# Claymont Steel

***Fugitive Dust Control Implementation Plan***

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# 1 Introduction

Claymont Steel was issued a Secretary's Order by the Delaware Department of Natural Resources and Environmental Control (DNREC) in October 2006. The Order requires that Claymont Steel undertake a study into the process, operating practice modifications and air pollution control systems required to reduce the emissions of fugitive dust from their outdoor slag handling operations and other steel mill operations that generate dust. The Order also requires that an ambient air monitoring program be established and operated to provide additional information about the amount of dust that is being deposited in residential areas nearby the plant. The ambient air monitoring program is also intended to provide an indication of Claymont Steel's contribution to the total dust loads being experienced.

These measures were required to address complaints from nearby residents that are being adversely affected by dust deposition on their properties. It was determined by DNREC that, although there are many sources of dust in the area that may be impacting residents, Claymont Steel was a significant contributor and would be the initial focus of efforts to reduce fugitive dust emissions.

One of the requirements in the Order is to prepare and submit an Implementation Plan to DNREC within 60 days of the acceptance of the original dust study report. That report has been completed, reviewed and accepted by DNREC. It presented recommended dust control measures and a protocol for the ambient air monitoring program. The date for submission of this Implementation Plan is November 13, 2007. Submission of this report, achieves this milestone.

The Dust Study report identifies several sources of fugitive dust emissions and prioritizes them based on their potential to emit dust and their importance to the steel-making operations. Various dust control measures were considered covering all identified sources. This Implementation Plan presents the selected approaches for each source and defines the steps required, schedule and approximate costs for implementing the dust control measures.

The selected dust control measures are divided into two phases: those that can be implemented relatively quickly, and those that will require more time, and resources to implement. All projects are listed, but only Phase 1 projects are presented in detail as to their timelines for implementation.

# 2 Dust Control Projects

The proposed dust control projects are based on the development of the Phase 1 and Phase 2 dust control projects presented in the Dust Study report "Slag Dust Fugitive Emissions Control Study", Earth Tech, September 2007.

## 2.1 Dust Sources

The sources of fugitive dust are listed in Table 1 and are presented along with an indicator of whether they are significant dust generating sources or not and the type of dust control to be implemented. The potential for impact to operations is also presented to allow for consideration of whether the dust control measures can be implemented without undue impact to the steel-making operations.

This list of dust sources was used as the basis for developing recommended dust control options, which were presented, discussed and eventually agreed to by Claymont Steel and DNREC.

**Table 1: Dust Sources to be Controlled**

| Source | Dust Emitting Process | Category | |
|---|---|---|---|
| | | Amount of Emissions | Frequency |
| Scrap yard | Roadways within scrap yard | Low – Moderate | High |
| | Scrap metal truck unloading | Low | High |
| Slag yard | Slag quenching stations | High | High |
| | Screening conveyor hopper charging | Moderate | High |
| | Processed slag storage piles | Low – Moderate | Low |
| | Slag storage pile relocation | Low – Moderate | Low |
| | Slag pit operation | Moderate | Low |
| Melt shop | Steel furnace operation | Moderate – High | High |
| | Scrap bucket preparation | High | High |
| | Carbon silo bin | High | High |
| | Lime storage bin | High | High |
| Ladle slag quenching | Ladle slag handling and quenching | Moderate | Low |
| Coal storage station | Handling and loading | Low | Moderate |
| Roadways | Major roadways | Moderate – High | High |

## 2.2 Dust Control Measures

The list of dust sources was used as the basis for developing recommended dust control options that were presented in the Dust Study report. This list of intended dust control

options was discussed and a final list of intended dust control measures was decided upon and agreed to by DNREC. This list is summarized in Table 2.

**Table 2: Dust Control Measures to be Implemented**

| Dust Emitting Process | Proposed Control Solution |
|---|---|
| **Phase 1 – Short Term Implementation** | |
| Melt Shop Improvements | • Conduct fume control system assessment to identify improvements required to reduce fugitive emissions from furnace operations<br>• Eliminate rail system for scrap transfer and use a truck transfer method<br>o Bucket loading by truck will reduce scrap transfers to 6 per heat from 100 per heat by magnet currently in use<br>o Reduces dust generating events<br>o Eliminates rail noise, vibration and diesel emissions<br>o Frees up space in building for slag quenching operations<br>• Baghouse installed to control carbon and lime transfer emissions as well as new scrap bucket loading station (as described above) |
| Slag Quenching / Cooling Improvements | • Move slag quenching operations inside the melt shop to area currently occupied by the scrap bay area<br>o Net reduction in water use<br>o Outdoor vehicle traffic reduced from 50 Loader trips / day to 10 truck trips per day<br>• Slag cooling emissions to be controlled by enclosure |
| Roadways | • Access road paving<br>• Truck wheel wash station<br>• Speed limit & rigorous road maintenance program |
| Scrap Yard | • Increase buffer zone by moving scrap storage farther from Naamans Rd.<br>• Construct tree-lined berm around scrap yard for wind break |
| Slag Yard | • Build enclosure around screening system charge hopper<br>• Improve water/suppressant spray system for slag pit operation<br>• Improve water/suppressant spray system for slag storage piles<br>• Minimize inventory of processed slag materials |
| **Phase 2 – Intermediate Term Implementation** | |
| Melt shop | • Additional dust control system improvements as identified by assessment in Phase 1 |
| Ladle slag handling and quenching | • Enclose slag transfer route and re-design quenching stations |

