and houses could be moved to build a new football stadium, then it was time to move the Exide plant away from Frisco.

An individual commented that they are not happy that the plant has been allowed to operate while its emissions are over the standard and that it has taken too long to comply. An individual

commented that Exide has polluted their air, soil, and water with some of the highest lead emissions in the country, and they are distressed that the proposed plan allows Exide to continue to operate. An individual questioned why Exide was given until November 2012 to bring these things under control. An individual commented that allowing Exide to operate as usual until November 2012 is not acceptable.

The commission follows procedures in accordance with FCAA requirements for areas that do not meet the NAAQS. The EPA has determined that areas not meeting the 2008 lead NAAQS should attain the NAAQS as expeditiously as possible but no later than December 31, 2015. This SIP revision and Agreed Order require the implementation of controls to ensure that the appropriate reductions are made so that the area attains the NAAQS as expeditiously as possible. As discussed in Chapter 4: *Control Strategy and Required Elements* of the SIP, some of these controls are already installed and operating. During the RACT and RACM analysis, the TCEQ evaluated the control measures implemented at Exide's California site. As part of Agreed Order 2011-0521-MIS, PTFE membrane filter media has already been installed on the baghouses at the Exide site in Frisco. The Agreed Order also requires the installation of HEPA filters as secondary control devices for all process emission sources, which will make the process emission control configuration identical to that used at Exide's California facility. Additional controls, including WESP, are not necessary at the Frisco plant because the area is expected to reach attainment of the NAAQS with controls that will be installed because of the Agreed Order. The commission does not have the authority to require any facility to shut down without due process, which would include a demonstration that the facility posed an imminent threat to human health. Exide has agreed to install controls that will enable the area to reach attainment of the 2008 lead NAAQS as expeditiously as possible. As discussed elsewhere, the NAAQS are health-based standards designed to protect public health including sensitive populations.

As part of the agreement between the City of Frisco and Exide, Exide has agreed to close the plant, cease all manufacturing operations, and remediate the property. The TCEQ is not a part of the agreement between the City of Frisco and Exide. However, as part of its Agreed Order with the TCEQ, Exide has agreed to notify the TCEQ by November 1, 2012, if it plans to close the plant. Should Exide choose this alternative, Exide will close the plant no later than January 6, 2014, and void its air quality permits for the plant no later than December 31, 2015, other than any authorizations required for operation of the wastewater treatment plant, instead of installing and operating the other control measures identified in the Agreed Order and the SIP.

An individual stated that the proposal deviated from TCEQ standard practices and that business has been favored at the cost of the health of local citizens. An individual commented that the proposal will not provide safety for the citizens and that regulators have chosen to place business interests above the environment.

The commission disagrees with these comments. The lead emissions from Exide have not increased. In 2008, the EPA lowered the NAAQS for lead from 1.5 µg/m³ to 0.15 µg/m³. Because of this ten-fold reduction in the standard, the then-current

lead emissions from Exide, the primary lead source in the area, resulted in an area of Collin County in Frisco being designated as nonattainment for the 2008 lead NAAQS. The commission then began the process of developing a SIP revision to ensure that the area would attain the 2008 lead NAAQS as expeditiously as possible. As part of this process, the commission has worked with Exide to develop control strategies to reduce Exide's lead emissions to a level that will allow the area to reach attainment of the 2008 lead NAAQS. In 2010, the commission proposed a SIP revision and an Agreed Order containing the proposed control measures to lower Exide's lead emissions. The proposed SIP and Agreed Order were based on the best data that the commission possessed at the time and included proposed measures that would require Exide to reduce lead emissions to levels that would allow the area to reach attainment of the 2008 lead NAAQS. The commission has re-examined the available information and considered all the comments that were submitted on the proposed SIP revision and Agreed Order. Necessary changes have been made to ensure that Collin County will attain the 2008 lead NAAQS as expeditiously as possible. The NAAQS are health-based standards that are designed to protect sensitive populations including children and elderly. The modeling conducted for this SIP revision demonstrates that with the controls that are required by the Agreed Order the lead emissions from Exide will be low enough to allow the area to demonstrate attainment of the NAAQS.

Two individuals commented that they analyzed the impact of particulate matter and Sulfur Dioxide (SO₂) currently authorized in Exide's permits by modeling the permit allowable emission rates and concluded that the area around the Exide facility was nonattainment for particles with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers (PM_{2.5}) and SO₂. Downwinders at Risk commented that according to these individuals' comments, Exide's emissions are causing violations of the FCAA for PM_{2.5} and SO₂ and that the TCEQ should thoroughly investigate.

The purpose of this SIP is to address attainment of the 2008 lead NAAQS, and therefore, comments regarding other pollutants are beyond the scope of this analysis. However, the types of controls that will be implemented as a result of the SIP revision and Agreed Order will reduce particulate emissions as a means to reduce lead emissions.

An individual commented that the preliminary lead nonattainment boundary was later revised and was reduced in size and that lead was a problem no matter what the size of the boundary area. Downwinders at Risk commented that the current boundary of the Frisco nonattainment area has not been proven to be protective of public health.

The initial boundary recommendation, based on existing monitoring and dispersion modeling information, was submitted to the EPA on October 14, 2009. Exide submitted new information to the TCEQ on October 5, 2010, documenting a reduction in permitted allowable emission rates through a permit alteration. The revised recommendation used the same methodology as the original recommendation but incorporated reduced permit limits in the dispersion modeling thereby reducing the size of the nonattainment area. The boundary of the nonattainment area was determined in accordance with EPA guidance, and the

EPA officially approved this recommendation in the Air Quality Designations for the 2008 lead NAAQS final rule (EPA-HQ-2009-0443) on November 22, 2010.

HEALTH EFFECTS

Three individuals that have young children commented that they were concerned about the health effects of lead exposure especially the health effects to their young children.

The commission appreciates the individuals' concerns about health effects from lead exposure. The FCAA requires the EPA to set NAAQS to protect public health with an adequate margin of safety including the most sensitive part of the population, and the modeling demonstration that this SIP revision is based on will result in the area coming into attainment of the NAAQS. Therefore, implementation of this SIP revision is expected to result in no adverse health effects. In addition, the slight exceedance of the lead NAAQS observed in Frisco does not necessarily mean that adverse health effects will occur. In fact, a blood lead exposure investigation conducted in Frisco during March 2011 by the Texas Department of State Health Services (TDSHS) did not indicate blood lead levels of concern. A person's blood lead level is the best indicator of lead exposure from all sources (e.g., soil, food, toys, lead-based paint, drinking water, and ambient air).

The TCEQ's health effects evaluation of airborne lead exposure around Exide is available at

http://www.tceq.texas.gov/assets/public/implementation/tox/monitoring/evaluation/2010/reg_4_dallas.pdf. Using an EPA-approved model and concentrations of lead at a Frisco monitor that are representative of community exposure, predicted results do not indicate blood lead levels of concern. In fact, the predicted blood lead levels due to lead in the air are below the analytical detection limit of blood lead levels.

With lead emission reductions required by the SIP and Agreed Order, the ambient air lead concentrations around Exide are expected to be lower than the levels used in this health effects evaluation. In addition, air monitor locations are carefully selected to represent the highest potential ambient lead concentrations as logistically feasible. Thus, the concentration a person is exposed to would likely be much lower than those concentrations reported from monitors. It is not expected that the amount of lead emissions specified by the SIP revision or the currently monitored lead level will produce adverse health effects to the residents of Frisco including children, which is the most sensitive portion of the general population.

