I. Summary

- Berkeley Laboratory's Chemical Hygiene and Safety Plan (CHSP) contains requirements that govern the safe use of beryllium
- Exposure assessments for currently identified Berkeley Laboratory operations have been performed
- As per 10 CFR Part 850, the Berkeley Laboratory currently has no beryllium workers as defined by the rule, only other beryllium-associated workers
- In accordance with best practice, the Berkeley Laboratory will adhere to the principles espoused in both 10 CFR Part 850 (minimize worker exposure, number of individuals exposed, and future disability and lost time for workers resulting from exposure) and the Berkeley Laboratory’s CBDPP as noted in the following approach to integrated beryllium health and safety management at the Berkeley Laboratory
- No task involving potential exposure to airborne beryllium that is outside the scope of the existing CBDPP may be initiated until an update of the CBDPP is approved by the Head of DOE Field Element, except in an unexpected situation and, then, only upon approval of the Head of DOE Field Element
- Beryllium activities at the Berkeley Laboratory will adhere to established waste minimization principles to reduce the amount of beryllium-containing waste

II. Subcontractor Operations

Subcontractors (to the University) engaged in beryllium activities at Berkeley Laboratory or other DOE site will follow the provisions of the CBDPP at the Berkeley Laboratory, except where otherwise specified in a job-specific work plan. This will cover contractors, including those engaged in construction-type activities, such as removal of beryllium contaminated buildings, building systems, or equipment. Berkeley Laboratory will request documentation from the contractor that verifies adherence to the stipulations of the CBDPP. This documentation will include:

- Beryllium awareness training records for contractor employees performing the work
- Completed Chronic Beryllium Disease Prevention Program Informed Consent Forms for all workers performing the work
- Written acknowledgement that the employees of the contractor engaged in the work are familiar with and understand the Berkeley Laboratory’s CBDPP
III. Elements

A. Beryllium Inventory
The baseline beryllium inventory has been developed by reviewing pertinent information sources at the Berkeley Laboratory, including:

- Chemical Management System (CMS) records
- Purchase records
- Review of assembled archived records from 1940 from the Berkeley Laboratory Historical Beryllium Report
- Other field records or data, including employee interviews with IH or medical staff

Review of these information sources has yielded a baseline inventory of operations where beryllium is in active use or stored for potential use, and a legacy facility where beryllium was used at the Berkeley Laboratory. These operations are listed in the “Be Activities at Lawrence Berkeley National Laboratory” which is maintained by the Beryllium Program Manager. This list can also be obtained from the Beryllium Program Manager.

The inventory will be updated periodically, at least annually by reviewing the information from sources indicated above. New beryllium activities involving articles or that meet the definition of laboratory use may also be incorporated in the inventory. New beryllium activities that fall under the scope 10 CFR Part 850 will be communicated to DOE-BSO before being initiated. In the event that beryllium must be used, in an unexpected situation that is outside the scope of the current program, informal approval from DOE-BSO will be obtained prior to starting work and updating the CBDPP at the Berkeley Laboratory. An inventory of beryllium operations will be entered and maintained in Berkeley Laboratory’s IH Database (currently the Comprehensive Health, Environmental, and Safety System, or CHESS).

B. Qualitative and Quantitative Assessments
A qualified industrial hygienist (IH) will evaluate operations at the Berkeley Laboratory that involve the active use or presence of beryllium with review by a Certified Industrial Hygienist (CIH). Initially, a qualitative assessment is generally performed to identify potential for exposure and adequacy of controls. If there is a potential for exposure to airborne beryllium or a potential for dermal exposure, a quantitative evaluation will be conducted to determine exposure levels. Assessments will be entered into the IH database or other recordkeeping system. Medical and industrial hygiene staff will review medical surveillance and exposure monitoring as well as related information for the purpose of uncovering any significant medical surveillance trends.

