UNIVERSITY OF South Carolina

Chemical Safety Committee Charter

I. Background

Laboratory research involving hazardous materials and processes is subject to multiple research safety regulations, standards, and guidelines. The risks of serious accidents, exposures, non-compliance, or unapproved lab experiments resulting from research involving laboratory hazard has been identified by the USC Enterprise Risk Management Oversight Committee as a high risk to the university. There has been a consistent increase in the complexity of laboratory research, hazardous materials used, the regulatory environment, research collaborations, and interdisciplinary research projects at USC. The Chemical Safety Committee's (CSC) Charter will define policies and procedures the committee will follow to accomplish its mission and objectives. The CSC will function in close partnership with the Chemical & Lab Safety Program and Chemical Hygiene Officer. The Chemical Safety Committee website and Chemical & Lab Safety webpage contain guidance resources to assist the USC research community with understanding and adhering to chemical and general laboratory safety and compliance requirements.

II. Purpose Statement

The purpose of the Chemical Safety Committee (CSC) is to serve in an advisory capacity to the President, Vice President for Research, Environmental Health & Safety (EH&S), Enterprise Risk Management (ERM), and the research community on risks and risk controls required for research involving hazardous chemicals and processes, and physical hazards in USC laboratories. The CSC mission is to provide leadership, coordination, and advocacy to ensure the effectiveness of laboratory safety programs, services, policies, procedures, training, initiatives, and strategic plans implemented to promote safety and compliance for research involving hazardous chemicals and processes, and physical hazards in USC laboratories and field research. The CSC will promote a shared responsibility for research and laboratory safety among USC leadership, research faculty, laboratory staff, students, and the Research Safety Programs. A shared responsibility will improve the laboratory safety culture, which is an integral component of USC's educational mission, the discovery and development process, and to the responsible conduct of research. The scope of the committee will include oversight for research activities conducted at the USC Columbia, USC School of Medicine Columbia, and USC School of Medicine Greenville campuses.

The CSC shall provide an annual chemical safety risk assessment and report to the Enterprise Risk Management Oversight Committee via the Research Safety Senior Committee. This assessment will identify the various risks associated with research involving chemical hazards and will define the highest risk(s). The committee

will review and update a chemical safety risk matrix and heat map annually. A High-Risk Report will describe the highest chemical safety risk, benefits of conducting the activity, and institutional impact. This report will list current risk controls and controls being implemented to mitigate these high risks, and track data on leading and lagging indicators associated with high risks. Reporting also includes metrics and a quarterly assessment that defines any changes to the status of risk or effectiveness of controls.

III. Terms of Appointment

CSC members are appointed for a period of three years. Consecutive terms are permissible when necessary to maintain a collective experience and expertise to effectively assess the safety and risks of research. The one exception is the Chemical Hygiene Officer who serves as a permanent voting member of the CSC. The CSC administrator is also a permanent appointment but is a non-voting member of the committee. Members are nominated by the Research Safety Bureau Chief, CSC Chair, Chemical Hygiene Officer or any member of the committee (often to fill an area of expertise when a member rotates off the committee). New members are formally appointed by a full committee vote during a convened meeting. If a CSC member does not attend at least 50% of the scheduled CSC meetings in a calendar year, the CSC Chair may request to nominate a replacement. The USC maintains a list of all Special Advisory Committees. This record of official committees includes the CSC's purpose statement and membership requirements, and a list of all committee members.

IV. CSC Authority

The CSC is empowered with the authority to enforce chemical and laboratory safety policies and procedures in USC Columbia, USC School of Medicine Columbia, and USC School of Medicine Greenville laboratories. The CSC may investigate potential violations or compliance problems. In the event of a significant research-related incident, the CSC may suspend, limit, or terminate a Principal Investigator's authorization to conduct research pending a formal investigation. The CSC or Chemical Hygiene Officer may take further actions deemed appropriate if a Principal Investigator has repeated compliance violations that are not corrected, or serious safety violations are identified that create a significant risk. The CSC has the authority to establish, amend, and approve Chemical and Lab Safety policies, manuals, plans, SOPs, trainings, and other guidance.

