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Revision 0

Hanford Site Chronic Beryllium Disease Prevention Program (CBDPP)

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

United States Department of Energy
P.O. Box 550
Richland, Washington 99352

Approved for Public Release;
Further Dissemination Unlimited

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NOTE

This Program document references the Site Occupational Medical Director (SOMD) and AdvanceMed Hanford (AMH) because they provide the services for the majority of Hanford Site contractors. However, in the case of a contract that allows another qualified medical provider to perform these services, then the references also apply to that provider of equivalent services.

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David G. Ruscitto, President
Chief Executive Officer
Fluor Hanford, Inc.

John G. Lehew III, President
Chief Executive Officer
CH2M HILL Plateau Remediation Company

Charles G. Spencer, President
Washington Closure Hanford LLC

William J. Johnson, President
Washington River Protection Solutions LLC

Martin E. Zizzi
Principal Manager
AdvanceMed Hanford

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1.0 PURPOSE

This document establishes an integrated Hanford Site Chronic Beryllium Disease Prevention Program (CBDPP), herein called the Program, and implements controls necessary to minimize the exposure to beryllium of employees working at Hanford.

This Program implements employer requirements for Hanford found in 10 Code of Federal Regulations 850 (10 CFR 850). This Program also provides consistent employer implementation practices for 10 CFR 850 requirements across the Hanford Site.

2.0 SCOPE

This Program applies to Hanford contractors who are responsible for facilities where beryllium activities may have previously been conducted and to any current activities that involve actual or potential exposures to airborne beryllium. It does not apply to beryllium articles as defined in Section 3.0. This Program does not apply to current or future laboratory or laboratory-scale operations (as defined by the Occupational Safety and Health Administration [OSHA]) involving beryllium that are subject to the requirements of 29 CFR 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories. However, present laboratory use of beryllium will be documented on facility fact sheets. The Program covers Hanford workers who have previously been exposed or currently have the potential for exposure to beryllium while working at Department of Energy (DOE) sites. This Program establishes the use of a Beryllium Work Permit (BWP) (Attachment 3) to implement and standardize controls for all work activities in beryllium-regulated areas and beryllium-controlled areas.

3.0 DEFINITIONS

Action Level: The airborne concentration of beryllium is 0.1 $\mu g/m^3$, calculated as an 8 hour time weighted average (TWA) exposure, as measured in the workers' breathing zone by personal monitoring.

Background Beryllium Level: The background beryllium level in soil is established as 2.0 ppm (2 µg/gm) per DOE Richland Operations Office (DOE/RL) Memorandum 00-ESD-116.

Beryllium: 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: 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 Article: A manufactured item that is formed to a specific shape or design during manufacture that has end-use functions that depend, in whole or in part, on its shape or design during end-use and that does not release beryllium or otherwise result in exposure to airborne concentrations of beryllium under normal conditions of use.

Beryllium-Affected Worker: A worker affected medically by beryllium exposure e.g. beryllium sensitization, chronic beryllium disease (CBD) or a medical condition otherwise associated with beryllium exposure.

Beryllium-Associated Worker: A current worker who is (or was) exposed, or potentially exposed to airborne concentrations of beryllium at a DOE facility, including:

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

Beryllium-Contaminated Material: Material with removable surface beryllium at greater than 0.2 $\mu g/100cm^2$, after decontamination or cleaning, when characterized by wipe sampling methods, or at levels that exceed the background beryllium level when characterized by bulk sampling methods.

Beryllium-Controlled Area (BCA): An accessible area where removable surface beryllium levels have the potential to exceed the Background Beryllium Level, as determined by the methodology outlined in DOE interpretation D06-07-004 or a decontaminated surface >0.2 $\mu g/100cm^2$. A BCA can be an entire building, room, system, or a geographic area.

Beryllium-Controlled Facility: An existing facility where:

- Beryllium activities are ongoing
- Beryllium activities have occurred in the past
- Beryllium surface contamination has been confirmed
- There is some evidence that a beryllium activity may have occurred in the past and characterization sampling has not been completed per Appendix A *Facility Characterization Process for Beryllium*

A beryllium-controlled facility may be decontaminated and classified as a beryllium-clean facility through adequate characterization sampling.

Beryllium-Clean Facility: An existing facility where, through characterization sampling and/or process knowledge, the potential for exposure to beryllium does not exist. Facility may be an entire building or a geographic area.

Beryllium-Historical Facility: A facility that no longer exists and where beryllium activities are known or assumed to have occurred. A facility may be an entire building or a geographic area.

Beryllium-Regulated Area (BRA): 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.

Beryllium Work Permit (BWP): A written set of controls and work practices required for work in a beryllium-controlled area or beryllium-regulated area (Attachment 3).

Beryllium Worker: A current worker who is regularly employed in a DOE beryllium activity.

Breathing Zone: An area described by a hemisphere forward of the shoulders, centered on the mouth and nose, with a radius of 6 inches to 9 inches.

Bulk Sample: A weight-by-weight (micrograms per gram or part per million) determination of beryllium content in a bulk material such as soil or dust.

CBDPP Committee: The entity that is chartered to develop processes for the administration, training, implementation and approval of the Hanford Site Chronic Beryllium Disease Prevention Program (CBDPP). (Attachment 1 is the *CBDPP Committee Charter*.)