A site-wide qualitative assessment has been conducted by an IH for beryllium operations at the Berkeley Laboratory. In addition, for those operations where potential exposure to beryllium exists, a quantitative exposure assessment was performed. A copy of this list can be obtained from the Beryllium Program Manager.

C. Permissible Exposure Limit (PEL)
There is no known instance in which a worker has been exposed to an airborne concentration of beryllium greater than the permissible exposure limit established in 29 CFR 1910.1000 or 10
CFR 850 at the Berkeley Laboratory. Should such an exposure occur, the beryllium operation would be stopped immediately pending a review by the Beryllium Program Manager and line management.

D. Action Level
Berkeley Laboratory will adhere to the action level of 0.2 micrograms per cubic meter (calculated as a time-weighted average) as measured in the worker's breathing zone. Any operation where the beryllium concentration is measured at or above the action level will result in implementation of the pertinent sections of 10 CFR Part 850, until such time as the exposures drop below the action level with a reasonable level of confidence.

E. Exposure Monitoring
Exposure monitoring protocols follow those outlined by the “OSHA Technical Manual” and the “NIOSH Manual of Analytical Methods,” although they may be modified based on established protocols from the analytical laboratory that is used. All operations subject to 10 CFR 850, with the potential to generate airborne beryllium or a potential dermal exposure, will be monitored according to the following:

- Personal breathing zone sampling representative of exposure conditions will be conducted and updated, as appropriate
- Sampling will be conducted by an IH working under the direction of the beryllium program manager or other knowledgeable CIH
- Appropriate statistical sampling considerations will be applied as per the AIHA guidance in “A Strategy for Assessing and Monitoring Occupational Exposures,” 3rd edition, as appropriate
- A stated goal for the sampling program is to have procedures with an accuracy of at least plus or minus 25% with a confidence level of 95 percent, for airborne concentrations of beryllium at the action level
- Samples will be analyzed by an AIHA-accredited laboratory
- Results will be communicated to the worker and line management within 10 days of the IH receiving results from the analytical laboratory
- Any exposures at or above the action level for beryllium will be communicated to DOE-BSO and the Occupational Physician within 10 working days of receiving results from the analytical laboratory
- Acquired data will be entered into CHESS, including exposure information, worker duties, and personal protective equipment data, and made available to the Site Occupational Medical Director (SOMD) and other medical staff. This information will be reviewed and updated, as necessary
- Exposure sampling data will be transmitted to DOE-BSO upon request
• Results from sampling conducted after January 7, 1999, will be used to fulfill initial monitoring requirements, except in cases where operations were discontinued prior to this date.

• Affected employees will be notified in writing within 10 working days of receipt of the results. Employees will be informed within 10 days of the measured result, the appropriate limit for beryllium, whether the appropriate limit has been exceeded, and any corrective actions based on exposure.

• Additional monitoring will be conducted for operations when a change has taken place, which is expected to affect potential exposure to beryllium.

• On a voluntary basis, Berkeley Lab will submit air monitoring data to the Beryllium Associated Worker Registry (BAWR).

Berkeley Laboratory will perform additional monitoring if operations, maintenance or procedures change, or when the Berkeley Laboratory has reason to suspect such a change has occurred.

Exposure monitoring has been conducted for operations at the Berkeley Laboratory where exposure to airborne beryllium exists. This sampling was conducted by an IH, and copies of the results are maintained in the IH database.

F. Exposure Reduction and Minimization
Beryllium operations will have specific practices and controls prescribed to reduce exposure. On a periodic basis these practices will be reviewed and re-evaluated to ensure exposure is being reduced to the greatest extent possible, regardless of exposure. Exposure reduction and minimization actions using the conventional hierarchy of industrial hygiene controls will be applied. Significant modifications to the current work practices will be noted in CHESS or another retrievable manner. It is the intent of the CBDPP at the Berkeley Laboratory to minimize to the greatest extent feasible the number of workers exposed to beryllium, as well as the number of opportunities where workers could be exposed. This will be achieved through implementation of a review system of operations and exposures. Review will occur periodically and may include industrial hygiene and occupational medical professionals who will review and analyze pertinent data for potentially redundant operations where beryllium is in use, as well as, emerging operations involving beryllium. In addition, beryllium-associated workers will be tracked as part of a beryllium similar exposure group. This group’s membership will be tracked through both CHESS exposure assessment and occupational medicine electronic modules. This group will be reviewed, on a periodic basis, to validate membership.