The CSC and Chemical & Lab Safety Program do not have authority to establish new programs to further reduce research laboratory risks. The CSC can advocate for or recommend implementing new programs (e.g., research occupational health program, service for laundering lab coats), but the implementation of new programs requires support from senior institutional officials and dedicated resources. The impact of additional chemical and lab safety risk controls will vary for different research projects. The CSC submits quarterly Chemical & Lab Safety High-Risk Report updates to the ERM Oversight Committee and Research Safety Senior Committee on risk controls being implemented, impact, implementation timelines, unit responsible and other quarterly notes. The USC and its CSC are committed to a process of continuous improvement in chemical/lab safety.

V. CSC Membership Requirements

The Chemical Safety Committee (CSC) will be comprised of no fewer than eight members. Members are appointed to ensure they collectively have experience and expertise in chemical and experimental hazards, and the capability to assess the safety of research involving hazardous chemicals and processes, and physical hazards, and to identify any potential risk to the researchers, other persons, facilities, or the environment.

The CSC membership will consist of:

1) Chair of the CSC
2) Chemical Hygiene Officer
3) Administrator (non-voting)
4) At least three members will be faculty at the USC Columbia
5) At least one member representing the USC School of Medicine Columbia/Greenville
6) Additional members may be selected to ensure the CSC effectively fulfills its mission:
   a) Include persons with expertise in work practices, safety equipment, laboratory facilities, and specialized chemical or physical hazards used in USC research labs
   b) Include or have persons available as consultants that are knowledgeable of institutional commitments and policies, applicable law, standards of professional conduct and practice, community attitudes, and the environment
   c) Include at least one member representing the laboratory technical staff or students.
7). Current membership will be posted on the CSC website.

VI. Roles and Responsibilities

Responsibilities of the Executive Vice President for Academic Affairs & Provost

1) Establish a Chemical Safety Committee (CSC) with the authority and resources to fulfill all federal, state, and local chemical and laboratory safety compliance responsibilities. Promote a laboratory safety culture in the research community.

2) Ensure a written CSC Charter is established that includes the appointment of CSC members. Determine if the appointment of CSC members is made by a senior institutional official, and if CSC members are appointed for a fixed term. Provide funding to appoint a qualified CSC administrator (0.2 FTE).

3) Determine how CSC members will be recognized for service to enable the committee to recruit and retain qualified members and acknowledge institution-wide the value that the institution places on the CSC's role (e.g., CSC service counts toward service requirements considered for promotion and tenure).

Responsibilities of the Enterprise Risk Management Oversight (Executive) Committee and ERM Research Safety Senior Committee

1) Review quarterly updates to the Chemical Safety High-Risk Report, Risk Register, and Heat Map that are submitted by the CSC. Assess the status of current risk controls, controls being implemented, leading and lagging indicators, status of risk, and the effectiveness of controls. Utilize this information when making decisions regarding acceptable chemical safety risk and implementation of new risk controls.

2) Conduct a thorough annual assessment of the resources necessary for the university to fulfill chemical and laboratory safety requirements when advised by the CSC.

Chemical Safety Committee Responsibilities

1) Assist in the development of new chemical and laboratory safety policies, manuals, procedures, training materials, guidance documents, and strategic plans pertaining to hazardous chemicals and processes, and physical hazards.

2) Review and approve major amendments to chemical and laboratory safety policies and procedures. Recommend new or revised policies for research and teaching labs. Adopt emergency plans for accidental chemical spills or exposures in research labs.

3) Address significant chemical safety problems and formulates solutions. Identify areas of concern and define ways to improve lab safety (e.g., training, equipment).

4) Review chemical and laboratory safety incident reports involving injury, illness or near misses. Determine corrective actions to mitigate the risk of future incidents.

5) Promote compliance with chemical safety regulations, standards, and guidelines.