Certified Industrial Hygienist (CIH): A health and safety professional certified by the American Board of Industrial Hygiene.

DOE Field Elements: Department of Energy, Richland Operations Office (RL), and Office of River Protection (ORP).

Dust-Producing Activity: Any activity resulting in the production of airborne particulates.

Facility Characterization: A statistically based sampling process to obtain a sufficient number of samples to adequately characterize a facility before classification.

Hanford Site Contractors/Employers:

Project Hanford Management Contract (PHMC)

Plateau Remediation Contract (PRC)

River Corridor Contract (RCC)

Tank Operation Contract (TOC)

AdvanceMed Hanford (AMH)

Hygiene Facility: Areas such as change rooms, shower and hand washing facilities that are designed to prevent the migration of beryllium by workers.

Internal Beryllium Contamination: Enclosed systems or equipment with inaccessible internal surfaces with suspected or known beryllium contamination. In general, the external surfaces of these items are below the release limit of 0.2 $\mu g/100cm^2$, or 2 ppm, but represent a potential hazard for workers unknowingly disturbing the internal surfaces.

Intrusive Work: Tasks where a facility, system or equipment is normally closed and the planned activity requires the opening/altering of the facility, system or equipment.

Negative Exposure Assessment: A statistically based monitoring review process to adequately characterize exposure as below the Action Level (i.e. AIHA, *A Strategy for Occupational Exposure Assessment*).

Non-Intrusive Work: Tasks having no potential for disrupting or altering a system, equipment or facility.

Permissible Exposure Limit (PEL): The PEL is defined by OSHA standards in 29 CFR 1910.1000. The current OSHA PEL for beryllium is 2 $\mu g/m^3$ as an 8-hour time-weighted average, with a ceiling of 5 $\mu g/m^3$ and an acceptable peak of 25 $\mu g/m^3$ for 30 minutes.

Release Criteria: The level of removable contamination for surfaces of equipment or items is less than 0.2 $\mu g/100cm^2$ for wipe samples, or the background level for bulk samples.

Site Occupational Medical Director (SOMD): The physician responsible for the overall direction and operation of the site occupational medicine program at the Hanford Site. (Attachment 4 is the *AdvanceMed Hanford Beryllium Medical Support Plan.*)

Time-Weighted Average (TWA): The average exposure, regardless of personal protective equipment, to a chemical based upon the concentration of the chemical, times the duration of exposure, divided by the entire duration of the work shift. Unless specified otherwise, the duration of the work shift is 8 hours.

Worker Exposure: The exposure of a worker to airborne beryllium that would occur if the worker were not using respiratory protective equipment. (Note: Skin contamination can be an additional pathway for exposure.)

4.0 ENFORCEMENT

DOE may take appropriate steps pursuant to 10 CFR 851 to enforce compliance by contractors with 10 CFR 850 and any DOE-approved CBDPP.

5.0 RESPONSIBILITIES

Hanford Site Contractors: Shall develop management systems necessary to implement the Hanford Site CBDPP.

CBDPP Committee: Shall be the collective interpretive authority for the Hanford Site CBDPP, as per the Charter (Attachment 1, *Hanford Site Chronic Beryllium Disease Prevention Program [CBDPP] Committee Charter*).

6.0 REQUIREMENTS

The contractual documents that provide the requirements in this Program are 10 Code of Federal Regulations, Part 850, Chronic Beryllium Disease Prevention Program, and 10 Code of Federal Regulations, Part 851, Worker Safety & Health Program. Existing program procedures that comply with these requirements are referenced, as applicable.

6.1 DISPUTE RESOLUTION

Employees who have concerns regarding the Hanford Site CBDPP are encouraged to use existing Hanford programs and processes for resolving such concerns. The CBDPP Committee shall be involved as a technical resource for disputes involving the interpretation or implementation of the CBDPP. The CBDPP Charter (Attachment 1, *Hanford Site Chronic Beryllium Disease Prevention Program [CBDPP] Committee Charter*) provides additional guidance for using the Committee's assistance in resolving disputes.

6.2 PROGRAM REVIEW AND SUBMITTAL

The PHMC contractor shall facilitate an annual update of the CBDPP, working with the CBDPP Committee. Any significant change to this Program must be submitted to the Hanford DOE Field Elements for review and approval prior to implementation. If no response is received from the DOE within 90 days, the submitted change will be considered approved. The PHMC shall provide notice of changes to this Program to the Hanford Atomic Metal Trades Council (HAMTC), the Central Washington Building and Construction Trades Council (CWB&TC) and any other affected bargaining unit. Any bargaining unit issues concerning the implementation of the CBDPP will be addressed in accordance with current labor agreements.

6.3 GENERAL REQUIREMENTS

This program contains requirements:

- Integrate elements of the CBDPP into existing programs for safety, health, training, medical, counseling and work planning
- Minimize skin contact with beryllium-contaminated surfaces
- Minimize the spread of beryllium surface contamination
- Minimize the number of workers exposed to beryllium through hazards assessment, work planning, and engineering controls
- Establish airborne exposure reduction and minimization goals below the Action Level that would be applicable to the specific task
- Reduce exposure by applying engineering controls, whenever feasible, as well as using administrative control measures and Personal Protective Equipment (PPE)

To satisfy these requirements, this Program integrates into the existing workflow process the requirements for the protection of workers and the environment from beryllium.