G. Regulated Areas
Regulated areas in accordance with the provisions of 10 CFR Part 850 will be established for Berkeley Laboratory operations involving beryllium when the airborne concentrations of beryllium are measured at or above the action level. There is no requirement for establishment of regulated areas for beryllium operations currently identified at the Berkeley Laboratory.

H. Hygiene Facilities and Practices
Pertinent hygienic facilities will be provided and practices observed as defined in 10 CFR Part 850 in areas where workers are exposed to beryllium at or above the action level. At the present
time, there is no requirement for hygiene facilities and special practices for beryllium operations at the Berkeley Laboratory.

I. Respiratory Protection
Respiratory protection will be provided to workers for protection against beryllium as described in the Respiratory Protection Program for Lawrence Berkeley National Laboratory (latest version, 11/2012), and in accordance with the pertinent stipulations of 10 CFR Part 850. Though there are no currently identified operations that require the use of respiratory protection for protection from beryllium particulate material, individuals involved in beryllium activities will be issued respiratory protection upon request, regardless of exposure.

J. Protective Clothing and Equipment
Protective clothing and equipment will be made available to individuals working with beryllium at the Berkeley Laboratory in accordance with the provisions of 10 CFR Part 850. Though, there are currently no identified instances where protective clothing and equipment, as prescribed in 10 CFR Part 850, would be required for protection from beryllium at Berkeley Laboratory, individuals involved in beryllium activities will be issued appropriate protective clothing and equipment, at no cost to the employee, upon request.

K. Housekeeping/Storage
Housekeeping provisions consistent with those outlined in 10 CFR Part 850 will be applied to Berkeley Laboratory operations that have the potential to generate dispersible beryllium particulate material. Such operations at the Berkeley Laboratory will be subject to routine surface sampling to determine housekeeping conditions in operational areas. Operational areas outside of installed closed systems (e.g., vacuum chambers and glove boxes) will be subject to the removable contamination limit of 3 micrograms per 100 square centimeters during periods when the operation is inactive. Only wet methods or vacuuming (no air or dry cleaning methods) will be used to remove contamination. Vacuum apparatus used in clean-up will be equipped with a HEPA filter that is tested in accordance with the LBNL HEPA-filter testing program. In addition, all cleaning equipment used on beryllium-contaminated surfaces will be labeled and used exclusively for beryllium clean-up operations.

Most beryllium items, including solutions and inert material, at Berkeley Laboratory were observed to be in storage due to infrequent, discontinued, or back-up use by researchers. As such, pertinent safety considerations are highlighted regarding beryllium storage. Storage areas should be clearly labeled as beryllium storage sites using Lab-approved labels. Oftentimes, items were found stored within several layers (i.e., beryllium windows in a plastic container in a plastic bag in a cardboard box). The industrial hygienist uses their best judgment in deciding the placement of labels which are appropriate to the storage area as well as being sufficient in raising awareness for anyone accessing these areas. Some beryllium items are remains of a previous era of research, and lack modern labeling features such as bright colors and health hazard warnings. These instances, when found via standard program maintenance protocols, have their storage containers and areas updated.

