Executive Summary

Updated as of June 20, 2008

Evaluation of Releases from Volume Reduction of Residential Building Debris from Hurricane Katrina

BACKGROUND

On August 29, 2005, Hurricane Katrina made landfall on the Gulf Coast. The hurricane damaged the coastal regions of southern Louisiana, southern Mississippi, and southern Alabama. Approximately 260,000 residential buildings in the State of Louisiana were identified as structurally unfit for reoccupation.

The State of Louisiana requested assistance in this massive effort of demolition, debris handling, and ultimately volume reduction and final disposal of the waste material. Given the enormous volume of vegetative and building debris created by Hurricanes Katrina and Rita, combined with the restrictions on debris transport imposed by the Formosan termite quarantine, there is a continued need for safe approaches for reducing the volume of waste requiring disposal. Utilization of Air Curtain Burners (ACB) has been proposed as potential means for volume reduction of the debris.

EPA's Region 6 along with the Office of Research and Development felt it important to the Nation as a whole to evaluate methods of reducing these large volumes of waste caused by a natural disaster. The proposed pilot project will evaluate the handling and burning of demolition debris in an Air Curtain Burner (ACB) to reduce debris volume. The project is proposed to be conducted at the Paris Road Landfill in St Bernard Parish in Louisiana.

OBJECTIVES

To determine the characteristics and quantities of discharges to the environment during combustion of disaster debris in an ACB.

To develop recommended operating procedures and monitoring techniques to assure effective ACB performance if this technology is used in this and future responses.

To determine the estimated volume reduction achieved by the ACB.

To assess disposal requirements for any residues from the process.

SITE SPECIFIC SAMPLING

The figure below shows the area at the Paris Road Landfill that will be used for the testing and data gathering. The area is quite remote from occupied residences (greater than 1000 feet).

Paris Rd Landfill Sampling Areas

Sampling will be conducted for pollutants that may be discharged at the outlet of the burner. These will include lead, other metals, selected organic compounds, asbestos, and criteria pollutants. Additional perimeter sampling will consist of two sampling rings around the center of the ACB operation. The inner sampling ring will be located between 60 to 75 feet from the actual ACB. The outer sampling ring will be approximately 300 feet from the center of the two operations. Each ring will consist of 18 asbestos samplers evenly spaced around the ring. A lesser number of samplers will be positioned in the two rings for metals, particulate emissions as total suspended particulates and as $PM_{2.5}$, and polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs).

In addition, ambient air samplers will be placed at the five numbered locations identified in the photograph. These locations will include:

Location 1.	West of the trailers at the URG Office compound
Location 2.	Inside the fence on the URG/Parish property west of Paris Road
Location 3.	West of the Motel on Paris Road
Location 4.	West of SDT Transfer Station
Location 5.	West of the URG Inspection tower

TIMING AND TEST CONDITIONS

The field sampling portion of the study will be approximately one week. The actual amount of time that the ACB will be in operation is not expected to exceed 48 hours of burn time. It is expected that the monitoring of the ACB will occur over four days. The first day will be a shakedown with vegetative debris to determine the operating procedures that will be used during burning of the

residential building debris. EPA's Office of Research and Development (ORD) will collect samples from the ACB exhaust emissions, as well as some ambient samples, during this period as a baseline for comparison.

Over the next two days, three four-hour test runs will be performed during which non-regulated asbestos containing residential debris will be burned. EPA ORD will sample emissions from the ACB exhaust during this period and will perform perimeter sampling during the C&D burn. These estimates are based on good weather and no major equipment malfunction.

METEOROLOGICAL MONITORING

A portable meteorological station will be used to record 5-minute average wind speed and wind direction data, as well as temperature, barometric pressure, and relative humidity. The test will not be conducted during rain conditions. Should light rain be encountered, monitoring and feeding of the burner will cease until the rain stops. For this study, if sustained wind speeds in excess of 20 mph (60-minute average) are encountered, monitoring will pause and process feeding will be discontinued until the wind speed is less than these conditions. The maximum limits were established to attempt to prevent the higher winds speeds from excessively modifying the micrometeorology. Operations will resume upon the winds returning to stable conditions for 15-minutes minimum allowable within the confines of the test, or will be delayed until satisfactory conditions exist. Wind conditions at the site will be continuously monitored by the onsite weather station.