6.4 IMPLEMENTATION

Each Site contractor is responsible for the implementation of the Program and control of beryllium exposures for all activities within their contract scope that are specified in the scope of the Program (Section 2.0).

6.5 COMPLIANCE

Each Site contractor must conduct beryllium activities in compliance with this CBDPP as approved by the DOE Field Elements.

6.6 BASELINE INVENTORY

The Hanford Site baseline inventory is maintained by the Project Hanford Management Contract (PHMC). The PHMC shall ensure that a qualified individual (e.g. a Certified Industrial Hygienist) is responsible for overseeing the maintenance of the baseline inventory. Site contractors shall communicate facility status changes to the PHMC within 30 calendar days. This inventory shall include:

- Beryllium-controlled facilities
- Former beryllium-controlled facilities that have been decontaminated

- Facilities that no longer exist and where beryllium activities are known or assumed to have occurred
- Outdoor areas where beryllium contamination is identified

The inventory will be maintained on a Web site accessible to all employees, current and former, and will be updated within 30 calendar days of receiving notification of a facility status change. All Site contractors shall provide to the PHMC the information necessary to establish and maintain the baseline inventory for facilities covered under their scopes of work.

6.6.1 Facility Characterization Process

An initial assessment of all facilities is required to determine if the facility is a beryllium clean facility or a beryllium-controlled facility. If there is not an exposure potential above background, further facility beryllium characterization and assessment is not required. Contractors may use the *Beryllium Facility Assessment Form* (Attachment 2) to document the initial assessment.

6.7 BERYLLIUM WORK PERMIT (BWP)

A BWP (Attachment 3, *Hanford Beryllium Work Permit*) is required for all work conducted in a BRA or BCA. A BWP shall be developed as part of the hazard assessment process (Section 6.8) when work is to be performed in a BRA or BCA. The BWP shall be coordinated with other safety, health, and radiological control documents to ensure a consistent approach to work controls.

The BWP documents the specific requirements for a task. The BWP communicates the beryllium hazards associated with the work, postings/labeling, required PPE, entry requirements, types of sampling to be conducted, as well as other specific information necessary to conduct the work in accordance with this Program. In addition, the BWP will be referenced in the Pre-Job Briefings to reinforce the information necessary to conduct work safely. The BWP shall be revised whenever there is a change in the work, beryllium hazards, postings or other information on the BWP. This BWP shall be reviewed and updated as required, to reflect field changes when changes occur in the field that could affect the validity of this completed form and the Job Hazards Analysis (JHA) it supports. Any revisions to the BWP shall be communicated to employees involved in the activity covered by the BWP prior to commencing work.

6.8 HAZARD ASSESSMENT

The Program requires contractors use a risk-based and graded approach when assessing beryllium exposure hazards (see Appendix B, *Exposure Assessment Guideline)* for guidelines on conducting this assessment. Work in a beryllium-regulated area or a beryllium-controlled area is controlled by the BWP, Attachment 3, *Hanford Beryllium Work Permit.*

The purpose of the hazard assessment is to determine the potential for employee exposure and the controls necessary to minimize the exposure risk. In completing the BWP, the following information shall be used to determine the required controls:

- A review of existing site conditions (an initial site walk down is required)
  - Status of facility (include both the operational status and the status of any systems that could impact exposures)
  - Location where the work will take place

  - Any conditions that have the potential to increase the risk of exposure
- The exposure potential of work activities
  - Intrusive or non-intrusive
  - Potential for the work to generate dust
  - Potential for skin exposure
  - Number of potentially exposed employees involved in the work activity
  - Length of the work taking place
- Sampling data (if available)
  - Employee exposure monitoring and area sampling data collected during similar work
  - Employee exposure monitoring and area sampling data collected during other work within the facility
- Historical data on the facility (if available)
  - Characterization data (bulk, wipe, and air sampling)
  - Employee reports of potential sources of beryllium
  - Descriptions of work previously conducted
- Medical surveillance trends, (if available)

The focus of the hazard assessment is to ensure that the appropriate controls are in place to minimize the potential for employee exposure to beryllium. The controls identified by the hazard assessment will be documented within the beryllium work permit. The beryllium hazard assessment shall be conducted by a person with sufficient knowledge and experience to perform such activity (e.g., Project IH, or assigned CIH). Work planners, supervisory staff, and employees familiar with the work shall be used as resources in completing the BWP.

Hazard assessments shall be reviewed and updated as necessary when conditions change. Prior to conducting work, employees shall ensure that the work activity description included in the BWP accurately describes the planned work scope and current site conditions. If the work scope does not match the work activity described in the BWP, the hazard assessment shall be updated and any changes in the controls shall be documented in the revised BWP.

6.9 PERMISSIBLE EXPOSURE LIMIT

Hanford Site contractors shall comply with the Occupational Safety and Health Administration Permissible Exposure Limit (OSHA PEL), or the 2005 American Conference of Governmental Industrial Hygienists Threshold Limit Values (ACGIH TLV), whichever is more conservative.

6.10 HANFORD SITE ACTION LEVEL

The Action Level for employees is 0.1 $\mu g/m^3$ as an 8 hour TWA, as further defined within the definition section of this document.