L. Release Criteria
The requirements contained in 10 CFR Part 850 for release of an item for another use or for distribution to the public will be adhered to for any item that has come into direct contact with beryllium as part of an operation at the Berkeley Laboratory. This would most appropriately pertain to pieces of equipment that have been used in legacy machining operations or recent small-scale activities such as Electrical Discharge Machining (EDM, Be Activity #10). In all cases, beryllium-contaminated equipment will be cleaned to the removable contamination level
specified (not to exceed the higher of 0.2 micrograms per 100 square centimeters or the concentration of beryllium in the soil at the point of release, whichever is greater) at a minimum. Within the bounds of economic constraints, cleaning will be performed to the lowest contamination level practicable below removable contamination level specified (0.2 micrograms per 100 square centimeters). Transfer of any item ultimately designated for release is conditioned on the recipient's commitment to implement pertinent controls that minimize foreseeable beryllium exposure, taking into account the nature of the item received and the nature of contamination. Contamination assessment activities and release determinations at the Berkeley Laboratory will be conducted by an IH and records of the swipe sampling will be entered and maintained in CHESS. Items released to the public, to a DOE facility for non-beryllium use, or to another facility for work involving beryllium will be labeled as per 10 CFR 850, including the stipulations for required wording, and labels will be placed on the items in a conspicuous location. Further, any items or beryllium-contaminated equipment released to another facility performing work with beryllium will be cleaned to the removable contamination level specified (not to exceed 3 micrograms per 100 square centimeters). The equipment or item in this case will be enclosed or placed in sealed, impermeable bags or containers to prevent the release of beryllium dust during handling and transportation.

M. Waste Disposal
Beryllium-containing waste generated at the Berkeley Laboratory will be processed in compliance with the Guidelines for Generators to meet HWHF Acceptance requirements for Hazardous, Radioactive, and Mixed Wastes at the Berkeley Laboratory (LBNL PUB-3092, October 2011, Rev. 7.1), as well as, the provisions of 10 CFR Part 850.

N. Beryllium Emergencies
Incidents or emergencies involving beryllium at the Berkeley Laboratory will be handled in accordance with the provisions of 10 CFR Part 850. Specifically, the Berkeley Laboratory will ensure compliance with 29 CFR 1910.120(l) for handling beryllium emergencies related to decontamination and decommissioning operations, and 29 CFR 1910.120(q) for handling beryllium emergencies related to other operations. Additional guidance is provided in the LBNL Emergency Guide.

Examples of events which could be deemed beryllium emergencies have been illustrated in 10 CFR Part 850. These include equipment failure, container rupture, or failure of control equipment or operations, which unexpectedly release a significant amount of beryllium. Another stated example was a major spill of powdered beryllium or an unexpected upset that releases a significant amount into the workplace atmosphere.

O. Medical Surveillance, Medical Removal, and Medical Consent
The Similar Exposure Group (SEG) for beryllium-associated Workers program in the on-line CHESS system in the Health Services Group at the Berkeley Laboratory contains information on all pertinent beryllium medical surveillance, consent, and removal protocols.

Berkeley Laboratory has identified no beryllium workers as defined by the standard, and about 25 beryllium-associated workers overall. Most of the workers had beryllium lymphocyte proliferation testing under a DOE research protocol not covered by this rule. In response to the final rule, a new examination was offered to these workers by 7/7/2000, the initial implementation date for the Rule. This examination was contingent on signature of the DOE "Chronic Beryllium Disease Prevention Program Informed Consent Form." The results of new baseline examinations were used to assemble the LBNL Beryllium Worker Registry. Following this, periodic evaluations are offered to this group of employees at 3-year intervals (chest X-rays
are offered on an as-needed basis or 5-year intervals). In the event a worker is exposed to beryllium because of an emergency he or she will also be provided a medical evaluation, at least equivalent to a periodic evaluation, as soon as possible. All medical evaluations and procedures will be performed by, or under the supervision of, of the Site Occupational Medical Director at Berkeley Laboratory who is familiar with the health effects of beryllium. Within 10 days of receipt of results of the findings of the examination, an interpretation of the findings relative to the beryllium exposure will be provided in writing to the employee. The communication will provide the worker with a written medical opinion containing the results of all tests and procedures, an explanation of any abnormal findings and any recommendations that the worker be referred for additional testing for evidence of CBD. CBD, beryllium sensitivity and other abnormal conditions or disorder caused or aggravated by the occupational exposure to beryllium will be reported on the appropriate OSHA reporting form.