Due to the significance of the scrap handling project to the central operations of the plant, and the need to obtain approval for the financial investment required, the move of the slag quenching operations to the existing scrap bay area is still contingent upon approval by Claymont Steel's Board of Directors. In any event improvements to the slag quenching operations will be implemented to reduce the emissions of fugitive dust.

## 2.3 Dust Control Measures Implemented to Date

Following the initial issuance of the Order in October 2006, Claymont Steel embarked upon a dedicated program of assessing where they could improve dust control from outdoor slag operations with little or no delay. IMS Tube City is the company that is under contract to Claymont Steel to handle all furnace and ladle slag materials including transport from the shop, quenching, cooling, metal recovery, sizing and storage and final shipping of slag off-site. Several dust control initiatives have been implemented by Claymont Steel and Tube City IMS. These are summarized below in Table 3.

**Table 3: Summary of Dust Control Measure Implemented to Date**

| Sources of Dust Controlled | Dust Control Measures Implemented |
|---|---|
| Slag Yard Operations | • Slag bay cooling stations with fine water sprays<br>• Minimize slag inventories (IMS coordination)<br>• Instruction for best practices for heavy equipment operations (IMS coordination) |
| Yard and Road Emissions from Truck Traffic | • Continuous watering of unpaved roads<br>• Vacuum sweeper truck for paved roads<br>• Paving of 2,300 feet of roadways<br>• Speed limit implemented and enforced |
| Ladle Slag Handling | • Spray enclosure installed to wet ladle slag before outdoor processing |
| General Dust | • Tree planting along Naamans road |
| Other | • Weather station installed |

## 2.4 Schedule for Dust Control Projects

Detail as to the intended staging and scheduling of dust control projects is summarized in Figure 1 (Section 4). This section briefly presents the considerations made in developing the schedule and the priority for which measures should be implemented first.

Generally, simple and inexpensive measures have been given first priority as they can be implemented most quickly and collectively contribute to a significant improvement in dust control. Operations that are significant sources of dust were considered next for early implementation. This includes the melt shop fume system assessment, which will become the foundation for the more significant modifications required in the melt shop. This approach recognizes that by dealing with the most significant sources as soon as possible,

timely and significant reductions in dust levels can be achieved. Other, more costly, or longer lead time projects were considered next.

As projects are implemented, it is the intention to closely monitor the frequency and timing of complaints and to analyze the ambient air monitoring data to build a picture of what effect is being achieved by the implementation of the dust control projects. It is expected that as more projects are implemented, and the largest sources are addressed, significant progress will be made and measurable reductions in complaints can be seen.

The sources discussed below are all included in the Phase 1 implementation plan.

### 2.4.1 Immediate Implementation

Based on the experience of dust control measures already implemented (such as road paving, stockpile water sprays, etc.) dust control measures called for in Phase 1 can be implemented very quickly and with minimal cost or disruption to the operations. These sources include:

- Truck wheel wash station
- Enclosure for Charge Hopper
- Stockpile inventory reduction
- Ambient Air Monitoring Program (see Section 3)
- Fume System Assessment

### 2.4.2 Mid-Term implementation

Some projects will require some engineering or equipment selection to take place before implementation of the dust control measure. These projects, will be initiated immediately, but will not be implemented until 2008 due to the time required to design or specify equipment and have it installed. These projects include:

- Road Paving (to be initiated in spring 2008 when weather allows for paving)
- Spray water system improvements for slag pit
- Spray water system improvements for Stockpiles
- Stockpile relocation
- Tree-lined berm
- Relocation of slag quench station, enclosure and improvement (based on approval by Claymont Steel for the change in scrap handling processes).

- Implementation of baghouse capacity for lime and carbon transfer operations (subject to the outcome of the melt shop fume system assessment).

