January 12, 2016

Clemson University
310 Klugh Avenue
Clemson, South Carolina 29634

Attn: Mr. W. Robert Newberry, IV
E: wnewber@clemson.edu

Re: Limited Hazard Assessment Report (revised January 12, 2016)
Clemson University
Biosystems Research Complex Facility
Clemson, South Carolina
Terracon Project No. 86127158

Dear Mr. Newberry:

Terracon Consultants, Inc. (Terracon) is pleased to present the hazard assessment at the above referenced facility at Clemson University in Clemson, South Carolina. It is our understanding that a contractor will be entering the Exhaust 1 & 2 plenum of the Biosystems Research Complex (BRC) facility to install new controls. The assessment was performed in general accordance with our IDC with Clemson University.

PROJECT DESCRIPTION

Terracon was requested to conduct a hazard assessment of the Exhaust 1 & 2 plenum on the upper floor of the BRC Facility. It is our understanding that contractors will be installing new controls within this area. The building is generally used for agricultural research. Terracon obtained information from Scott Feagan of Clemson University Facilities to formulate a hazard assessment for entering the Exhaust 1 & 2 plenum.

This investigation was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. Terracon did not attempt to identify every potential exposure or hazard present in the subject building. The results, findings, conclusions, and recommendations expressed in this report are based on conditions observed during our investigation. The information contained in this report should not be relied upon to represent conditions that existed prior to or after this investigation. Terracon does not warrant the services of regulatory agencies, laboratories, or other third parties supplying information that may have been used in the preparation of this report.

INVESTIGATION INFORMATION

Terracon was escorted by Scott Feagan of Clemson University to understand the scope of the project. Based on information obtained from Mr. Feagan, heating, ventilation and air conditioning (HVAC) controls will be installed in the Exhaust 1 & 2 plenum in the near future. It is our understanding this unit functions as an exhaust while simultaneously assisting in adjusting temperature for an adjacent return air intake. The fume hoods exhaust within the BRC facility intermixes with this system.

Terracon additionally obtained and reviewed information containing biological agents and chemical use in the building. Information obtained from Robert R. Clark of Clemson University stated there are no biological agents (bacteria, viruses, etc.) of concern in the ventilation system. Information concerning chemical use in the building was provided in a spreadsheet from Laura Armstrong of Clemson University. Terracon reviewed the chemical inventory supplied by Ms. Armstrong. The chemical inventory spreadsheet has several categories including; highly toxic, carcinogenic, teratogenic, explosive, biosafety level 2-4, and other hazards (i.e. irritant) to classify chemicals stored in the building. Additionally the quantities of the chemicals are listed.

It is Terracon's understanding that chemicals are not used on a daily basis and chemicals which are listed as highly toxic or carcinogenic generally have low quantities present and are required to be used in fume hoods. Also, it is Terracon's understanding that the HVAC systems and fume hoods will be de-energized during the installation of the new control systems in the Exhaust 1 & 2 plenum.

CONCLUSIONS/RECOMMENDATIONS

The following conclusions and recommendations are provides based on our assessment:

- Based on the information provided, it appears there is occasional potential for hazardous chemicals or biological agents from the fume hoods to directly intermix with the building HVAC Exhaust 1 & 2. The exhaust is primarily used for general conditioning of the building. However, the majority of these chemicals are not used on a routine basis.
- It does not appear that the work area, the Exhaust 1 & 2 plenum, meets the definition of a regulated confined space.
- Installation of HVAC controls is scheduled during off-hours. During this period use of chemicals should be at a minimum within the building. Prior to the contractor mobilizing Clemson's building representative should verify no additional experiments or use of hazardous chemicals will be occurring in fume hoods.

- Lockout/Tagout – the fume hoods and HVAC system shall be de-energized per the requirements of University lockout/tagout policy during the installation of the new control sensors in the Exhaust 1 & 2 plenum.

- Clemson University currently has this space on a routine maintenance schedule. As a best practice, Clemson University should schedule a cleaning of the system (i.e. coils, changing filters) in the area where the contractors are installing controls. This affords two benefits; one, the area is cleaned, and two, the system is maintained before controls are installed so a baseline can be established.

This assessment does not include hazards associated with the contractors work methods. The contractor shall perform their own assessment based on their work methods and chemical use, if any. The contractors should be responsible for complying with applicable parts of the Occupational Safety and Health Administration (OSHA) regulations as they pertain to the installation of the new control sensors.

Terracon appreciates the opportunity to provide this service to Clemson University. If you have any questions regarding this report, please contact the undersigned at 864-292-2901.

Sincerely,
Terracon Consultants, Inc.

Jeffrey A. Gurrie
Sr. Project Industrial Hygienist

Benjamin Hestir, P.E.
Project Industrial Hygienist II