Berkeley Laboratory will offer a beryllium-associated worker medical removal from exposure to beryllium if the SOMD determines in a written medical opinion that it is medically appropriate to remove the worker from such exposure. The SOMD's determination must be based on one or more positive Be-LPT results, chronic beryllium disease diagnosis, an examining physician's recommendation, or any other signs or symptoms that the SOMD deems medically sufficient to remove a worker.

Berkeley Laboratory will offer a beryllium-associated worker temporary medical removal from exposure to beryllium on each occasion that the SOMD determines in a written medical opinion that the worker should be temporarily removed from such exposure pending a final medical determination of whether the worker should be removed permanently.

If a beryllium-associated worker is temporarily removed from beryllium exposure, the Berkeley Laboratory will transfer the worker to a comparable job for which the worker is qualified (or for which the worker can be trained in a short period), and where beryllium exposures are as low as possible, but in no event at or above the action level. Berkeley Laboratory will maintain the beryllium-associated worker's total normal earnings, seniority, and other worker rights and benefits as if the worker had not been removed. If there is no such job available, Berkeley Laboratory will provide to the beryllium-associated worker the medical removal protection benefits specified below in this document, until a job becomes available or for one year, whichever comes first. Berkeley Laboratory will offer a beryllium-associated worker permanent medical removal from exposure to beryllium if the SOMD determines in a written medical opinion that the worker should be permanently removed from exposure to beryllium. If a beryllium-associated worker at the Berkeley Laboratory is removed permanently from beryllium exposure based on the SOMD's recommendation as specified in this document, the worker will receive the medical removal protection benefits as specified below. If the SOMD at the Berkeley Laboratory determines that a beryllium-associated worker should be temporarily or permanently removed from exposure to beryllium, the SOMD will: (1) advise the beryllium-associated worker of the determination that medical removal is necessary to protect the worker's health; (2) provide the beryllium-associated worker with a copy of 10 CFR Part 850 and its preamble, and any other information the SOMD deems necessary on the risks of continued exposure to beryllium and the benefits of removal; (3) provide the beryllium-associated worker the opportunity to have any questions concerning medical removal answered by Berkeley Laboratory occupational medicine staff; and,(4) obtain the beryllium-associated worker's signature acknowledging that the worker has been advised to accept medical removal from beryllium exposure as specified in this document, and has been provided with the necessary information on the benefits of removal and the risks of continued exposure to beryllium.
The Berkeley Laboratory will not return a beryllium-associated worker who has been permanently removed to the worker's former job status unless the SOMD at the Berkeley Laboratory first determines in a written medical opinion that continued medical removal is no longer necessary to protect the worker's health.

If, in the SOMD's opinion, continued exposure to beryllium will not pose an increased risk to the beryllium-associated worker's health, and medical removal is an inappropriate remedy in the circumstances, the SOMD will fully discuss these matters with the worker and then, in a written determination, may authorize the worker to return to his or her former job status. Thereafter, the returned beryllium-associated worker will continue to be provided with medical surveillance as per the Berkeley Laboratory beryllium medical surveillance program.

If a beryllium-associated worker has been permanently removed from beryllium exposure, the Berkeley Laboratory will provide the beryllium-associated worker: (1) The opportunity to transfer to another position which is available, or later becomes available, for which the beryllium-associated worker is qualified (or for which the worker can be trained in a short period) and where beryllium exposures are as low as possible, but in no event at or above the action level; or (2) If the beryllium-associated worker cannot be transferred to a comparable job where beryllium exposures are below the action level, a maximum of 2 years of permanent medical removal protection benefits.