INSPECTION OF BUILDINGS

Many candidate residential buildings were inspected by EPA and a State of Louisiana Department of Environmental Quality (LDEQ) licensed asbestos consultant to determine the amount of asbestos present in the buildings and the suitability of the structure to be used for the test. A single house that was scheduled for demolition was chosen for the study. After the demolition, a contractor will transport the residential building debris to the site, and will stockpile and catalog the house for the study. The house contained trace levels of asbestos in some joint compound, far below the quantity required to be classed as Regulated Asbestos-Containing Material (RACM).

Lead in paint film ("paint chip") samples were collected from the interior finishes (painted gypsum wallboard and millwork) and from the exterior surfaces (clapboard siding and window sash/frame) from each of the buildings. The analyses did not observe any lead in the samples.

SAFEGUARDS

EPA will employ a set of safeguards to ensure protection of the surrounding community, the environment, and workers during the test program. These safeguards include:

Location:

The Paris Road facility itself is relatively isolated from populated areas. The areas selected for potential test locations abut water on at least one side. In addition, the potential locations for the test burner on the grounds are at least 1800 feet from the inhabited trailers in the URG parking lot. Dominant wind directions are away from inhabited areas.

Test Phasing:

As stated previously, the testing will be phased in such a manner that burning will first occur with only vegetative materials. The first day of testing will be directed toward establishing optimum conditions for combustion of this vegetative matter. Testing will then proceed with demolition debris that contains no Regulated Asbestos Containing Materials so that appropriate operating conditions may be established for this material. The testing of the demolition debris will occur over a two-day period

Meteorological Protections:

No operation of the burner will occur if wind velocities are in excess of 20 miles per hour. Wind direction can be variable and unpredictable at this time of the year. However, no operation of the burner will be initiated if the prevailing wind direction is toward the nearest occupied structures.

Process Controls:

Real-time monitoring of combustion conditions at the burner will include measurements of temperature as well as emissions of carbon monoxide, carbon dioxide, and total hydrocarbons to ensure that the combustor is operating properly.

For the purposes of these studies, stable-operating conditions will be defined as those where opacity does not exceed average values greater than 20% for a period exceeding 30 minutes.

If the operation of the unit while burning the house cannot be stabilized (as defined above), the unit will be brought into an orderly shutdown by terminating the feed of C&D debris and introducing vegetative debris for an hour until the unit is essentially operating on vegetative debris. At this point, operation of the unit will be terminated or an alternate feeding arrangement for C&D debris will be attempted.

In addition, upwind and downwind carbon monoxide (CO) and particulate will be measured and compared to OSHA levels. If CO exceeds OSHA-defined levels of 1200 ppm at any time, the test will be brought to an orderly shutdown.

Worker Safety Monitoring:

EPA, its contractors, and any other workers at the site during the testing will be monitored in compliance with OSHA rules. This monitoring will include personal monitors for asbestos. Workers will also be tested for potential exposure to asbestos fibers, lead, and carbon monoxide.

Screening Level Preliminary Risk Assessment:

The health and safety of St. Bernard Parish residents is a priority to the EPA and has been thoroughly considered for this test. Operationally, EPA has chosen a somewhat remote site in which to conduct this test. The predominant wind direction is away from inhabited areas and should the wind shift for a significant duration in the direction of Parish residents, the test burn will be aborted. Additionally, the EPA has conducted a risk screening analysis and has concluded that any contaminants that may be emitted do not present unsafe conditions for potentially exposed populations.

Additional Ambient Air Monitoring:

In addition to the process monitoring described above EPA will place ambient high volume air samplers at the five sampling locations previously identified . These monitors will measure asbestos, metals, particulate, and PCDDs/PCDFs concentrations other contaminant concentrations during, before, and after the testing program. Monitoring locations will include:

Location 1. West of the trailers at the URG Office compound
Location 2. Inside the fence on the URG/Parish property west of Paris Road
Location 3. West of the Motel on Paris Road
Location 4. West of SDT Transfer Station
Location 5. West of the URG Inspection tower

Additional sampling will be conducted at locations to be determined:

Six background sample locations for asbestos and 3 background sample locations each for TSP/metals, $PM_{2.5}$, and PCDDs/PCDFs.

Downwind 500-1000 feet from burner (asbestos air only)

FINAL REPORTS

The draft final report on the project will be due 90 days from the end of the field sampling. The final reports will be released after review to ensure data quality requirements have been meet and technical peer review of the project's approach and conclusions.