Downwinders at Risk and two individuals commented that there was no safe level of lead, so the amount of lead emissions specified in the SIP revision was capable of doing harm to the residents of Frisco, especially children.

The FCAA requires the EPA to set NAAQS for pollutants from sources considered harmful to public health and the environment. The FCAA established primary standards to set limits to protect public health including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards are set to protect public welfare. The FCAA requires periodic review of the science upon which the standards are based and the standards themselves.

In 2008, the levels of the primary and secondary NAAQS for lead were lowered ten-fold from the 1978 level of 1.5 µg/m³ to a level of 0.15 µg/m³. The EPA's decision on the level for the primary standard was based on the expanded health effects evidence on neurocognitive effects of lead in children.

According to the literature, the increase of lead levels in the blood of children and adults is less likely to occur from breathing low concentrations of lead in the air compared to the contact with lead from other sources such as ingestion of lead-based paint chips, soil contaminated with lead-based paint chips, food, drinking water, and even toys painted with lead-based paint. Although lead is a toxic metal, it occurs naturally in the environment and can be found at low concentrations in the soil, water, food, air, etc. Lead exposure from lead-based paint and soil contaminated with lead-based paint are the major contributors to elevated blood lead levels in children.

**The TCEQ investigated the impact of lead in the air on blood lead levels in children using an EPA-approved model. The EPA developed the Integrated Exposure Uptake Biokinetic (IEUBK) model to estimate the blood lead concentrations of children less than seven years old being exposed to lead from multiple sources and through various pathways. Using the average Frisco soil lead concentration of 38.31 milligrams per kilogram determined from EPA soil sampling around Exide in March 2010, the estimated geometric mean blood lead levels for children are similar (between 1.22 and 1.30 micrograms of lead per deciliter of blood (µg/dL)) regardless of whether the NAAQS (0.15 µg/m³), the reported annual average (0.11 µg/m³), or the highest rolling three-month average (0.21 µg/m³) lead concentration from the Frisco 7 community monitor (Ash Street AQS Code#480850007) is used as an input to the IEUBK model. These calculated blood lead levels are less than the detection limit of lead in blood of 2 µg/dL. A detailed discussion of the TCEQ analyses can be found in a memorandum dated August 29, 2011. Pages 9 through 14 of the memorandum include information specific to lead exposure around Exide. The memorandum may be accessed at the following link:
http://www.tceq.texas.gov/assets/public/implementation/tox/monitoring/evaluation/2010/reg_4_dallas.pdf.**

Although reported ambient air lead concentrations from monitors around Exide have exceeded the 2008 NAAQS for lead, blood lead levels of Frisco residents do not indicate levels of health concern (i.e., the United States Centers for Disease Control and Prevention (CDC) guideline level of 10 µg/dL).

**The TDSHS conducted a blood lead exposure investigation in Frisco during March 2011. Of the 608 blood samples tested by the TDSHS laboratory, 575 (95%) did not contain detectable levels of lead (detection limit of 2 µg/dL). Only two samples, both from adults who were potentially exposed to lead at work, were found to have blood lead levels above 10 µg/dL. Although above the threshold set for children, these two adult blood samples were below the 25 µg/dL level of concern for adults set by the CDC. Detailed information is available in the fact sheet or the final report for the investigation. The fact sheet is available at:
<http://www.dshs.state.tx.us/epitox/education.shtm>, and the final report is available at: <http://www.dshs.state.tx.us/epitox/assess.shtm>. The results of the**

blood-lead study of citizens in Frisco and the modeled results from the EPA's IEUBK model corroborate the Toxicology Division's understanding that ambient air lead concentrations are not causing an unsafe exposure to lead from lead air emissions.

An individual commented that the 10 µg/dL guideline for blood lead level of concern from the CDC was outdated. The individual also commented that studies indicated learning and intelligence quotient (IQ) deficits occurred at blood lead levels of 2 µg/dL.

The purpose of the SIP and Agreed Order is to lower lead concentrations in air around Exide so that the area comes into compliance with the 2008 lead NAAQS as expeditiously as possible. While the TCEQ is familiar with the latest scientific information on blood lead levels, the obligation to reduce ambient lead concentrations is unaffected by the CDC's guideline level, since the EPA has established the air quality standard that is protective of public health.

The commission is aware of research indicating that subtle health effects may occur below the CDC guideline level of 10 µg/dL. However, there are uncertainties about these studies (see discussion below). According to the literature and the TCEQ's analysis using an EPA-approved model, breathing low concentrations of lead in the air, such as those measured in Frisco, is a minor pathway to the general public and results in children's blood lead levels below 2 µg/dL.

It is known that exposure to high levels of lead can cause a variety of health effects including effects on the central nervous system, cardiovascular system, kidney function, red blood cell formation, and reproductive and developmental effects. However, at low levels of environmental lead exposure, health effects are subtle. Specifically, the effects of low exposures (low blood lead concentrations) are estimated and not observed and are, therefore, inconclusive. Recent reports indicate that subtle health effects may occur at very low blood lead levels (ranging from 2 to 7 µg/dL). However, many of the reported health outcomes (e.g., IQ or academic performance) have complex etiologies, are difficult to accurately assess, and are based on observational epidemiology studies. If important confounders in epidemiology studies were not considered in the study design or could not be adjusted for, the reported subtle health effects of exposure to low levels of lead are unlikely to be accurate.

A specific example regarding an inconclusive association between blood lead at 2 µg/dL and attention deficit hyperactivity disorder (ADHD) using the National Health and Nutrition Examination Survey (NHANES) data is presented. NHANES is a program of studies designed to assess the health and nutritional status of adults and children in the United States. Braun et al. (2006) found a positive relationship between blood lead level and ADHD (parent-report of a diagnosis of ADHD or use of stimulant medication) in a recent analysis of NHANES 1999 through 2002 data.¹ However, the associations were not statistically significant, meaning the relationship was likely due to chance and is therefore not

¹ Braun, J. M., R. S. Kahn, T. Froehlich, P. Auinger, and B. P. Lanphear. 2006. Exposures to environmental toxicants and attention deficit hyperactivity disorder in U.S. children. *Environ Health Perspect* 114 (12):1904-9.

scientifically established. Using the same NHANES dataset, restricting children ages to 8-15 years, Froehlich et al. (2009) found that prenatal tobacco smoke (maternal report) exposure and blood lead levels are associated with ADHD, although prenatal tobacco smoke exposure was the greater risk factor.² However, both studies have important limitations because of their inability to adjust for parental psychopathology - one of the most important confounders when studying the associations of ADHD and environmental risk factors since ADHD heritability has been estimated to be about 75% (Biederman and Faraone 2005).³ Therefore, for diseases or health effects with a complex etiology such as ADHD or learning and IQ deficits, many confounders (currently both known and unknown) have to be considered and carefully adjusted for when attempting to elucidate any association, statistical or causal, between blood lead level and diseases or health effects.

An individual commented that lead exposure was from contaminated soil and soil lead standard of 400 parts per million (ppm) was too high and recommended a soil mapping study around Frisco.