### 2.4.3 2-Stage Implementation

The main project that has been committed to in Phase 1 will entail the improvement of the fume control systems in the melt shop that contain and control emissions from the furnace, metal transfer and treatment processes. This assessment will become the foundation for further modifications to the fume control systems in the melt shop.

This first step is to conduct a comprehensive preliminary engineering program to identify the existing performance of the fume control systems and to develop recommendations for improving or expanding the fume control systems to better contain and control dust generated from the steel-making operations (melt shop). This preliminary engineering program will be initiated as soon as possible in Phase 1; however, the implementation of the actual improvements is expected to take approximately 1 year to begin. This is based primarily on the size and complexity of these systems and the requirement for significant engineering effort to design the appropriate modifications. This program of changes will also have a significant disruptive effect to the steel-making operations during installation and several stages of implementation may be required.

# 3 Ambient Air Monitoring Program

One of the requirements of the Order was for an ambient air monitoring program to be established in the Claymont area to measure concentrations of Total Suspended Particulate (TSP). A protocol for this program has been developed and approved by DNREC and will be implemented. Work is progressing on getting landowner agreements in place and equipment purchased so that the program can be initiated as soon as possible.

## 3.1 Program Objective

The primary objective of the ambient air monitoring program is to provide a tool for tracking the reductions in dust levels at various nearby areas that may be currently impacted by the operations at Claymont Steel.

Total suspended particulate (TSP) will be measured at four locations around the Claymont area. These locations are presented in the Fugitive Dust Study along with the particulars of the instrumentation and sampling schedule to be used.

Data will be analyzed and provided to DNREC on a regular basis as the program proceeds. Regular documentation will also be developed to monitor plant operating schedules, weather conditions and the implementation of new dust control projects. Together this body of data will assist in attributing reduced dust levels to the planned implementation of dust control projects.

## 3.2 Program Schedule

The program implementation schedule is outlined in Figure 1 (Section 4). The preliminary activities required to set up the program include:

- Executing landowner agreements for access to monitoring stations
- Sampling equipment selection and procurement
- Selection of a contractor to construct the required fencing and electrical power supply
- Station Construction and equipment installation, and
- Commissioning

These tasks are currently under way. It is expected that by the submission of this implementation plan the equipment will be on order and the landowner agreements will be in discussion. It is expected that the ambient air monitoring stations will be in service by January 31, 2008. Regular data will be generated thereafter based on a 6-day sampling schedule.

# 4 Implementation Schedule

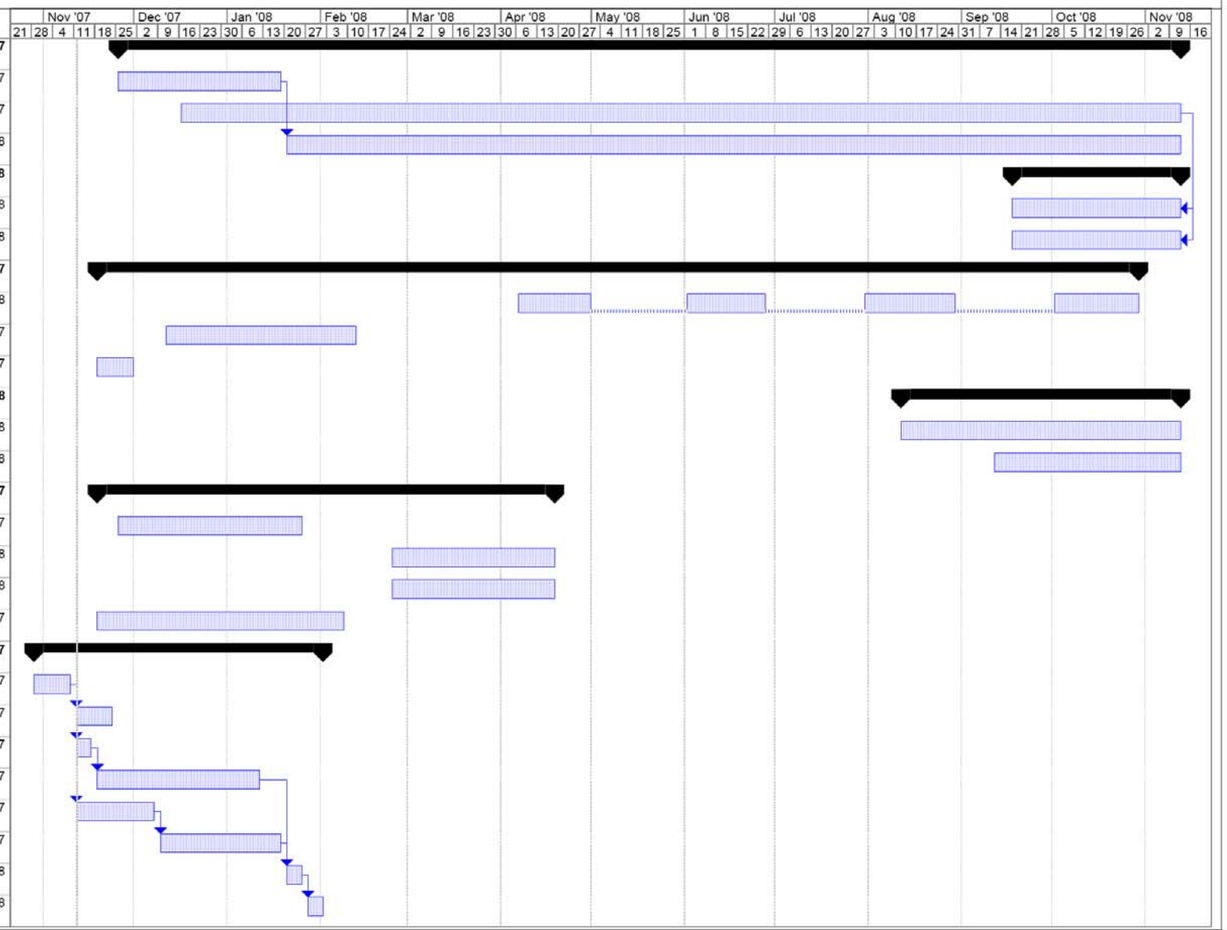
The implementation plan schedule is presented in Figure 1 on the following page and includes all Phase 1 dust control projects and the ambient air monitoring program.