6.11 EXPOSURE MONITORING

The exposure monitoring provisions in this section are necessary to determine the extent of exposure at the worksite; prevent worker overexposure; identify the sources of exposure to beryllium; collect exposure data so that the responsible employer can select the proper control

methods to be used; evaluate the effectiveness of selected controls; and provide continual feedback on the effectiveness of the program in controlling exposures.

Because the 2009 ACGIH TLV for beryllium refers to inhalable particulates, contractors are encouraged to include both total beryllium and inhalable beryllium sampling in their sampling plans whenever measurable levels of airborne beryllium are expected. A summary of the data will be provided to the Committee upon request.

6.11.1 Initial Personal/Area Air Monitoring

Personal monitoring for airborne beryllium using breathing zone air samplers shall be conducted at the beginning the first day of work at all work sites where there is a potential airborne exposure to beryllium above the Action Level (0.1 $\mu g/m^3$) and continue per the sampling plan in the BWP. A beryllium worker may request and shall be provided with personal monitoring during any beryllium work activity.

Area air monitoring can be conducted to further characterize exposure pathways as specified by the Project IH. This includes sampling at the boundaries where beryllium work is conducted and may require sampling at locations that are immediately downwind or closest to the potential beryllium generation sources. Area and boundary sampling will be specified in the applicable sampling plan or BWP.

6.11.2 Negative Exposure Assessment

Negative Exposure Assessments (NEA) may be used to reduce the number or frequency of personal samples required and reduce exposure controls, such as downgrading respiratory protection. A negative exposure assessment must meet the following criteria:

- The personal monitoring data must be statistically significant and representative of the work being conducted. In addition, the monitoring and analysis must have been conducted in accordance with section 6.11.7 of this Program
- The personal monitoring data were obtained during work operations closely resembling the current operation, the state of the beryllium contamination, control methods, work practices, and environmental conditions prevailing in the current operations
- The operations were conducted by employees whose training and experience are no more extensive than that of employees performing the current work
- The personal monitoring data must demonstrate a high degree of certainty (95 percent confidence level) that employee exposure during the current job will not exceed the Action Level
- Personal sampling must be restarted if there is any change on the job site that could result in potential increased exposure (i.e. reduction in ventilation, drying of surfaces when using wet methods, or other modification in controls at the work site, etc.)
- The negative exposure assessment shall be documented

6.11.3 Surface Sampling

Surface sampling (wipe sampling or bulk sampling) will be conducted in beryllium-controlled areas prior to performing dust producing or intrusive activities unless contractors choose to control the area as a beryllium-regulated area. Beryllium-Clean Facilities do not require surface

sampling prior to intrusive work or dust producing activities. The Project Industrial Hygienist (IH) may request surface sampling to verify the absence of beryllium contamination.

6.11.4 Periodic Personal Air Monitoring

Once initial monitoring is completed, periodic air monitoring will be performed to ensure work practices and controls are adequate to prevent airborne exposures at or above the Action Level. If work is in an area where exposure levels are at or above the Action Level, periodic monitoring must be repeated at least every 3 months. Additional sampling may be requested by employees.

6.11.5 Periodic Surface Sampling

Surface wipe sampling is required at least monthly in lunchrooms and change rooms used by beryllium workers working in a beryllium-regulated, or beryllium-controlled area. Other periodic wipe sampling may be necessary to determine the potential for skin contact with beryllium, as documented in the sampling plan or BWP.

6.11.6 Bulk/Dust and Soil Sampling

Sampling shall be conducted in a biased random method to ensure that if beryllium is present, it is detected during the sampling evolution at a 95 percent confidence level. Where no data exists on the possible locations of beryllium contamination, a random sampling method shall be used.

Bulk dust sampling is conducted when there is a visible amount of dust deposited on surfaces to be sampled and the contribution of background beryllium in local soils (2 ppm) is to be considered in the classification of areas or facilities as beryllium-controlled or for release of equipment or items. For the classification of areas or facilities, it is necessary to develop a sampling strategy as defined within the facility characterization criteria (Appendix A, *Facility Characterization Process for Beryllium)*, that will determine if the beryllium in the dust collected from surfaces is distinguishable from the background beryllium in local soils. Other information, such as the ratio of beryllium to iron, copper or other metals, may also be of value in determining the sources of beryllium. However, this method cannot replace wipe sampling for surfaces that have been cleaned, such as in lunchrooms or on equipment and items that have already been cleaned of accumulated soils.

If bulk sampling of soils is necessary to determine the level of beryllium background in soils or to classify bulk waste, bulk sampling of soil will be conducted using Environmental Protection Agency-approved methods.

6.11.7 Monitoring and Analytical Methods

All beryllium personal monitoring conducted to meet this Program shall be overseen and/or managed by a qualified individual (Certified Industrial Hygienist or Project IH). All beryllium sampling will be conducted in accordance with applicable contractor policy or Industrial Hygiene Work Instructions. Sampling will be directed by the qualified individual.

The National Institute for Occupational Safety and Health (NIOSH) method 7300 or OSHA ID-125G are the methods generally used for personal air monitoring for Hanford worksites. Each method meets the limit of detection and accuracy specified in 10 CFR 850.24(e). Analyses of personal air monitoring samples shall be conducted by a laboratory that is accredited by the American Industrial Hygiene Association.