**While the commission appreciates the individual's concern about soil lead contamination and the soil standard, it is beyond the scope of this SIP revision to conduct comprehensive analysis of soil near Exide. Furthermore, the EPA conducted a Neighborhood Soil Survey around Exide in March 2010 and concluded that concentrations are below regulatory levels of concern, and no further testing or remedial action is needed for those areas that were sampled. Detailed information regarding the EPA Neighborhood Soil Survey around Exide is available at:
http://www.tceq.texas.gov/airquality/sip/stakeholders/pb_stakeholder.**

An individual commented that diseases such as Asperger's, autism, and Down Syndrome were occurring disproportionately around Frisco.

The commission appreciates the individual's concern about the health effects from lead exposure. There are no conclusive associations between lead exposure and diseases such as Asperger's or autism in the scientific literature. Down syndrome is a genetic disease and has not been clearly linked with lead exposure.

IMPACTS ON WATER AND SOIL

An individual cited an inspection of the Exide facility by the EPA in 2009 and stated that they were deeply troubled by potential contamination from lead via groundwater, soil, and stormwater run-off. The individual urged the TCEQ to form a multi-discipline team to address all lead air, soil, and water contamination issues associated with the Exide facility. An individual referred to findings from an EPA Region 6 Multimedia Inspection Report dated September 13, 2010, that revealed soil and water contamination problems on the Exide property and

² Froehlich, T. E., B. P. Lanphear, P. Auinger, R. Hornung, J. N. Epstein, J. Braun, and R. S. Kahn. 2009. Association of tobacco and lead exposures with attention-deficit/hyperactivity disorder. *Pediatrics* 124 (6):e1054-63.

³ Biederman, J., and S. V. Faraone. 2005. Attention-deficit hyperactivity disorder. *Lancet* 366 (9481):237-48.

questioned how these problems identified in the EPA's report were missed or ignored by the TCEQ. The individual strongly urged the TCEQ to take immediate enforcement action against the known soil, surface water, and groundwater contamination on the Exide property and commented that it would be unconscionable for the TCEQ to only address the air noncompliance and stop there. An individual voiced concern over potential water contamination.

While issues involving soil and water quality are beyond the scope of this SIP revision and Agreed Order, the commission reviews the impact to soil and water quality through other programs. On September 12, 2011, the TCEQ initiated formal enforcement action against Exide for alleged violations of industrial and hazardous waste requirements. Exide is being required through the enforcement process to evaluate the impact to soil and water and to remediate any identified contamination pursuant to the Texas Risk Reduction Program.

EVALUATION OF THE SIP REVISION AND AGREED ORDER

Exide commented that it has developed improvements to the traffic plan for truck traffic within the facility. Exide has provided a new traffic flow diagram to reflect those improvements and recommended that the new diagram replace the existing traffic flow diagram in Attachment C of the proposed Agreed Order.

The new traffic flow diagram has been replaced in Appendix C of the Agreed Order.

Exide commented that it supports the proposed SIP revision and Agreed Order and believes that the control measures go beyond what is needed to meet the 2008 lead NAAQS.

An individual commented that the SIP revision and Agreed Order anticipated that the area will attain the 2008 lead NAAQS by a small number – just below the standard, but that this number is not realistic. Texas Campaign for the Environment commented that the proposal was a good first start but it didn't go far enough to address the health issues and concerns of the people who live there. An individual commented that the plan will not improve the lead toxicity problem in Frisco. An individual commented that data in the SIP proposal did not add up. An individual commented that the proposal was flawed.

An individual commented that the proposed SIP revision should be withdrawn, corrected, and re-proposed. An individual commented that the proposed SIP revision and Agreed Order will fall short of actual compliance and requested that the proposal be amended to take into account the calculations and factors addressed in the report submitted by Spirit Environmental in order to ensure compliance with the lead NAAQS.

Downwinders at Risk commented that even though the TCEQ is holding a public hearing and is taking comments on the proposed SIP revision, the TCEQ is not going to accept any comments and will not change the SIP document.

Due to substantial comment from the public and the EPA, the SIP revision and Agreed Order have been revised. Based on the specific comments received, the TCEQ requested and received detailed information from Exide, which resulted in a more robust demonstration of attainment. Specific details regarding the improvements can be found in the Air Dispersion Modeling section of this Response to Comments document.

PUBLIC PARTICIPATION IN SIP DEVELOPMENT

An individual commented that they appreciated the TCEQ's outreach to the public including access to documents through the Web site and the two public meetings held in Frisco.

The commission appreciates the support and will continue to encourage public participation in the SIP development process.

An individual commented that the numbers in some of the backup documents for a study didn't add up, that the numbers were not based on the permitted emissions, and that the TCEQ put false information on its Web site. The individual commented that people were getting mixed up because they didn't understand the technical details of the proposal and that the TCEQ needed to do a better job of communicating to the public.

The commission did not knowingly put false information on the Web site. The commission contracted with Eastern Research Group Inc. (ERG) to conduct a comprehensive evaluation of air quality control techniques used for lead-acid battery recycling that could potentially be used to reduce lead emissions from the Exide facility. The objective of the study was to produce a menu of potential control technologies and industry best management practices available to reduce lead emissions and estimate associated costs, time to implement, and expected reductions in lead emissions. After the report was finalized, it was pointed out that the total potential reduction of fugitive emissions from Exide as stated in the report were higher than the actual stated fugitive emissions. The contractor was alerted to this, and an error was discovered in the calculation process. ERG revised the report and apologized for the error. Two numbers in Table 1 of the report were changed, but the overall conclusions of the report were not affected by the revision. The revised report was immediately posted to the State Implementation Plan for Lead Stakeholder Group Web page.

The TCEQ established a lead stakeholder group and a dedicated Web page as an effort to provide a mechanism for communicating with the public regarding the technical information associated with implementation of the lead SIP. The TCEQ held a public meeting in Frisco on January 19, 2011, to get input from local stakeholders. A public hearing regarding the proposed lead SIP and Agreed Order was held in Frisco on July 28, 2011. The TCEQ has also participated in numerous meetings and has answered many questions from stakeholders since the revision of the lead NAAQS. The TCEQ welcomes any specific suggestions on techniques for improving communications with the public on this matter.

EMISSIONS INVENTORY

An individual commented that Exide's reported 2010 emissions inventory lead emissions total of 1.09 tons per year (tpy) from Chapter 2.2: *Point Sources* of the SIP narrative was inaccurate because it did not include emissions from other sources at Exide. An individual commented that all sources of lead emissions may not be reported in the annual point source emissions inventory.

Exide is a major stationary source of air pollution per 30 Texas Administrative Code (TAC) §116.12 and is required to submit an annual emissions inventory update per 30 TAC §101.10(a)(1). Per the §101.10 reporting requirements, Exide is

required to report actual emissions of all criteria pollutants, including lead, in its annual emissions inventory. On March 23, 2011, the TCEQ requested that Exide update its 2010 emissions inventory to provide emissions from all sources that emit more than two pounds of lead per year including those not currently represented in the 2010 emissions inventory. On February 24, 2011, Exide responded that all lead emissions sources that could be quantified are represented in the 2010 emissions inventory. On April 1, 2011, Exide acknowledged that representative test data and/or emissions factors are not available to quantify battery breaker emissions. However, this source was evaluated and emission estimates were included in the TCEQ modeling conducted for this SIP revision. Emissions from the battery breaker will be controlled with an enclosure and negative pressure ventilation sufficient to ensure that fugitive emissions are routed to a new baghouse per the Agreed Order with the TCEQ.