If it becomes necessary to provide medical removal protection benefits to a beryllium-associated worker, the Berkeley Laboratory will maintain the removed worker's total normal earnings, seniority and other worker rights and benefits, as though the worker had not been removed.

If a removed beryllium-associated worker files a claim for workers' compensation payments for a beryllium-related disability, then the Berkeley Laboratory will continue to provide medical removal protection benefits pending disposition of the claim. The Berkeley Laboratory will receive no credit for the workers' compensation payments received by the worker for treatment related expenses.

The obligation of the Berkeley Laboratory to provide medical removal protection benefits to a removed beryllium-associated worker is reduced to the extent that the worker receives compensation for earnings lost during the period of removal either from a publicly- or employer-funded compensation program, or from employment with another employer made possible by virtue of the worker's removal.

Berkeley Laboratory may condition the provision of medical removal protection benefits upon the beryllium-associated worker's participation in medical surveillance. Beryllium rule provisions for multiple physician review, Site Occupational Medical Director designation, alternate physician designation, written medical opinions and recommendations, communication with beryllium-associated workers, medical removal protection, and medical consent will be followed as outlined in the rule.

P. Training and Counseling
Any individual who has the potential to be exposed above the Action Level to beryllium will have written instructions on appropriate beryllium control measures and precautions in accordance with the stipulations of 10 CFR 850. This training will be reviewed with these individuals no less than every two years or more frequently, and may be done by a knowledgeable Industrial Hygienist, qualified trainer, or other means (such as web-based training. Fundamental training for individuals with potential beryllium exposure consists of a Web-based Beryllium Hazard
Communication course (EHS0342), which features a quiz; this course must be completed every two years. In addition, any individual who works with hazardous chemicals, such as beryllium, is required to take the Berkeley Laboratory Chemical Hygiene training course (EHS0345 or EHS0348). Employees on-site, at a minimum, will receive general safety information on beryllium and the Laboratory’s beryllium program (possible sources include; new employee training, the safety pamphlet; Beryllium Safety Awareness at Berkeley Laboratory, PUB-3000; Chapter 4.18, the CBDPP, or other sources). General employee hazard communication course (EHS0342 Beryllium Hazard Communication) discusses basic safety precautions for any employee who wants to enroll and the course is required for those individuals actively handling beryllium, as specified in an employee’s Job Hazard Analysis (JHA) or other work authorization documentation. This training and information is available online or can be obtained by contacting Health Services (486-5321) or the Beryllium Subject Matter Expert (495-2709). Training will be repeated as stipulated in the rule and documented in employees’ work authorizations.

Berkeley Laboratory will provide retraining when the Beryllium Program Manager or supervisor/work lead has reason to believe that a beryllium worker lacks the proficiency, knowledge, or understanding needed to work safely with beryllium.

In addition, an employee counseling program to assist beryllium-associated workers who are diagnosed to have CBD or to be sensitized to beryllium will be conducted as prescribed in 10 CFR 850.

Q. Warning Signs and Labels
For uses of beryllium that are associated with research laboratory operations, signs and labels will be utilized in accordance with the Berkeley Laboratory’s Chemical Hygiene and Safety Plan. Any operation that falls within the definition of 10 CFR Part 850 will adhere to the provisions of the rule for warning signs and labels. This includes affixing warning labels, as required, to all containers of beryllium, beryllium compounds, or beryllium-contaminated clothing, equipment, waste, scrap or debris. In addition, labels will reflect required wording as per 10 CFR 850, and will be of such a format (e.g., size of lettering, color scheme) and placed on containers in such a way as to provide adequate warning to individuals who may come into contact.