**Figure 1: Implementation Schedule**

**CLAYMONT STEEL**
**Fugitive Dust Control Projects**
**Implementation Plan**
**November 13, 2007**

**Figure 1**

| ID | Task Name | Duration | Start |
|---|---|---|---|
| 1 | **Melt Shop** | **253 days** | **Nov 26 '07** |
| 2 | Fume Control System Assessment | 8 wks | Nov 26 '07 |
| 3 | Change Scrap Bay from Rail to Truck (*) | 11.9 mons | Dec 17 '07 |
| 4 | Baghouse for carbon and lime transfer (**) | 10.65 mons | Jan 21 '08 |
| 5 | **Slag Quenching** | **40 days** | **Sep 18 '08** |
| 6 | Relocate Slag Quenching Operations into Scrap Bay (*) | 2 mons | Sep 18 '08 |
| 7 | Slag Cooling System Enclosure (**) | 2 mons | Sep 18 '08 |
| 8 | **Roadways** | **248 days** | **Nov 19 '07** |
| 9 | Access Road Paving | 4 mons | Apr 7 '08 |
| 10 | Truck Wheel Wash Station | 2.25 mons | Dec 12 '07 |
| 11 | Speed Limit Enforcement | 2 wks | Nov 19 '07 |
| 12 | **Scrap Yard** | **67 days** | **Aug 12 '08** |
| 13 | Relocate Stockpiles | 3.35 mons | Aug 12 '08 |
| 14 | Tree-lined Berm | 2.2 mons | Sep 12 '08 |
| 15 | **Slag Yard** | **110 days** | **Nov 19 '07** |
| 16 | Enclosure for Charge Hopper | 9 wks | Nov 26 '07 |
| 17 | Improve Spray System for Slag Pit | 2 mons | Feb 25 '08 |
| 18 | Improve Spray System for Stockpiles | 2 mons | Feb 25 '08 |
| 19 | Minimize Inventory of Processed Slag | 3 mons | Nov 19 '07 |
| 20 | **Ambient Air Monitoring Program** | **70 days** | **Oct 29 '07** |
| 21 | Station Concept Sketches | 2 wks | Oct 29 '07 |
| 22 | Landowner Agreements | 2 wks | Nov 12 '07 |
| 23 | Equipment Specifications | 1 wk | Nov 12 '07 |
| 24 | Equipment Procurement | 8 wks | Nov 19 '07 |
| 25 | Station Construction Tendering | 4 wks | Nov 12 '07 |
| 26 | Station Construction | 6 wks | Dec 10 '07 |
| 27 | Equipment Installation | 1 wk | Jan 21 '08 |
| 28 | Commissioning | 1 wk | Jan 28 '08 |




Notes:
(*) - Contingent upon approval by Claymont Steel Board of Directors
(**) - Applicability will be based on outcome of Melt Shop Assessment

Earth Tech Inc.

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