An individual commented that historic emissions inventory data did not appear to trend consistently with ambient air lead concentrations. The individual commented that there was not good correlation between the reported lead emissions in the Toxics Release Inventory (TRI) and monitored concentrations.

It is not unusual to have a poor correlation between reported annual emissions and ambient air monitoring samples taken on a non-continuous basis. For an emission source to affect a monitor, winds have to blow from the source towards the monitor, which is not always the case. An emissions inventory (EI) will include estimates of emissions from all known stack and fugitive sources for operation throughout the entire year. The TRI is a self-reporting inventory administered by the EPA. The EPA issues TRI reporting guidance regarding air emissions reporting and is responsible for the quality assurance of the reported data. While these EI and TRI data do provide a measure of the level of activity at the Exide facility, SIP designation and attainment decisions are not based on EI or TRI data. The FCAA and EPA rules require that SIP designations and attainment decisions for lead be based on monitoring results.

MONITORING

Exide commented that, in general, it agreed with the description in Section 4.5.1: *Lead Monitoring Sites in Frisco* of past and current monitoring sites, although it suggested that discussion of current monitoring requirements and sites be more clearly separated in Section 4.5.1 from discussion of the past history of monitoring sites in the area. Exide offered a correction to the description of the area's current monitoring for site 480850003.

In order to provide a distinction between historical and current monitors, the proposed SIP revision has been modified by adding Section 4.5.2: *Current Ambient Monitoring*, to discuss current monitoring sites. The revision also corrects the description of monitoring site 480850003.

An individual commented that some of the lead monitors should be relocated and set to an off-day cycle to better capture the true picture of lead exposure to the area and prevent gaming the testing system. The individual also commented that the lead NAAQS did not factor the impact to the general population surrounding the plant and that monitoring and enforcement needed to be elevated.

The comment regarding changing the monitoring schedule is beyond the TCEQ's jurisdiction. The EPA requires states to sample on a prescribed sampling schedule, and the data collected according to this schedule is the factor used to determine whether air quality meets the lead NAAQS. As discussed elsewhere in this Response to Comments document, the FCAA requires the EPA to set NAAQS for pollutants from sources considered harmful to public health and the environment. The FCAA establishes primary standards to set limits to protect public health with an adequate margin of safety including the most sensitive part of the population.

The EPA lead monitoring regulation (Docket No. EPA-HQ-OAR-2006-0735) published on December 27, 2010, requires one monitor to be located near lead sources that emit 0.5 tpy or more. The TCEQ goes beyond what is federally required and operates four primary and two co-located monitors located east, north, north-northwest, and south of the Exide facility. The monitor north-northwest of the facility is located in the area that was determined to have the highest concentration of lead in ambient air in Collin County. This monitor is located to provide information on the highest ambient air impact of the Exide facility based on modeling and historical monitoring. The other three primary monitors provide additional data reflecting non-dominant wind patterns.

CONTROL STRATEGIES

Eight individuals commented that Exide's lead emissions should be reduced to the maximum level achievable. An individual requested the TCEQ require Exide to use the best available technology and cut emissions to less than 20 pounds of lead per year.

The TCEQ's jurisdiction is established by the Texas Legislature and is limited to the issues set forth in statute. The purpose of this SIP revision and Agreed Order is to require controls that allow Collin County to come into attainment with the 2008 lead NAAQS as expeditiously as possible. Accordingly, the TCEQ does not have jurisdiction to consider control measures that go beyond what is necessary to meet FCAA requirements. FCAA, §172(c)(1) requires that the SIP incorporate all RACM, including RACT, for sources of relevant pollutants. States containing areas designated as nonattainment are required to submit a SIP revision demonstrating that the associated enforceable control measures fulfill the RACT and RACM requirements for sources of ambient lead concentrations (73 FR 67035, November 12, 2008). The EPA defines RACT as the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility (44 FR 53761, September 17, 1979). RACT requirements are included in the FCAA to assure that major sources of emissions are controlled to a reasonable extent, but not necessarily to best available control technology levels expected of new sources or to maximum achievable control technology (MACT) levels required for major sources of hazardous air pollutants. Agreed Order 2011-0521-MIS includes the control measures that the TCEQ determined to meet RACT and RACM criteria. Air dispersion modeling conducted for this SIP revision demonstrates that with the controls in Agreed Order 2011-0521-MIS, the ambient lead concentration in the Collin County lead nonattainment area will be below the 2008 lead NAAQS by the December 31, 2015, attainment date. Because the lead emissions that will remain after Exide has installed and is operating all the required controls included in the

Agreed Order are sufficient for Collin County to demonstrate attainment of the 2008 lead NAAQS, it is unnecessary to impose an emission limit of less than 20 pounds of lead on Exide.

In addition to complying with the control requirements in Agreed Order 2011-0521-MIS, Exide must comply with the EPA's NESHAP for secondary lead smelters in 40 Code of Federal Regulations (CFR) Part 63, Subpart X. For major sources, these technology-based standards must reflect the maximum degree of emission reductions of hazardous air pollutant achievable after considering cost, energy requirements, and non-air quality health and environmental impacts and are commonly referred to MACT standards. According to FCAA, §112(d)(2)(A) - (E), MACT standards must require the maximum degree of emissions reduction through the application of measures, processes, methods, systems, or techniques including, but not limited to, measures that: reduce the volume of or eliminate pollutants through process changes, substitution of materials or other modifications; enclose systems or processes to eliminate emissions; capture or treat pollutants when released from a process, stack, storage, or fugitive emissions point; are design, equipment, work practice, or operational standards (including requirements for operator training or certification); or are a combination of the above.

Furthermore, Exide operates under New Source Review (NSR) permits as required by both state and federal law. Exide must revise its permits before installing the control equipment required by the Agreed Order. If any change proposed by Exide would make an increase in a pollutant or change the character of emissions, the permit will also require an evaluation of control technology.

As part of the agreement between the City of Frisco and Exide, Exide has agreed to close the plant, cease all manufacturing operations, and remediate the property. The TCEQ is not a part of the agreement between the City of Frisco and Exide. However, as part of its Agreed Order with the TCEQ, Exide has agreed to notify the TCEQ by November 1, 2012, if it plans to close the plant. Should Exide choose this alternative, Exide will close the plant no later than January 6, 2014, and void its air quality permits for the plant no later than December 31, 2015, other than any authorizations required for operation of the wastewater treatment plant, instead of installing and operating the other control measures identified in the Agreed Order and the SIP.

Reasonably Available Control Technology (RACT), Reasonably Available Control Measures (RACM)

An individual commented that the proposed SIP revision and Agreed Order highlighted the impact of fugitive emissions from Exide and indicated that the origin and amount of these fugitive emissions were not well understood. The individual commented that both the ERG report entitled *Comprehensive Evaluation of Air Quality Control Technologies Used for Lead-Acid Battery Recycling* and the EPA's multimedia inspections of the Exide facility in Frisco have documented Exide's inability to control fugitive emissions. The individual commented that a more effective approach for controlling fugitive emissions is required to assure compliance with the NAAQS and meet FCAA RACT and RACM requirements. The individual recommended the commission adopt as RACT and RACM all requirements in California's South Coast Air Quality

Management District (SCAQMD) November 2010 final Rule 1420.1 entitled *Emissions Standard for Large Lead-Acid Battery Recycling Facilities*.