Surface wipe sampling is conducted by taking a pre-moistened towelette to wipe across the surface to be sampled (normally 100cm^2), the towelette is then placed inside a sample container and analyzed for beryllium. The sampling method is described in NIOSH method 9100 and OSHA ID-125G, with analysis of the wipes for beryllium analysis based on NIOSH method 7300. This method should be used for wipe sampling on surfaces that do not have sufficient dust for bulk sampling.

If another method is used, or alterations to the above-mentioned methods are necessary (such as dry wipe sampling in radiological areas), the deviations must be documented and approved by the Project IH. A protocol for conducting beryllium wipe sampling on radiologically contaminated surfaces may be developed by the Project IH and Project Radiological Engineer, as necessary.

There are two DOE recognized methods for surface dust sampling:

- A brush can be used to collect the dust for weighing and beryllium analysis based on NIOSH method 7300
- A battery-powered pump with a 37 mm cassette can be used as a vacuum to collect the surface dust. The collected dust is weighed and analyzed for beryllium based on NIOSH method 7300. This surface dust sampling method is based upon American Standards Testing Method ASTM D7144-05a

Bulk sampling results will be compared with background beryllium soil concentrations. The sampling strategy will be based on the protocol contained in Appendix A, *Facility Characterization Process for Beryllium.* Survey units will be established, as well as calculating the number of samples necessary in each survey unit, to determine whether detectable beryllium is distinguishable above background levels, based on 95/95 percent upper tolerance limit (UTL).

6.11.8 Notification of Monitoring Results

Requirements for documentation of field monitoring results are specified as follows:

- Monitored employees shall receive written notification of personal beryllium monitoring results within 10 working days after receipt of the sample analysis. The results may be posted in a location that is readily accessible to monitored employees, or by e-mail with a "read receipt," or by hand delivery
- Posted monitoring results shall not identify individual workers by name
- Monitoring results are reported without reduction of respiratory protection worn during the measured exposure
- All employees have the right to request beryllium monitoring data and additional explanation of the sampling results

If the monitoring results indicate that the worker exposure is at or above the Action Level, the following actions must be completed:

- Within 10 working days after receipt of the laboratory results, but not to exceed 14 calendar days, the employee shall receive written notification stating that the Action Level has been reached or exceeded. This will include remedial actions, if practicable,

that will be taken by the employer to reduce exposure. Notification to the employee must be made personally

- If the Action Level is exceeded without respiratory protection, or if above the protection factor of the respirator, the responsible employer shall notify the DOE Field Element and the SOMD. DOE shall initially be notified by phone upon receipt of sample analysis, followed by written notification within 10 working days. The SOMD shall also be notified as soon as possible but within 10 working days of the receipt of the sample analysis by the project
- If unexpected exposures occur, or an unexpected concentration level of beryllium occurs, the CBDPP Committee shall be made aware of the circumstance to ensure lessons learned and remedial actions are communicated to all effected groups

6.12 EXPOSURE REDUCTION AND MINIMIZATION

The worker exposure minimization goal for all Hanford Site projects is as low as practicable. However, if airborne exposure levels to beryllium meet or exceed the Action Level at any work site, a review of beryllium work practices and controls shall be conducted by the Project IH and appropriate modifications made to reduce exposures to as low as practicable. This review will include:

- Establishing project goals for reducing and minimizing exposure
- Determining actions necessary to achieve these goals, including the design and application of engineering controls
- The rationale and strategy for meeting these goals
- A means of tracking progress toward meeting these goals, or documentation verifying that the goals have been met
- Additional employee/surface/area monitoring for beryllium
- Additional regulated or controlled area controls
- Modifications to hygiene facilities and practices
- Additional respiratory protection or other PPE
- Additional warning signs and posting
- A review of any modifications with employees at site pre-job and safety meetings.

For work where either monitoring data or a negative exposure assessment has established that the Action Level will not be exceeded, the above elements will be implemented on a graded approach that is adequate to control the identified hazard. The applicable controls must be addressed in the BWP.

6.13 MANAGING BERYLLIUM WORKER EXPOSURE

This Program establishes an Action Level of 0.1 $\mu g/m^3$ (8-hour TWA). It is the expectation, however, that employee exposures to beryllium will be kept as low as practicable.

Each contractor will review ALL activities where breathing zone sample results exceed the Level of Quantification (LOQ) or Reporting Detection Limit (RDL). The review shall include, at a minimum, the work planning for the activity, controls established for the activity, the content of the BWP and feedback from the workers involved in the activity.

If the results of this review find that there was unexpected beryllium exposure, the review will be communicated to the CBDPP Committee. The Committee will use the information to improve worker protection.

6.14 MANAGING BERYLLIUM-AFFECTED WORKER EXPOSURE

A beryllium-affected worker requires a higher level of protection from beryllium exposure to prevent the transition from sensitization to disease, or further progression of the disease. The current consensus of beryllium experts in the medical field is that exposure to beryllium for these individuals should be maintained as low as possible to protect their health status from further decline. Therefore, it is the policy of DOE that beryllium-affected workers will not be assigned to perform work in a BCA or an area with measurable airborne beryllium that is at or exceeds .02 $\mu g/m^3$ (8 hour TWA). This worker protective measure will be accomplished as part of the hazard assessment conducted during the work planning process.

DOE expects that contractors, and their subcontractors at any level, who are covered by the scope of this CBDPP follow the process outlined in the remainder of this section to ensure that beryllium-affected workers are protected.