6) Assess compliance with laboratory safety policies and advise methods to promote compliance. This may include methods to improve proper use of PPE, completion of required training, corrective actions from lab inspections, shipping chemicals, lab design, lab security, or other laboratory safety and compliance risks.

7) Serve as a forum to review work practices and procedures for research involving high-hazard chemicals/processes and physical hazards, ensure labs develop SOPs using appropriate templates, and recommend SOP amendments to promote safety.

8) Provide technical assistance to USC's Chemical Safety Program when assessing risk of laboratory experiments involving chemical or physical hazards requiring specialized subject-matter expertise and evaluate the need for external consultants.

9) Encourage stakeholders in USC Colleges, Schools, and Departments to establish unit-level chemical safety committees or programs. Advocate for unit or college-level solutions to lab safety or compliance risks and serve as a forum where the USC community can bring concerns or review chemical safety issues in their units.

10) Evaluate implementation of recommendations in the *APLU Guide to Implementing a Safety Culture in Our Universities* or guidance in other lab safety culture reports.

11) Make specific and actionable recommendations in writing to members of USC leadership when necessary to promote a safe laboratory environment. Support the CHO and Chemical Safety Program to escalate unsafe conditions for resolution.

12) Review and provide feedback on the Chemical Safety Program's annual report. This report will include chemical safety and compliance priorities, metrics, and annual highlights, and any status updates on chemical and laboratory safety risk controls, successes, compliance challenges, and opportunities for improvement.

13) Provide an annual risk assessment to the Enterprise Risk Management Oversight Committee via the Research Safety Senior Committee. The risk assessment will identify risks associated with research involving hazardous chemicals/processes and physical hazards in laboratories and will list the major risk controls in place and timelines for controls being implemented to mitigate the identified risks.

CSC Chair Responsibilities

1) Serve as CSC Chair and prioritize activities for all convened meetings.

2) Ensure the CSC fulfills its responsibilities as stated in the CSC Charter.

3) Report any significant chemical or laboratory safety risks or compliance violations to the Vice President for Research (VPR) or other institutional stakeholders. Articulate specific and actionable CSC recommendations to resolve identified risks.

4) Serve as an advocate for chemical and laboratory safety on behalf of the CSC.

5) Provide leadership for the CSC to identify, develop and adopt policies or programs to promote safe and compliant research involving chemical and physical hazards.

6) Perform other functions as required for the CSC to fulfill its mission and purpose.

CSC Administrator Responsibilities

1) Serve as a permanent non-voting member of the Chemical Safety Committee.

2) Maintain the CSC Charter. Coordinate CSC review, suggested revisions, and approval of significant amendments to the CSC Charter.

3) Schedule CSC meetings, verify quorum attendance, and prepare meeting agendas.

4) Facilitate CSC review and approval process for policies and other safety guidance.

5) Notify Principal Investigators of the results of CSC review and approval of SOPs.

6) Prepare CSC meeting minutes to include agenda items, vote motions and approvals.

7) Maintain CSC records (approved policies, meeting minutes, membership roster).

8) Provide updated CSC membership roster to the USC Provost Office upon request.

9) Serve as the primary liaison between the CSC, Chemical Safety Program, CHO, and Enterprise Risk Management (ERM) Research Safety Senior Committee.

Chemical Hygiene Officer (CHO) Responsibilities

1) Serve as a permanent voting member of the Chemical Safety Committee.

2) Serve as USC's primary expert on chemical safety and compliance issues. Provide technical advice to the CSC on research laboratory safety procedures, safety equipment, lab facilities, lab security, and other lab safety best practices.

3) Maintain chemical and lab safety policies, procedures, and guidance documents. Post chemical and laboratory safety guidance on the chemical safety website.

4) Ensure periodic inspections are conducted to verify lab standards are rigorously followed and compliance with USC chemical safety policies and requirements.

5) Ensure required chemical safety training is provided to laboratory personnel.

6) Coordinate the annual certification of chemical fume hoods and necessary repairs.

7) Coordinate posting of chemical safety policies, plans, guidance documents, and other references on the CSC website to promote research safety and compliance.