Agreed Order 2011-0521-MIS includes the fugitive emission control measures that the commission determined to meet RACT and RACM criteria. As part of the RACM and RACT analysis, the TCEQ evaluated the control measures contained in SCAQMD Rule 1420.1. Control measures in SCAQMD Rule 1402.1 that were determined to meet RACM and RACT criteria are included in Agreed Order 2011-0521-MIS, and control measures similar to those in SCAQMD Rule 1420.1 are also included in the newly promulgated NESHAP requirements in 40 CFR Part 63, Subpart X. Air dispersion modeling conducted for this SIP revision demonstrates that with the controls in Agreed Order 2011-0521-MIS the ambient lead concentration in the Collin County lead nonattainment area will be below the 2008 lead NAAQS by the December 31, 2015, attainment date. After Exide has installed and is operating all the required controls included in the Agreed Order, lead emissions are sufficiently reduced for Collin County to demonstrate attainment of the 2008 lead NAAQS. It is unnecessary for a lower lead emission limit beyond that required in this plan to be imposed on Exide.

To ensure that area fugitive emissions are routed to a high efficiency control device, Exide will fully enclose and place the secondary lead smelting operations, including battery breaking operations, blast and reverberatory furnaces, refining and casting operations, slag treatment and fixation, and raw materials storage and handling areas under negative pressure ventilation. Pick-up hoods are employed to capture process fugitives from the blast and reverberatory furnaces. These process fugitives are exhausted through control devices. Exide will install high speed roll-up doors, unless there is a truck dock system installed, on the total enclosures to help maintain negative pressure and reduce fugitive emissions. Exide will also install dock seal at each dock to eliminate the release of fugitive dust during loading and unloading.

Exide will also implement the following operational work practices and housekeeping requirements that minimize fugitive lead-dust emissions to the ambient air: traffic plans for materials loading and unloading, traffic plans that avoid areas with the potential to create fugitive lead-dust, inspection and immediate removal of leaking lead-acid batteries upon delivery, and the cleaning of equipment that is contaminated with lead inside of a permanent total enclosure prior to moving such equipment to a maintenance building.

An individual commented that the TCEQ relied significantly on the ERG report entitled *Comprehensive Evaluation of Air Quality Control Technologies Used for Lead-Acid Battery Recycling* to develop the Agreed Order and the RACT and RACM analysis. The commenter also expressed concern that the ERG report did not fulfill its contract scope of work and contained technical deficiencies and noted several shortcomings within the ERG report. The individual commented that the combination of the ERG report understating the fugitive emissions and overstating the ability to control these fugitives provides an inaccurate base for the TCEQ to reach an accurate control technology or control measure strategy. The individual commented that the ERG report also understated the opportunity for stack emission reductions.

The commission disagrees that the information in the ERG report hindered the development of an accurate control strategy. As discussed in Chapter 4: Control Strategy and Required Elements of this SIP revision, the TCEQ used multiple resources to develop the RACM and RACT analysis. The final list of potential control strategy concepts for the RACM and RACT analysis includes the strategies presented to stakeholders and the strategies suggested by stakeholders during the informal stakeholder comment process; control measures proposed or implemented at similar secondary lead smelting facilities in other states; and control technologies and measures recommended in the ERG report entitled *Comprehensive Evaluation of Air Quality Control Technologies used for Lead-Acid Battery Recycling*. The TCEQ also conducted independent research on the control technologies for secondary lead smelting operations including contacting South Coast Air Quality Management District staff to discuss the requirements in Rule 1420.1, Emissions Standard for Lead from Large Lead-Acid Battery Recycling Facilities. Staff also contacted control device manufactures to discuss baghouses and WESP technologies and the estimated time to install these technologies. See Appendix F: *Reasonably Available Control Measure (RACM) and Reasonably Available Control Technology (RACT) Analysis* of this SIP revision for a complete list of control measures and determinations. Agreed Order 2011-0521-MIS includes the control measures that the commission determined to meet RACT and RACM criteria. Air dispersion modeling conducted for this SIP revision demonstrates that with the controls in Agreed Order 2011-0521-MIS the ambient lead concentration in the Collin County lead nonattainment area will be below the 2008 lead NAAQS by the December 31, 2015, attainment date.

One individual commented that the value of 2,786 homes within 3,000 feet from the Exide facility was reduced by an estimated \$51 million due to environmental hazards and commented that the home values would be restored if lead emissions were mitigated and prior impacts remediated. The individual requested the TCEQ include the impact of local housing value in the RACT analysis.

In the September 17, 1979, issue of the *Federal Register* (44 FR 53762), RACT is defined as the lowest emissions limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. Economic feasibility considers the cost of reducing emissions and the difference between the cost of the emissions reduction approach at the particular source in question and the costs of emissions reduction approaches that have been implemented at other similar sources. The capital costs, annualized costs, and cost-effectiveness of an emissions reduction technology are considered in determining whether a potential control measure is reasonable for an area or state. Local housing value is not part of the RACT analysis criteria.

Wet Electrostatic Precipitator (WESP)

Exide supported the conclusion that the installation of WESP control technology is not RACM or RACT for lead-acid battery operation with secondary lead smelting and lead oxide operations.

The commission appreciates the support. As discussed in Chapter 4: *Control Strategy and Required Elements* of this SIP revision, the TCEQ determined that

the installation of WESP is not RACT or RACM for the Exide facility in Collin County because it is not economically feasible given the estimated emission reductions.

One individual supported the Agreed Order with Exide but requested that WESP technology be included as RACT. One individual requested the WESP and Regenerative Thermal Oxidizer technology be considered RACT especially given the population in the immediate area and the density of children.

Downwinders at Risk and two individuals disagreed with the TCEQ's determination that WESP is not RACT or RACM because of its high cost and requested the TCEQ reconsider that determination. The commenters noted that in the final rule for the 2008 lead NAAQS, the EPA stated that "it is reasonable for similar sources to bear similar costs of emissions reduction. Economic feasibility for RACT purposes is largely determined by evidence that other sources in a particular source category have in fact applied the control technology or process change in question." The commenters added that of the 14 secondary lead smelters in the United States in 2011, one site in California is currently operating a WESP, and two additional sites in Indiana and New York are anticipated to install WESP before 2013.

Two individuals also disagreed with the TCEQ's determination that WESP is not RACT or RACM because of its unproven performance. The commenters also indicated that Envirotech, the manufacturer of the WESP installed at the Quemetco facility in California, stated that WESP technology could be used to control waste gas from blast and reverberatory furnaces. The commenter added that Envirotech stated the waste gas would need to be properly conditioned so that the temperature is less than 200 degrees Fahrenheit and estimated that a gas conditioning system at Exide would be no more than \$100,000 in additional capital cost. The commenters requested the TCEQ require Exide to install a WESP and lower total lead emissions to less than 11.21 pounds per year. The commenters stated that the Quemetco facility with a WESP in City of Industry, California, reported total lead emissions of 11.21 pounds of lead in 2010, which is 97.7% lower than what Exide claims its emissions would be after November 2012. Downwinders at Risk commented that there are no technical feasibility issues associated with the application of WESP.