R. Recordkeeping and Use of Information
Berkeley Laboratory will operate within the provisions of 10 CFR Part 850 for establishing and maintaining accurate records of beryllium inventory information, assessments, exposure measurements, exposure controls, and medical surveillance. Specifically, Berkeley Laboratory will commit to the following:

- Qualitative and quantitative assessment information will be included in applicable, accessible files.
- Beryllium-associated workers and line management will have copies of these assessments, including a discussion of appropriate controls and protective measures.
- Electronic versions of beryllium exposure data and assessments will reside in CHESS
• A report detailing workplace conditions contained in CHESS is accessible to occupational medical staff and health outcomes contained in the occupational medicine electronic tracking system link the worker to the workplace (and vice a versa). This will establish a basis for understanding beryllium health risk.

• Electronic versions of medical surveillance records and other medical information pertaining to beryllium-associated workers will reside in official medical records and the occupational medicine electronic information system.

• Records will be retained for at least 75 years beyond each worker’s employment and will be turned over to DOE in the event of a change in the contractor-operator status at the Berkeley Laboratory.

• Records will be maintained in a confidential fashion consistent with established practices observed for other medical and industrial hygiene records, as well as, in accordance 10 CFR 850 stipulations. This includes placing medical information in a separate employee file maintained by the SOMD, and removing descriptive information from IH sampling reports and medical information prior to transmitting to other parties.

• Records required by 10 CFR 850 will be transmitted to the DOE Chief Health, Safety, and Security Officer, upon request, and the DOE Office of Epidemiological Studies will receive, on a semi-annual basis, an electronic registry of beryllium-associated workers that protects confidentiality of these individuals, through the BAWR submittal.

S. Performance Feedback
A periodic review of the CBDPP at the Berkeley Laboratory to ensure effectiveness will be conducted in accordance with the provisions of 10 CFR Part 850, and will include analyses and assessments of monitoring activities, hazards, medical surveillance, exposure reduction and minimization, and occurrence reporting data, as applicable. This review will generally be performed as part of the EHS Division’s self assessment program. This review may include the Beryllium Program Manager, and representatives for the Occupational Medicine program, and other organizations (including line management) as necessary. Results of this periodic review will be made available to interested parties (e.g., line managers, labor organizations, workers) who request such information. Labor organizations representing employees covered by this program, will be notified on a timely basis regarding changes to the program, and any bargaining associated with the implementation of this program will be conducted in accordance with Federal labor laws. In addition, copies of the CBDPP at the Berkeley Laboratory will be available for the Department of Energy Berkeley Site Office (DOE-BSO) to review when changes are made.

T. Program Maintenance
The document, “Activities for Program Maintenance,” Attachment A describes the effort to ensure that the Chronic Beryllium Disease Prevention Program (CBDPP) is implemented effectively at the Berkeley Laboratory. This appendix will be reviewed periodically and updated as necessary to reflect program changes and new initiatives.

U. Definitions (from 10 CFR 850)
Action level means the level of airborne concentration of beryllium established pursuant to section 850.23 of this part that, if met or exceeded, requires the implementation of worker protection provisions specified in that section.

Beryllium means elemental beryllium and any insoluble beryllium compound or alloy containing 0.1 percent beryllium or greater that may be released as an airborne particulate.

Beryllium activity means an activity taken for, or by, DOE at a DOE facility that can expose workers to airborne beryllium, including but not limited to design, construction, operation, maintenance, or decommissioning, and which may involve one DOE facility or operation or a combination of facilities and operations.

Beryllium-associated worker means a current worker who is or was exposed or potentially exposed to airborne concentrations of beryllium at a DOE facility, including:

1. A beryllium worker;
2. A current worker whose work history shows that the worker may have been exposed to airborne concentrations of beryllium at a DOE facility;
3. A current worker who exhibits signs or symptoms of beryllium exposure; and
4. A current worker who is receiving medical removal protection benefits.

Beryllium emergency means any occurrence such as, but not limited to, equipment failure, container rupture, or failure of control equipment or operations that results in an unexpected and significant release of beryllium at a DOE facility.

Beryllium worker means a current worker who is regularly employed in a DOE beryllium activity.

Regulated area means an area demarcated by the responsible employer in which the airborne concentration of beryllium exceeds, or can reasonably be expected to exceed, the action level.