8) Investigate laboratory accidents. Report to the CSC Chair any significant problems or violations, and any significant research-related injuries or exposures associated with research involving hazardous chemicals. Following all incident investigations, notify the research personnel involved of the recommended corrective actions.

9) Review laboratory facility design plans for research involving chemical hazards.

10) Assist DLAR with development of SOPs for the use of chemical hazards in animals.

11) In collaboration with the CSC Chair, identify CSC members with the collective experience and expertise in research involving chemical hazards used at USC.

12) Prepare the Chemical Safety Program annual report and submit to CSC for review.

CSC Member Responsibilities

1) Provide knowledge and expertise to the broad scope of chemical safety issues, with primary responsibility for providing guidance in acknowledged areas of expertise.

2) Attend and participate at CSC meetings. All members are encouraged to attend every meeting. The Chair may nominate a replacement for any CSC member that does not attend at least 50% of the scheduled CSC meetings in a calendar year.

3) Perform a comprehensive and timely review with feedback on any chemical or lab safety documents submitted to the CSC for committee review and approval.

4) Contribute expertise and assist with efforts to identify, develop, and adopt policies to promote safe and compliant research involving chemical and physical hazards.

5) Perform other functions as required by members for the CSC to fulfill its purpose.

Principal Investigator Responsibilities

1) Facilitate an open dialogue about lab safety, and model good safety behavior.

2) Supervise the safety performance of the lab staff to ensure that the required safety practices and techniques are employed (this includes monitoring PPE compliance)

3) Correct work errors and lab conditions that may impede safety or containment for hazardous chemicals, correct reported safety or compliance deficiencies identified during lab inspections, and submit corrective action plan by the requested due date;

4) Ensure that laboratory staff is appropriately trained in lab-specific practices and techniques required to ensure safety and the procedures for dealing with accidents. Ensure lab personnel complete all required chemical and laboratory safety training.

5) Never initiate research involving chemical or physical hazards until laboratory personnel have completed all requirements for the experiments conducted (e.g., lab-specific and general lab safety training, SOP reviews, use of proper PPE, functional safety equipment, compliant lab facilities, incident/near-miss reporting).

6) Report any laboratory incidents, near misses, safety concerns, compliance violation or any significant research-related accidents or exposures to the CSC and CHO.

7) Adhere to CSC approved lab emergency plans for accidental spills and exposures.

8) Comply with all laboratory safety policies (e.g., Chemical Hygiene Plan, hazardous waste management, lab & equipment decommissioning, minors in research labs).

VII. Conduct of Committee Business

1) The CSC will meet at least once every quarter throughout the calendar year. Additional meetings may be scheduled when necessary to fulfill the CSC mission.

2) The CSC meeting dates, times, and locations will be posted on the CSC website.

3) All CSC members, except the Administrator, have the right to make motions, speak in debate, and vote on all chemical and lab safety approvals or issues discussed.

4) The CSC will not allow the transaction of substantive business to continue in the absence of a quorum. If the Chair notices the absence of a quorum, he or she will declare this fact before taking any vote or stating the question on any new motion.

5) Committee quorum consists of a numerical majority (i.e., at least 50%) of CSC members. Each CSC meeting requires sufficient members to ensure the collective experience and expertise to assess the safety and identify any potential risk involved with items on the meeting agenda. Consultants may be invited to attend a CSC meeting due to subject-matter expertise on a specific topic that will be discussed during the meeting. A consultant may provide professional guidance on the topic of interest but will not have rights to make motions or vote and will not be counted as a CSC member for quorum.

6) The CSC Administrator prepares the proposed agenda prior to the meeting after consulting with the CSC Chair regarding agenda items that should be included. For a proposed agenda to become the official agenda for a meeting, it must be adopted by the committee at the outset of the meeting. At the time that an agenda is presented for adoption, any member may move to amend the proposed agenda by requesting to add any item that the member desires to add, or by proposing any other modifications to the meeting agenda.

7) Formal business will only be conducted when a CSC meeting quorum is present.