The TCEQ determined that the installation of WESP control technology is not RACT or RACM for the Exide facility in Collin County because it is not economically feasible given the estimated emission reductions. In the recently promulgated revisions to the NESHAP for Secondary Lead Smelting in 40 CFR Part 63, Subpart X, the EPA stated that adding WESP technology as supplementary control for hazardous air pollutant (HAP) metal is excessively costly and not cost-effective (76 FR 29058). According to the supporting documentation, the cost-effectiveness of installing WESP technology at all secondary lead smelting facilities is an estimated \$2.37 million per ton of HAP (Docket No. EPA-HQ-OAR-2011-0344-0155). In comparison, the cost-effectiveness of complying with all of the newly promulgated NESHAP requirements is an estimated \$0.33 million per ton of HAP (Docket No. EPA-HQ-OAR-2011-0344-0155). Agreed Order 2011-0521-MIS requires Exide to install HEPA filters as secondary lead control devices. HEPA filters have a minimum 99.97% control efficiency for the removal of particles with a diameter of at least 0.3 micrometre. According to EPA's Air Pollution Control Technology Fact Sheet (EPA-452/F-03-023), the capital cost for a HEPA filter is \$6,400 to \$8,500

per standard cubic meter per second (scm/sec) or \$3.00 to \$4.00 per standard cubic feet per minute (scfm). According to EPA's Air Pollution Control Technology Fact Sheets (EPA-452/F-03-030 and EPA-452/F-03-023), the control efficiency of a typical new WESP design is between 99% and 99.9%, and the capital cost is \$42,000 to \$85,000 per scm/sec or \$20 to \$40 per scfm, which is roughly 10 times the capital cost of a HEPA filter. The HEPA filter provides equivalent control efficiency at a much lower cost than a WESP.

WESP has been installed at one secondary lead smelting operation in California to comply with the AB2588 Toxics Hot Spots program, a unique regulatory requirement that specifically addresses cancer risk from arsenic and other heavy metal emissions. The facility in California selected WESP technology as a secondary pollution control device installed after the baghouse to further reduce arsenic emissions from the secondary lead smelting operation. In this case, WESP technology may be reasonable for facilities that operate electric arc furnaces (EAF) as part of the secondary lead smelting process. EAFs operate at much higher temperatures (2500 - 3000 degrees Fahrenheit) than the blast furnaces used at the Exide facility in Frisco. This higher heat volatilizes compounds such as arsenic and other heavy metals, which makes the particles more difficult to remove using a dry filtration device, such as a baghouse or secondary HEPA filter. Arsenic and other heavy metals such as lead are not volatilized in secondary lead smelting operations using blast and reverberatory furnaces, such as those used at the Exide facility in Frisco. There is not sufficient information to substantiate that WESP is reasonable for secondary lead smelting facilities using blast and reverberatory furnaces at the additional cost of \$16 to \$40 million at each secondary lead smelter when the HEPA filter provides equivalent control efficiency at a much lower cost.

In addition, installing a WESP on the Exide facility for process emission control will have limited benefit because the vast majority of Exide's lead emissions are from fugitive sources. Air dispersion modeling conducted for this SIP revision demonstrates that with the controls in Agreed Order 2011-0521-MIS the ambient lead concentration in the Collin County lead nonattainment area will be below the 2008 lead NAAQS by the December 31, 2015, attainment date. The lead emissions that will remain after Exide has installed and is operating all the required controls included in the Agreed Order are sufficiently reduced for Collin County to demonstrate attainment of the 2008 lead NAAQS. It is unnecessary for a lower lead emission limit to be imposed on Exide.

A regenerative thermal oxidizer is typically used to control hydrocarbon emissions and would not provide any additional reductions in lead emissions. This SIP revision and the associated Agreed Order address the 2008 lead NAAQS. Including any additional control measures to reduce pollutants other than lead is beyond the scope of this SIP revision.

AIR DISPERSION MODELING

The EPA requested more information regarding 1) calculation of surface characteristics using an equivalent method to the AERSURFACE program; 2) raw meteorological data processed with AERMET; and 3) a description of fugitive emission sources.

This SIP revision contains detailed calculations of surface characteristics equivalent to the method in the AERSURFACE program. A description of fugitive emission sources is also contained in the SIP revision. The raw meteorological data processed with AERMET used in the SIP revision were sent to EPA Region 6 staff.

The EPA commented that there were differences in source representation between the modeling performed for the proposed SIP revision and modeling performed in 2009 and 2010 in support of the lead monitoring requirement.

On November 12, 2008, the EPA finalized the new 0.15 µg/m³ lead NAAQS based on a rolling three-month average (73 FR 66964). In general, the rule requires source-oriented ambient air lead monitoring by January 1, 2010, at sites with actual annual lead emissions of one or more tpy. Exide was identified as having emissions at or above this level based on the reported 2007 TCEQ Emissions Inventory and/or 2006 TRI. The rule further requires that this monitoring be conducted at or near the maximum off-site ambient air lead concentration as predicted by modeling. To meet the rule requirement, modeling was performed by TCEQ staff in 2009 and again in 2010 based on permit representations and modeling programs that were available at the time. Exide provided updated values on source coordinates and parameters. Some of these values may have differed slightly from previous representations. Regardless of the slight differences, the modeling in support of the SIP revision uses the data available based on Exide's current authorizations.

The EPA, Downwinders at Risk, and two individuals commented that the TCEQ had not addressed the contribution of background lead concentrations in the modeling analysis.

In response to these comments, the TCEQ has addressed the contribution of background lead concentrations in the revised modeling analysis included with this SIP revision.

Using the procedure described in 40 CFR §51 Appendix W 8.2.2(b), a mean background concentration was determined at each monitor near the Exide site. Using data from 2006-2011, a background concentration of 0.028 µg/m³ was calculated. This calculated background concentration was added to the maximum predicted concentration to evaluate compliance with the lead NAAQS.

The modeling in the June 3, 2011, SIP proposal included an evaluation of the potential impact of known mobile and stationary sources of lead emissions in the area near the Exide site, but the emissions were not quantified in the model. In addition, the TCEQ considered unknown sources but did not add a background concentration to represent these emissions. These decisions were made because the base-case analysis clearly demonstrated that Exide facilities and associated activities caused exceedances of the lead standard.

In addition, at the time of the June 3, 2011, SIP proposal, the reduction in emissions due to the tube sheeting and new baghouse media had not been quantified due to engineering design specifications not being available. No

reduction in emissions was attributed to these emission control measures in the modeling. By not accounting for proposed emissions control measures, the predicted impact is greater than the impact of background sources of lead. The TCEQ believes the modeling approach was reasonable.

However, since the SIP revision was proposed on June 3, 2011, Exide has had time to more completely develop the engineering design specifications at the Frisco site. As a result, Exide has provided updated emission limits taking into account the new tube sheeting and baghouse media. The modeling analysis in support of this SIP revision thus has more specific inputs related to emission controls and includes a background lead concentration based on monitoring to the maximum predicted concentration from modeling.

The EPA commented that the TCEQ did not use adequate receptor grid resolution in the modeling for demonstrating compliance with the lead NAAQS.

In the TCEQ's technical judgment, the receptor grid resolution was sufficient to determine the location and magnitude of the maximum predicted concentration based on emission characteristics and distance to receptors. The Exide site has been modeled with refined dispersion models many times over the past 20 years. The source locations, building locations, and stack parameters have been approximately the same between the different analyses. Using at least three different five-year meteorological data sets, three different dispersion models, and three different receptor resolutions (25, 50, and 100 meter), the location of the maximum predicted concentration has consistently been the location of the Eubanks monitor. To ensure that the maximum predicted concentration is captured for the demonstration of compliance with the lead NAAQS, additional receptors spaced 25 meters apart were placed in the vicinity of the location representing the Eubanks monitor.