Sampling shall be performed for each beryllium-affected worker at the time the worker receives a diagnosis of Beryllium sensitization and/or Chronic Beryllium Disease. Periodic sampling shall also be performed in accordance with the *Sample Protocols for Beryllium-Affected Workers* (Appendix C) or as requested by the affected worker. Each beryllium-affected worker will be offered sampling to evaluate exposure (i.e. lapel sample unit). If the worker declines sampling, then air sampling will be conducted in the affected worker's principal work area(s). During preparations to conduct air sampling, the project IH shall discuss with the affected employee his or her concerns regarding surface contamination (0.2 $\mu g/100cm^2$) from a decontaminated or clean surface by wipe sampling or above background for bulk sampling. If the employee and the project IH identify potential sources of surface contamination, the project IH shall conduct additional surface sampling (wipe and/or bulk sampling). The results of this sampling will be communicated in writing to the employee, along with a copy of the original lab sample report, if requested.

If the sampling results show measurable levels of airborne beryllium at or exceeding .02 $\mu g/m^3$ (8 hour TWA), the contractor and the affected worker will discuss potential causes for this result and determine the appropriate actions. These actions shall include, but are not limited to the following:

- Relocate temporarily the affected worker away from the potential beryllium exposure
- Determine through discussion with the affected worker what activities occurred during sampling
- Collect additional airborne and surface samples during similar work activities

- Contact the analytical lab to determine whether reanalysis of the sample is possible
- Review the work planning documents to ensure that work was performed as planned
- Review the hazard assessment to verify potential exposure sources were identified
- Notify the SOMD

The affected worker is free to discuss his/her exposure based on the sampling results with the SOMD. The purpose of the meeting will be to clarify the medical risk of the exposure event to the affected worker.

It should be noted here that DOE has provided contractual direction to the Hanford prime contractors expressing DOE's expectation that contractors will be able to identify jobs for beryllium-affected workers that shall not involve a decrease in wages or benefits and are not exposed at or above the Action Level.

6.15 BERYLLIUM-REGULATED AREAS (BRA)

Beryllium-regulated areas shall be demarcated by the responsible employer when the airborne concentration of beryllium exceeds, or can reasonably be expected to exceed, the Action Level.

Contractors must:

- Establish regulated areas for those work locations
- In accordance with Section 6.28 of this Program, demarcate regulated areas from the rest of the workplace in a manner that adequately alerts workers to the boundaries of such areas
- Limit access to regulated areas to authorized persons. Specific qualifications to be an authorized person are defined in the Beryllium Work Permit
- Keep records of all individuals who enter regulated areas. These records must include the name, date, time in and time out, and work activity

6.16 BERYLLIUM-CONTROLLED AREAS (BCA)

A Beryllium-Controlled Area (BCA) may be established for areas where the level of removable surface beryllium exceeds background, by bulk sampling or exceeds 0.2 $\mu g/100cm^2$ from a decontaminated or clean surface by wipe sampling. Based on the Hazard Assessment, respiratory protection is not required in a BCA during non-intrusive and non-dust producing activities. However, respiratory protection may be required, per the Project IH, based on the specific conditions and tasks to be performed. BCAs can also be used for storage of beryllium-contaminated material that is unwrapped, unlabeled or otherwise uncontrolled. A warning barrier (e.g., a rope or plastic ribbon) shall be erected at all boundaries of a BCA not otherwise marked by some other barrier. Signs will be posted in accordance with Section 6.28 of this Program.

When intrusive and/or dust-producing activities are performed, only beryllium workers may enter the BCA. Once a negative exposure assessment has been conducted on the activities within the BCA, the initial control requirements may be modified by the Project IH. (Release of material from a BCA to the public is discussed in Section 6.22.) Required PPE, level of IH and/or IHT support, required postings and entry/exit requirements will be specified by the project

IH in the appropriate Beryllium Work Permit. Monitoring will be conducted in accordance with Section 6.11 of this Program.

A BCA does not have to be established if the beryllium surface contamination is restricted to a piece of equipment, waste material or an item (e.g., a light fixture): these items can be labeled in accordance with Section 6.29 of this Program.

6.17 ENGINEERING CONTROLS

Engineering controls shall be designed into work activity whenever appropriate to minimize exposures, even when exposures are predicted to be below the Action Level. Worker PPE will only be used after first considering engineering controls, administrative controls, and regulatory requirements. Engineering controls include but are not limited to the following:

- HEPA filtered air movers that re-circulate air to remove airborne beryllium inside a work area
- Application of critical barriers to isolate sources of airborne beryllium
- Use of negative air pressure to contain airborne beryllium
- Decontamination of surfaces prior to disturbing structural elements of a contaminated building
- Use of wetting agents during demolition of a contaminated building
- Intact removal of contaminated ventilation equipment prior to demolition
- Use powered shears to reduce the size of items during demolition rather than cutting with torches

Fixing beryllium in place using sprayed-on fixatives is an alternative to decontamination. Spraying on fixatives allows handling without the potential for re-suspension of beryllium into the air. Fixatives can be permanent or temporary. Fixed beryllium, however, can still be hazardous if the covering is penetrated (i.e. drilling, grinding, welding), and workers are not aware that beryllium is present. Fixed beryllium surfaces that are released from controlled areas must be labeled in accordance with Section 6.29. Removal of the contamination is required before the warning labels may be removed.