VIII. Conflict of Interest

Members of the CSC shall not participate in approvals or vote motions assessed by the CSC when a conflict of interest exists. This includes when the CSC member has been engaged, expects to be engaged, has a family member engaged, or has a direct financial interest in a research project or other item being evaluated by the CSC. This also includes any time the CSC member has other reasons to feel that he/she cannot render an impartial assessment of one or more items on the CSC meeting agenda. The CSC member shall disclose the conflict of interest prior to the discussion at a convened meeting of any agenda item or vote motion for which the CSC member has a conflict of interest. Although a CSC member shall be recused from voting on the final disposition of research projects or other vote motions for which she/he has a conflict of interest, the CSC member shall nevertheless remain eligible to provide information or assist in the risk assessment process. related to the item under review by the CSC.

IX. Meeting Minutes

1) Meeting minutes reflect the date and place of the meeting, whether prior meeting minutes were approved, individuals in attendance, list of agenda items discussed, all major vote motions, whether motions were approved, and time of adjournment.

2) Meeting minutes offer sufficient detail of the CSC's rationale for decisions by documenting any significant discussions.

3) Meeting minutes will reflect the CSC voting decisions for each item approved.

4) The CSC may not document certain information in the meeting minutes. Examples of information that may not be captured in the minutes include high-hazard materials use or locations, trade secrets and confidential commercial information, and information whose disclosure may directly compromise institutional security.

X. Lab Research Involving Private Companies or Industry-Scale Hazards

The USC Office of Economic Engagement (OEE) and other stakeholders continue to promote private-public partnerships. Lease agreements approved for private companies to work in USC laboratory facilities can create safety and compliance challenges and risks. A private company may need to utilize larger amounts of hazardous materials (i.e., industry scale) than other USC laboratories that conduct academic basic science research. Private company labs may conduct experiments or procedures that require highly specialized expertise to effectively perform a risk assessment. In addition, private companies in USC labs do not always follow USC research safety policies and procedures. The Research Safety Programs currently receive no funding for services provided to private companies.

The CSC will propose appropriate policies and procedures to properly manage these laboratory safety and compliance risks. This may include the establishment of a required service fee and lab-specific compliance requirements in the lease agreements. Service fees should include the cost of all hazardous waste disposal and research safety support services, which are often variable based on the type of lab work performed by the private company. Proposed policies will consider the challenges, administrative burden, and adverse impact of direct charge-back for required safety and compliance services. These policies should include procedures for the assessment of laboratory facilities to ensure they are appropriate for the planned lab work before the lease agreement is signed. The CSC will advise when it is necessary to hire external consultants to perform specialized risk assessments of private company experiments. The CSC will also determine circumstances when the tenant will be required to sign an agreement their lab personnel will adhere to all USC safety policies and other federal and state regulations, standards, and guidelines as a condition for their lease agreement. If deemed appropriate by the CSC, each lab tenant would be required to complete a lab work assessment form that would be reviewed by the research safety officers to assess the risk of their lab activities (hazards used, experiments, etc.). This assessment would be used to determine appropriate overhead costs based on the scope of safety support services required, and how fees will be incorporated into the lease agreement by the Office of Economic Engagement, so they are not assessed separately. These fees will ensure time spent providing laboratory safety services to private company labs does not diminish time

research safety staff invest to provide essential lab safety services to USC research labs.

XI. Chemical Safety Regulations and Guidelines

As the CSC fulfills its mission and responsibilities, the committee strives to ensure compliance with relevant chemical and laboratory safety regulations, guidelines, and standards, including:

- USC Chemical Hygiene Plan
- USC Chemical Safety Committee Charter
- APLU A Guide to Implementing a Safety Culture in Our Universities
- OSHA Occupational Exposure to Hazardous Chemicals in Laboratories (29 CFR 1910.1450)
- CISA Chemical Facility Anti-Terrorism Standards (CFATS)
- NFPA 45 Standard on Fire Protection for Laboratories Using Chemicals
- NFPA 55 Compressed Gasses and Cryogenic Fluids Code
- US Department of Transportation Hazardous Materials Regulations