The EPA and two individuals questioned whether all emission sources of lead were included in the Base Case modeling scenario. Exide commented that the fugitive emissions included in the Base Case modeling were over-estimated based on comparing Base Case modeling results (1.44 $\mu\text{g}/\text{m}^3$ maximum for rolling three-month average) to monitoring values since January 2009 (0.71 $\mu\text{g}/\text{m}^3$).

In order to determine if all sources of lead at the Exide site were accounted for, the TCEQ reviewed and analyzed monitoring data from the Eubanks, Ash Street, and Parkwood Street monitors for the 2006 through 2010 period. During that time, the highest rolling three-month average concentration (May through July 2008) was 1.26 $\mu\text{g}/\text{m}^3$. The highest monthly average concentration (May 2008) was 1.56 $\mu\text{g}/\text{m}^3$, and the highest 24-hour average concentration (June 5, 2008) was 3.42 $\mu\text{g}/\text{m}^3$. Modeling the maximum hourly allowable emission rates represented in the October 2010 permit alteration occurring every hour, which is conservative due to the high variability of emissions from the site, predicted a maximum rolling three-month average concentration of 0.84 $\mu\text{g}/\text{m}^3$, well below (50% less than) the monitored values. In addition, regular stack tests of the secondary smelter baghouse stacks demonstrated that the stack emissions were below their associated maximum hourly allowable emission rates. Given that modeling

predictions should always be higher than monitored concentrations due to the conservative treatment of source emissions, TCEQ staff concluded that a substantial emissions source or sources had not been accounted for in the modeling.

From review of the monitoring data, the TCEQ inferred that more emissions were occurring from the Exide site process area than were modeled. Initial modeling of the October 2010 permit alteration represented emissions showed that stack emissions contributed only a small portion to the maximum predicted concentrations. From analysis of the monitoring data and initial modeling, the TCEQ concluded that the most likely cause of the discrepancy between monitored concentrations and predicted modeled concentrations was the presence of a fugitive source of emissions located in the Exide site process area. Since the monitor captures 24-hour samples, it was difficult to pinpoint the possible location with hourly meteorology. However, the data suggest that the emissions originated from the western portion of the process area.

In conducting a model performance evaluation, the TCEQ relied upon monitoring data, source representations in the permit files, stack test data, and site production data to construct a modeled emissions scenario that would reasonably replicate actual monitored conditions. In constructing this emissions scenario, TCEQ staff included an additional fugitive emissions source. The modeling results with the additional fugitive source substantially agree with the monitoring data.

The purpose of the emissions scenario in the model performance evaluation (base case) was to propose just one explanation of the disparity of the initial modeling analysis and the monitoring data.

Exide commented that emission estimates for the demonstration of compliance with the lead NAAQS (future case) should be refined.

The demonstration of compliance with the lead NAAQS in the proposed June 3, 2011, SIP revision contained emission rate estimates based on the best information that was available at the time. Exide has provided more detailed information regarding construction design and emissions estimates. The TCEQ has reviewed this information and is using it in the demonstration of compliance with the lead NAAQS for the final SIP revision.

The EPA commented that the point source emission rates modeled, based on emission rates from stack testing, were not backed up with enforceable limits.

The commission disagrees that the point source emission rates modeled in the proposed and final SIP revision are not enforceable limits. Though the value of the emission rates are based on stack testing, and the value of the emission rates are limits and listed as such in the effective permits, the rates alone do not constitute continuously enforceable limits that can be simply enforced. Exide's permits (permits 1147A and 3048A) contain special conditions limiting production levels, process rates, operating temperature ranges, and fuel specifications. In cases where there is no direct calculation method to estimate emissions, such as in the

case of Exide's baghouses, the limits contained in the permit special conditions are the enforceable limits.

In *United States v. Louisiana-Pacific Corporation*, 682 F.Supp. 1122 (D. Colo. Oct. 30, 1987) and 682 F.Supp. 1141 (D. Colo. March 22, 1988), the Court discussed the type of permit restrictions that can be used to limit a source's potential to emit. The Court concluded that "not all federally enforceable restrictions are properly considered in the calculation of a source's potential to emit. While restrictions on hours of operation and on the amount of materials combusted or produced are properly included, blanket restrictions on actual emissions are not." *Louisiana-Pacific*, 682 F. Supp. at 1133. The Court held that Louisiana-Pacific's permit conditions, which limited carbon monoxide emissions to 78 tpy and volatile organic compounds to 101.5 tpy, should not be considered in determining "potential to emit," because these blanket emission limits did not reflect the type of permit conditions that restricted operations or production such as limits on hours of operation, fuel consumption, or final product. Furthermore, the second Louisiana-Pacific decision makes clear that the Court considered operational limitations to be valid permit limitations to rely on when calculating a source's potential to emit when such limits are federally enforceable. *Louisiana-Pacific*, 682 F. Supp. at 1159.

The *Louisiana-Pacific* court was guided in its reasoning by the D.C. Circuit's holding in *Alabama Power v. Costle*, 636 F. 2d 323 (D.C. Circuit 1979). Before *Alabama Power*, EPA regulations required potential to emit to be calculated according to a source's maximum uncontrolled emissions. In *Alabama Power*, the D.C. Circuit remanded those regulations to the EPA with instructions that the agency include the effect of in-place control equipment in defining potential to emit. The EPA went beyond the minimum dictates of the D.C. Circuit in promulgating revised regulations in 1980 to include, in addition to control equipment, any federally enforceable physical or operational limitation. The *Louisiana-Pacific* court found that blanket limits on emissions did not fit within the concept of proper restrictions on potential to emit as set forth by *Alabama Power*.

Moreover, the Court found that "a fundamental distinction can be drawn between the federally enforceable limitations which are expressly included in the definition of potential to emit and the [emission] limitations.... Restrictions on hours of operation or on the amount of material which may be combusted or produced ... are, relatively speaking, much easier to 'federally enforce.' Compliance with such conditions could be easily verified through the testimony of officers, all manner of internal correspondence and accounting, purchasing and production records. In contrast, compliance with blanket restrictions on actual emissions would be virtually impossible to verify or enforce." *Louisiana-Pacific*, 682 F. Supp. at 1133. Thus, the Court found that blanket emission limits were not enforceable as a practical matter. *Id.* Finally, the Court reasoned that allowing blanket emission limitations to restrict potential to emit would deprive EPA "of the benefit of the remedies Congress created for a violation of PSD." *Id.*

Since the demonstration of compliance with the lead NAAQS can only be performed through dispersion modeling and the model input requires an emission rate value, reasonable values for the emission rates must be developed. Using stack testing data to develop these rates is a common practice that the EPA has approved of in the past. The values developed from stack testing are typically validated through compliance testing. The EPA's comment that stack testing is the only means to make emission limits enforceable is in conflict with EPA rules and the findings of the *Louisiana-Pacific* decisions.

The EPA commented that the TCEQ did not follow provisions in 40 CFR §51.112.

The commission disagrees that it did not follow the provisions in 40 CFR §51.112. The control strategy and demonstration of compliance with the lead NAAQS contained in the proposed and final SIP revision contain all the elements specified in 40 CFR §51.112(a) and (b).