6.18 HYGIENE FACILITIES AND PRACTICES

The following are prohibited in a BRA or BCA:

- Consumption or use of beverages, food, gum, or tobacco
- Application of cosmetics
- Open or uncovered wounds

A separate, clean area (change room) shall be provided for beryllium workers required to work in a BRA, or as required by the project IH for work in a BCA. This area shall provide workers with some method for storage of personal clothing. Storage of PPE in this area shall be adequate to ensure that it is clean and maintained in usable condition. The change room shall be cleaned on a routine basis and wipe sampling shall be conducted at least every 30 days while activity is being performed.

A PPE removal area shall be established at the exit of beryllium-regulated or controlled areas prior to performing work in the BCA or BRA. PPE removal areas are not required to be maintained for unused BRAs and BCAs. The PPE removal area may be under negative air pressure, or its location will be selected to prevent dispersion of beryllium into clean areas, while providing employees with adequate protection from airborne or skin contact with beryllium. PPE shall be removed prior to exiting the work area and prior to entering a clean area. Periodic wipe sampling shall be conducted on the clean side of the step-off pad of the PPE removal area at least every 30 days while activity is being performed to ensure that beryllium is not entering this area from the work site.

Beryllium workers performing work in a BRA or BCA shall be provided with a lunchroom facility that is readily accessible, and is located away from the work site and free (less than 0.2 $\mu g/100cm^2$ or background) from beryllium contamination or airborne beryllium. Beryllium workers shall not enter the lunchroom facility with potentially contaminated protective clothing and if full body PPE has been worn, without washing their faces and hands (a shower is required for workers in BRAs at the end of their shifts). Equipment shall not be moved from a beryllium-regulated, or controlled area to the lunchroom facility without surveys, decontamination, or other required controls. The lunchroom shall be cleaned on a routine basis and periodic wipe sampling shall be conducted at least every 30 days while activity is being performed to ensure that the room, including tables for eating, is free (less than 0.2 $\mu g/100cm^2$ or background) of beryllium. If beryllium is detected at greater than 0.2 $\mu g/100cm^2$, or greater than background in settled dust, the lunchroom will be taken out of service, posted appropriately, decontaminated, and a review of contamination control procedures shall be conducted.

Employees who have worked in a BRA must shower at the end of the work shift. Showers may be installed between the regulated area and the change room, or may be located at another location. The use of showers not located adjacent to the work site must be approved by the Project IH. Lunchrooms, showers, change rooms/areas, restrooms, and hand-washing facilities must comply with the requirements of 29 CFR 1910.141.

6.19 RESPIRATORY PROTECTION

Use, maintenance, and selection of respirators for protection of the workers from airborne beryllium will be in accordance with the applicable contractor respiratory protection procedures. Respiratory protection will be required for any potential airborne exposure at or above the Action Level. Respiratory protection may be required by the Project IH for lower levels of exposure based on the potential for increased worker exposure concentrations and specific work task. The respiratory protection required for a specific work task shall be specified in the applicable BWP. Respiratory protection may be provided to an employee requesting such respirator when a respirator is not required if the use of the respirator does not produce additional safety hazards.

6.20 PERSONAL PROTECTIVE EQUIPMENT (PPE)

10 CFR 850.29 requires the use of protective clothing where particulate forms of beryllium may contact worker's skin, enter openings in workers' skin or contact workers' eyes, including where airborne levels of beryllium meet or exceed the Action Level or where surface levels exceed 3 $\mu g/100cm^2$. Any special guidance for donning/doffing of PPE for operations in beryllium-regulated or controlled areas will be documented in the BWP. The Project IH selects the actual

PPE to be used and specifies that PPE in the applicable BWP and/or posts PPE directions at the worksite. Government furnished modesty clothing and/or coveralls shall be worn under full body anti-contamination clothing in BRAs (this clothing shall not be taken home). If the disposable outer garment maintains its integrity, the undergarments will be considered to have no contamination. If the outer garment rips, tears, or is otherwise in question, the garments will be thrown away as beryllium waste or held pending IH sample results. Any beryllium worker, however can request protective clothing for work in a BCA if the use of the PPE does not produce additional safety hazards.

Beryllium-contaminated PPE and clothing must be handled in a manner to prevent the beryllium from becoming airborne: it cannot be shaken, air-cleaned, or otherwise disturbed prior to bagging. Disposable PPE will be bagged, labeled, and disposed as waste in accordance with Section 6.23 of this Program. Respirator face pieces sent to the laundry facility will be placed in plastic bags and labeled in accordance with Section 6.29 of this Program. Prior to shipment, the laundry facility will be notified by the Project that beryllium-contaminated PPE is being sent.

6.21 HOUSEKEEPING

10 CFR 850.30 requires cleaning of surfaces in beryllium operational areas that exceed a removable beryllium level of 3.0 $\mu g/100cm^2$ during non-operational periods. Operational areas are defined in 10 CFR 850 as: "An area where workers are routinely in the presence of beryllium as part of their work activity," such as a machine shop, blasting booth or welding booth. Legacy beryllium contamination in facilities does not constitute an operational area. Beryllium-contaminated surfaces in these facilities will be controlled to the extent required to prevent airborne beryllium levels in employee work areas from exceeding the Action Level, to prevent the spread of beryllium contamination, or to prevent airborne beryllium from escaping the building during demolition.