Removable contamination means beryllium contamination that can be removed from surfaces by nondestructive means, such as casual contact, wiping, brushing or washing.

Worker means a person who performs work for or on behalf of DOE, including a DOE employee, an independent contractor, a DOE contractor or subcontractor employee, or any other person who performs work at a DOE facility.
ATTACHMENT A
LBNL Chronic Beryllium Disease Prevention Program (CBDPP)

ACTIVITIES FOR PROGRAM MAINTENANCE

1. **Review Chemical Management System (CMS) beryllium records**
   Periodically, CMS will be searched for containers that “contain” beryllium in their name. The listed owner of the container will be contacted to determine if the beryllium metal, alloy or substance listed is in use or just stored (or even present), and the CMS record will be updated accordingly. If there is a potential for exposure, sampling will be performed (if a new operation), and sampling information will be entered into CHESS.

2. **Review CHESS records**
   Periodically review CHESS records and ensure that monitoring and sampling events are cataloged on Be Activities Spreadsheet retained by Beryllium Program Manager. Update spreadsheet as necessary. The Beryllium Program Manager or a CIH will perform an appropriate technical review of newly entered activities for quality assurance purposes.

3. **Review Beryllium Hazard Communication Training (EHS0342) records**
   Periodically ensure that individuals who have the potential for exposure to beryllium have completed EHS0342 within the last two years. This is achieved by reviewing hazard evaluations in the files or CHESS records. In addition, periodically the list of individuals enrolled in the LBNL Medical Surveillance Program for Beryllium will be checked against the EHS0342 completion list. Individuals on the list who have not completed or who are not current with respect to EHS0342 will be contacted to ensure completion of the training.

4. **Review Beryllium Associated Worker (BAW) registry list**
   Periodically, review and update beryllium-associated worker list for LBNL (individual noted in LBNL Medical Surveillance Program for Beryllium). Any updates or changes will be transmitted to the DOE Office of Epidemiologic Studies on a semi-annual basis in conformance with scheduled reporting dates. BAW list will be updated based on changes in operations or job duties of personnel. This information will be transmitted from line management or the Beryllium Program Manager to LBNL Health Services to update the BAW listing. On an as needed basis the Beryllium Program Manager and LBNL Health Services representative will meet to discuss registry reporting issues.

5. **Review purchasing records for beryllium**
   As requests are made to purchase items containing beryllium or beryllium compounds, a hazard evaluation, coordinated by the Beryllium Program Manager or other CIH will be conducted (as necessary) to ensure the materials are being used with the proper safety measures. Additional controls or work practices, as applicable, will be implemented to ensure these materials are used safely on-site. All evaluations or monitoring activities generated through purchase requests will be documented as described above.

6. **Review of major building renovations/demolition**
Any major building renovations or modifications, including demolition activities, of areas suspected to have previous beryllium use (or with current beryllium activities), will be reviewed to ensure that beryllium materials or residues will not be disturbed and result in a potential exposure. The review will be conducted by a CIH, the Beryllium Program Manager, or a qualified subcontractor. Documentation and follow-up activities, as needed, will be performed in accordance with the provisions of the CBDPP.

7. **Quality Assurance (QA) Check of beryllium use**

As needed, the Beryllium Program Manager will coordinate a random review of the use of and exposure to beryllium on the site. This will consist of selecting an area where beryllium use is thought to occur, and reviewing records related to its use in that area against program elements (e.g., hazard evaluations, training, medical surveillance etc.). Deficiencies found will be corrected and cause for the deficiencies will be investigated. A document describing the inadequacies will be distributed, as necessary, to the affected individuals or divisions, and recognized program findings will be noted in the LBNL Corrective Action Tracking System (CATS) as applicable.

8. **EHS Self Assessments**

Document program improvement activities in beryllium self-assessment program management documents. CBDPP-related findings discovered during this process will be captured in the LBNL Corrective Action Tracking System (CATS).