XII. Lab Safety Culture, CSC Charter, Training, Reports and Approvals

Laboratory Safety Culture:

The Association of Public and Land-Grant Universities (APLU) published A Guide to Implementing a Safety Culture in Our Universities. According to this report, as educational institutions and research universities, faculty across the nation should be at the forefront of embracing this culture of safety and adopting or developing best practices that makes this culture foundational to each institution. The fundamental nature of laboratory research and discovery involves risk, but it is incumbent on all of us to embrace the idea that the culture of safety is foundational to our educational mission, the discovery process, and responsible conduct of research. The APLU formed a Task Force on Laboratory Safety to provide research universities with recommendations and guidance on the most appropriate strategies to help enhance the culture of laboratory safety on each campus. The APLU report highlights five core institutional values foundational to a culture of safety:

- **Safety is everyone's responsibility.**

  Each institution should commit to providing a campus environment that supports the health and safety practices of its community (faculty, students, staff and visitors) and empowers the community to be responsible for the safety of others. A safe campus environment is a right of employment for all categories of employees. A safe campus learning environment is a right of all involved in education and research.

- **Good science is safe science.**

  Safety is a critical component of scholarly excellence and responsible conduct of research.

- **Safety training and safety education are essential elements of research and education.**

  They instill a culture of safety in the next generation of researchers and future faculty, and they are important for our students' career development and employability.

- **An improved culture of safety is necessary to truly reduce risk.**

  An improved culture of safety is necessary to truly reduce risk throughout the academic enterprise.

- **Diverse methods and flexible approaches will be used by each institution.**

  It is best to recognize that diverse methods and flexible approaches will be used by each institution to develop a strong culture of safety, unique to its situation.

The CSC, Chemical Safety Program, and other institutional committees and officials are committed to a process of continuous improvement in chemical safety and compliance.

CSC Charter:

The CSC Charter will be reviewed and updated at least annually. The CSC Charter must be approved by a full committee vote during a convened meeting. Then the approved CSC Charter will be posted on the CSC website. The Vice President for Research or Provost may propose amendments to this Charter by contacting the Research Safety Bureau Chief.

Training:

The Chemical Hygiene Officer provides an orientation training to all new CSC members, including the Chair, to review the CSC policies and procedures contained in this charter.

The Chemical Safety Program has implemented a Chemical and Laboratory Safety training for Principal Investigators and other laboratory personnel. The Principal Investigator is responsible for providing lab-specific safety training for their personnel on the hazards used and instructing lab staff in safe work practices and procedures for lab hazards. Other required research safety training courses are provided to research personnel on laboratory safety topics based on the type of research conducted such as Personal Protective Equipment (PPE) Selection, Use & Maintenance; Compressed Gas Safety; and HF Safety.

Chemical Safety Reports and Plans:

The Chemical Hygiene Officer will prepare a Chemical Safety Program Annual Report. The agenda for the first CSC meeting each calendar year will include this annual report for full committee review and an opportunity to provide feedback. The annual report will include a summary of the following topics to ensure the CSC has updated information pertaining to their role:

1) Chemical safety and CSC compliance priorities, metrics, and annual highlights
2) Updates on chemical and lab safety oversight and changes in university research
3) Updates on chemical safety risk controls, successes, and compliance challenges

Research Safety Senior Committee will review updates to the Chemical Safety High-Risk Report, Risk Register, and Heat Map that are submitted by the CSC. These committees will assess current chemical and lab safety risk controls, controls being implemented, leading and lagging indicators, chemical safety and compliance risks, and effectiveness of controls.

The CSC may review and approve new or significantly updated USC chemical safety policies and plans, including resources such as the Chemical Hygiene Plan, SOP template, lab safety inspection checklists, chemical fume hood guidance, PPE guidance, application for minors in labs, lab and equipment decommissioning policy, laboratory emergency plans, lab design and construction guidelines, and the Chemical Safety or CSC website.