130 Liberty Street

New York, New York

Supplemental Investigation Summary Report

Exterior Glass Summary Results

Prepared for:
Lower Manhattan Development Corporation
One Liberty Plaza, 20th Floor, New York, NY 10006

LMDC
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1. INTRODUCTION

TRC Environmental Corporation (TRC) was contracted and authorized by the Lower Manhattan Development Corporation (LMDC) to conduct a preliminary investigation of exterior building glass at 130 Liberty Street (the Building). The intent of the investigation is to address handling and disposal options for the Building glass during the Building deconstruction process. This Summary Report presents the results of the Building glass testing.

1.1 Background

The Building is located across the street and south of the WTC site and is the former office building comprised of 40 stories and approximately 1.5 million square feet. The massive debris generated from the collapse of the South Tower of the WTC broke approximately 1,500 windows, curtain wall, and structural components creating a gash (Gash Area) in the Building's exterior exposing portions of the interior north side of the Building between the 7th and 24th floors. The debris demolished the plaza in front of the Building, exposing the basement and subbasement (Basement A and Basement B) areas and ruptured a diesel fuel tank in the basement, the contents of which burned. The Gash Area and broken windows exposed the interior of the Building to the elements.

As a result of the collapse of the World Trade Center (WTC) on September 11, 2001, a combination of soot, dust, dirt, debris, and contaminants settled in and on the Building. See the *Initial Building Characterization Report* for additional background information.

Historically, selenium has sometimes been used as an ingredient within window glass to reduce solar heat transmission. This report presents the results of sampling and analysis of representative Building window glass for selenium.

1.2 Scope of Work

This investigation summary presents the results of inspection and sampling performed by TRC of the Building facade glass at 130 Liberty Street. The Building facade glass consists of spandrel glass, plate glass, and vision glass.

For the Building glass, TRC collected nine representative bulk samples for Toxicity Characteristic Leaching Protocol (TCLP) and three representative bulk samples for total Selenium.

1.3 Purpose and Objectives

The objective of the Building glass investigation is to provide information relative to the concentrations of Selenium and to address selenium in glass as detailed in the Federal Register Volume 59, Number 28. In glass manufacturing, selenium is used to color container glass and other soda-lime silica glasses and to reduce solar heat transmission in architectural plate and automotive glass. Because selenium is a non-renewable source, and because the waste in question could contain high selenium concentrations, the EPA would prefer to recover the selenium as opposed to stabilizing or land disposing of the glass.

This investigation is also intended to assist in determining what measures and protocols may be required in support of the 130 Liberty Street cleaning and deconstruction plan. In particular, the results of the investigation are intended to provide reference information allowing for informed decisions to be made regarding appropriate cleaning and deconstruction methods. These decisions include the development and implementation of engineering controls to contain the work zone (i.e., to ensure no exposure to the surrounding community during the cleaning and deconstruction) and appropriate methods for the disposal or recycling of materials generated by the cleaning and deconstruction activities. Using the available characterization results, LMDC, its consultants, and the selected deconstruction contractor can develop and implement appropriate deconstruction protocols and safety precautions for the cleaning and deconstruction process to ensure the health and safety of workers and the surrounding community.

2. METHODOLOGY

This section presents the methodologies implemented for the Building glass. These tasks were implemented in general accordance with the *Sampling Analysis and Quality Assurance Project Plan* (SAQAPP) developed by TRC dated November 15, 2004.

TRC collected representative bulk samples for Selenium directly from the Building or from glass collected in drums from a spandrel glass removal project. Glass sampling directly off of the Building was conducted on the North side and Southwest corner Building faces.

Samples were analyzed as per the SW846 6010B method. TCLP Selenium analysis was conducted using a leachate matrix. Total Selenium analysis was conducted using a solid glass matrix.

All samples were properly labeled as per the SAQAPP and were delivered to Accutest Laboratories, located in Dayton, New Jersey, an independent laboratory certified under the New York State Department of Health Environmental Laboratory Approval Program (NYSDOH ELAP # 10983).