The EPA commented that the TCEQ did not follow provisions in 40 CFR §51 Appendix W, Guideline on Air Quality Models.

The TCEQ disagrees that it did not follow the provisions in 40 CFR §51 Appendix W, Guideline on Air Quality Models (GAQM) or deviate from EPA guidance when conducting the demonstration of compliance with the lead NAAQS. The TCEQ coordinated with EPA Region 6 through many verbal communications over several months. From these discussions of modeling-related issues, the TCEQ and EPA Region 6 verbally agreed on all issues except one - the averaging time of the emissions to be modeled. The TCEQ informally submitted to EPA Region 6 a modeling protocol on May 16, 2011, and an updated protocol February 2, 2012.

Though maximum hourly emission rates were modeled in this final SIP revision, the TCEQ contends that modeling 24-hour emission rates, as in the June 3, 2011, proposal, is equally valid.

In its comments, the EPA describes three elements in Table 8-1: *Model Emission Input Data for Point Sources* of the GAQM; however, there are four elements to the table. The element not contained in the EPA's comments is the first element of the table, "Averaging Time." The EPA has a long-standing and consistently applied policy to link enforceable limits demonstrating compliance of a NAAQS to a specific averaging time at least as long as the averaging time of the applicable NAAQS.

The EPA considered the averaging time of an emission limit as a vital element in guidance given to EPA regions and included averaging time of the NAAQS on the SIP approvability checklist. The EPA dispersion modeling guidance for NSR permits states that modeled emissions rates "must reflect the maximum allowable operating conditions as expressed by the federally enforceable emissions limit, operating level, and operating factor." The guidance gives special emphasis to the applicable averaging time of the emission rates. The EPA guidance on limiting a source's emissions states "the averaging time for all limits must be practicably enforceable. In other words, the averaging time period must readily allow for

determination of compliance. EPA policy expresses a preference toward short-term limits, generally daily but not to exceed one month.” In regard to 24-hour NAAQS demonstrations, the EPA’s policy for short-term emission limit was stated as “the only approach that seems to be protective is to model the target source, and nearby background sources, at their maximum potential to emit over 24 hours. We believe this is necessary for both permit and SIP modeling.” Specific guidance from the EPA regarding modeling for the lead NAAQS was to model maximum rolling three-month emission rates because the NAAQS is based on a rolling three-month period. In each of the cases, where the issue is a demonstration of compliance with a NAAQS, EPA guidance has directly linked enforceable limits to the appropriate averaging time of the NAAQS in question.

Though some of the emission rates modeled for the June 3, 2011, SIP proposal were maximum 24-hour emission rates, the permit authorizing the emissions contains special conditions on daily finished lead production, hourly feed rates, emission control equipment specifications and maintenance practices, and recordkeeping of relevant operating parameters to ensure the emission limits are enforceable. By modeling emission rates with a shorter averaging time than the NAAQS (rolling three-month period), rates that are federally enforceable, and rates assumed continuous over all hours, the emission rates modeled complied with the requirements of Table 8-1 of the GAQM.

The EPA and three individuals commented on the 100% capture efficiency used for the Future Case modeling analysis.

The EPA commented that the Future Case modeling analysis did not include any modeled fugitive emissions from these sources since the installation of the full enclosure with negative pressure were assumed to result in 100% capture of fugitive emissions. The EPA stated it has accepted 100% capture of fugitive VOC emissions in other situations only with stringent requirements including a 15-square centimeter maximum leak area, minimum entrance and exit velocities, and limits on the size of egress points. The EPA stated that the TCEQ’s modeling analysis showed that even very small uncontrolled fugitive lead emissions could prevent the area from reaching attainment. The EPA requested that the final SIP include a detailed plan demonstrating how the source would be able to achieve 100% capture efficiency.

One individual commented that 100% capture and control of fugitive emissions was unrealistic and noted that site visits by the EPA and the TCEQ’s contractor, ERG, documented that 100% fugitive emission capture was not a plant priority.

Two individuals commented that 100% capture and control of fugitive lead emissions was overly optimistic because the work practices for areas that could generate fugitive emissions could allow lead dust to be tracked outside the building and, therefore, could not be controlled by the permanent total enclosure. The commenters also stated that the past and current operating practices at the Exide facility demonstrated improper control of fugitive emissions. The commenter noted that pictures taken during EPA inspections in 2009 and 2010 documented holes in roofs and walls of fugitive emissions enclosures, waste materials lying outside of controlled areas, doors either missing or left open, and material leaks. The commenters suggested that using the 90% capture and control efficiency recommended in the ERG report was more realistic.

In response to these comments, the TCEQ revised the Future Case modeling analysis used to demonstrate compliance with the 2008 lead NAAQS to account for potential fugitive emissions from buildings. The revised Future Case modeling analysis includes the fugitive emissions from roads and fugitive emissions from the buildings including un-captured process emissions and fugitive emissions from other sources within the buildings.

During the development of the newly promulgated revisions to the NESHAP for secondary lead smelters in 40 CFR Part 63, Subpart X, the EPA documented that compliance with these control requirements and work practices will result in 95% capture and control of building fugitive emissions (Docket no. EPA-HGQ-OAR-2011-0344-0163). In a letter dated February 16, 2012, EPA Region 6 confirmed that compliance with the requirements in 40 CFR Part 63, Subpart X would result in 95% capture of fugitive emissions and stated that the TCEQ would need to provide reasoned justification for the use of capture efficiency greater than 95%.

The TCEQ estimates that at most only 1% of the fugitive emissions from the buildings would escape to the atmosphere from the total enclosure and, therefore, the Future Case modeling analysis assumes 99% capture efficiency. The supporting documents for the newly promulgated revisions to 40 CFR Part 63, Subpart X indicate that total enclosures can provide up to 99% control of fugitive emissions from sources inside a building if the site adds supplementary controls and work practices beyond the NESHAP Subpart X requirements (Docket no. EPA-HQ-OAR-2011-0344-0163). In addition to operating required sources in a total enclosure as required in 40 CFR Part 63, Subpart X, Exide will also operate supplementary controls to address uncaptured process emissions and fugitive emissions from other sources within the buildings. Four supplementary controls and work practices will be implemented at the Exide facility. First, Exide will install high-speed roll-up doors and interlock systems to minimize the duration and extent of pressure variation due to open doors. Second, Exide will install a dock seal at each dock to eliminate the release of fugitive dust during loading and unloading. Third, Exide will designate lead-bearing material-handling equipment inside the building and reroute traffic within the plant to minimize material transfer, outdoor traffic, and the generation of fugitive emissions. Fourth, pick-up hoods are employed to capture process fugitives from the blast and reverberatory furnaces (i.e., charging, tapping, etc.), and these process fugitives are exhausted through control devices. These capture hoods are required under the 1997 NESHAP in 40 CFR Part 63, Subpart X (62 FR 32218) but are not required under the 2012 revisions. However, Exide's permit (1147A) requires the continued operation of these capture hoods. The combination of capture hoods, total enclosure, high-speed roll-up doors, dock seals, and work practices inside the building will ensure that the control efficiency of building fugitive emissions should maximize the overall efficiency. Given the supplementary controls required to address uncaptured process emissions and fugitive emissions from other sources within the buildings, the use of 99% control efficiency is reasonable and consistent with EPA guidelines.