3. SELENIUM RESULTS

Twelve selenium bulk samples were collected on various floors of the Building as detailed below. As described in the *Initial Building Characterization Report*, samples were collected from Zone 6, exterior façade building materials.

Asbestos Sample ID	Floor
EXT GLASS-01A-TCLP	All
EXT GLASS-01B-TCLP	All
EXT GLASS-01C-TCLP	All
EXT GLASS-02A-TCLP	2&3
EXT GLASS-02B-TCLP	2&3
EXT GLASS-02C-TCLP	2&3
EXT GLASS-3A-TCLP	All
EXT GLASS-3B-TCLP	All
EXT GLASS-3C-TCLP	All
EXT GLASS-01-TOTAL	All
EXT GLASS-02-TOTAL	2&3
EXT GLASS-03-TOTAL	All

None of the sample results exceeded the method detection limits. TCLP results were compared to 40 CFR 261.24 Maximum Concentration of Contaminants for the Toxicity Characteristics. Sample results are provided in the attached Table 1.

A limited data validation was performed on the samples in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA 540/R-99/008* (October 1999). In general, the data appear to be valid as reported and may be used for decision-making purposes.

4. CONCLUSIONS AND RECOMMENDATIONS

No selenium was detected in the spandrel, vision, or plate glass analyzed. Based on the results of the sampling and testing performed for this investigation, selenium has not been identified as a contaminant of the glass and therefore not considered a contaminant of concern for disposal of glass.

5. REFERENCES

Sampling, Analysis, and Quality Assurance Project Plan, Supplement Investigation of 130 Liberty Street, New York, New York. TRC Environmental Corp., November 15, 2004.

Table 1
Exterior Glass - Selenium Bulk Sample Results
Selenium Bulk (Selenium SW 846 6010B)
Leachate matrix for TCLP Analysis
Solid matrix for Total analysis

LMDC
130 Liberty Street
New York, New York
February 14, 2005

Sample ID	Lab Sample ID	Sample Date	Material Description	Floor	Location	Selenium	Units
EXT GLASS-01A-TCLP	N90910-1	14-Feb-05	Spandrel panel glass	All	From LVI drums - Spandrel glass removal p	< 0.50	mg/l
EXT GLASS-01B-TCLP	N90910-2	14-Feb-05	Spandrel panel glass	All	From LVI drums - Spandrel glass removal p	< 0.50	mg/l
EXT GLASS-01C-TCLP	N90910-3	14-Feb-05	Spandrel panel glass	All	From LVI drums - Spandrel glass removal p	< 0.50	mg/l
EXT GLASS-02A-TCLP	N90910-4	14-Feb-05	North plate glass	2/3	North side (E-8) - plate glass	< 0.50	mg/l
EXT GLASS-02B-TCLP	N90910-5	14-Feb-05	North plate glass	2/3	North side (E-8) - North lobby area	< 0.50	mg/l
EXT GLASS-02C-TCLP	N90910-6	14-Feb-05	North plate glass	2/3	North side (E-8) - 2nd/3rd floor	< 0.50	mg/l
EXT GLASS-3A-TCLP	N90910-7	14-Feb-05	Window glass	All	SW Corner - tinted window glass	< 0.50	mg/l
EXT GLASS-3B-TCLP	N90910-8	14-Feb-05	Window glass	All	Typical of all floors	< 0.50	mg/l
EXT GLASS-3C-TCLP	N90910-9	14-Feb-05	Window glass	All	Typical of all floors	< 0.50	mg/l
EXT GLASS-01-TOTAL	N90911-1	14-Feb-05	Spandrel panel glass	All		< 1.1	mg/kg
EXT GLASS-02-TOTAL	N90911-2	14-Feb-05	North plate glass	2/3	Clearer than spandrel or window	< 1.1	mg/kg
EXT GLASS-03-TOTAL	N90911-3	14-Feb-05	Window glass	All		< 0.99	mg/kg

Selenium Toxicity Regulatory Level (mg/L) = 1