Cleaning of equipment and materials will be conducted for release of materials from BRAs and BCAs. Such cleaning will be conducted by using a wet method, HEPA vacuuming, tacky cloth or other method that will minimize the generation of airborne beryllium. All waste from cleaning operations will be bagged, labeled, and disposed as beryllium-contaminated waste. The HEPA vacuums used for beryllium cleanup will be labeled as internally contaminated in accordance with Section 6.29. Additional labeling may be required for radiological or other contaminants.

6.22 RELEASE CRITERIA

The Project Manager (or Area Manager) shall notify the appropriate DOE Field Element of the intent to release contaminated government equipment at least 30 calendar days prior to the release date. This includes items from building locations with known beryllium contamination going to the general public or for use in a non-beryllium area within the Hanford Site. Notification is not required for transfer of items for laundering, storage of wrapped/labeled material, transfer of samples or sampling pumps, or waste transportation/disposal operations.

If releasing beryllium-contaminated equipment or items to the public, the Project IH shall prepare a written release plan. This plan shall identify the extent of contamination, decontamination, and the sampling plan assuring that the surfaces of the equipment or items are less than 0.2 $\mu g/100cm^2$, or the background level, whichever is greater. The equipment or items will be labeled in accordance with Section 6.29 of this Program, and release will be conditional

upon the recipient's written plan to adequately control the material in order to prevent hazards to workers, the public, or the environment. All written release plans for release of beryllium-contaminated equipment or items to the public shall be submitted to DOE for review and approval prior to the planned release.

When subcontractors are responsible for government equipment that is contaminated with beryllium, and they plan to release such equipment or items to the general public or for use in a non-beryllium area within the Hanford Site, the subcontractor shall notify the contractor at least 45 calendar days prior to the release date. The contractor shall forward the notification to DOE at least 30 calendar days prior to the release date.

Contaminated equipment or items may be released for use in another BRA or BCA, provided the removable surface beryllium contamination does not exceed 3 $\mu g/100cm^2$. For release to a non-beryllium-controlled area, or if the item is not wrapped or labeled, the removable surface beryllium contamination must be less than 0.2 $\mu g/100cm^2$.

Items or equipment can be determined to be uncontaminated and released without requirements for labeling or wipe sampling, if evaluated to ensure that there is not potential for internal beryllium contamination, and accessible surfaces have not come in contact with beryllium contamination. However, all items and equipment exiting regulated or controlled areas will be cleaned by washing, wet wiping, or HEPA vacuuming to ensure that they are cleaned to ensure that any beryllium contamination is at the lowest level possible. (Wet cleaning is not required for samples inside of sample containers or sample pumps that are bagged out of the area.) Wrapped items brought into the area can be released after cleaning (wet wiping) the outer layer of plastic, then removing the outer layer of plastic at the exit point. Respirators used during beryllium activities will be wet wiped prior to removal, labeled and bagged out of the area or disposed. Wipe sampling shall be periodically used to determine the effectiveness of these controls on decontaminated items, equipment and respirators. Any indication that such controls are inadequate will require an evaluation by the Project IH and implementation of additional controls.

Equipment or items can be held in a BRA or BCA pending sample analysis to confirm items are within applicable release criteria. Items may also be wrapped, per Project IH instructions, for transferring from one beryllium location to another. Additional information for release of items or equipment consistent with this Program can be specified by the Project IH in the applicable BWP.

6.23 WASTE DISPOSAL

Waste material removed from a beryllium-controlled or beryllium-regulated area that is not placed directly into Environmental Restoration Disposal Facility (ERDF) waste containers, drums, or other sealed containers for transport shall be wrapped in at least one layer of 6 mil plastic. Wrapped or otherwise containerized waste shall be labeled in accordance with Section 6.29 of this Program. Bulk debris with beryllium surface contamination, such as broken concrete, lumber or dry wall, will be fixed with paint, soil cement, or other fixative decontaminated, wrapped, wetted or otherwise reduced to control removable beryllium surface contamination for disposal at the Hanford Site's ERDF or other appropriate disposal sites. Soil with greater than 0.1 percent by weight of beryllium would also be considered beryllium waste. Such waste shall be transported to ERDF in an ERDF-approved container. Disposal of

beryllium-contaminated waste at ERDF shall be conducted in a manner that does not release airborne beryllium above the Action Level, but disposal in a sealed container is not required by 10 CFR 850. ERDF containers used to transport beryllium waste shall be labeled and controlled for use only with beryllium waste until the container is released by wipe sampling.

6.24 BERYLLIUM EMERGENCIES

The potential hazards of a beryllium release are included in the applicable site emergency action plan in accordance with the Hanford Site Emergency Management Program Plan. A spill of contaminated waste during transportation is addressed in Hanford Site emergency planning. The responsible employer must comply with 29 CFR 1910.120 (l) for handling beryllium emergencies related to decontamination and decommissioning operations. The responsible employer must comply with 29 CFR 1910.120 (q) for handling beryllium emergencies related to all other operations.

6.25 MEDICAL SURVEILLANCE

Beryllium medical surveillance on the Hanford Site will be provided by the SOMD in accordance with the AdvanceMed Hanford (AMH) Beryllium Medical Support Plan (Attachment 4) or an equivalent plan. This plan will be reviewed with AMH periodically to ensure that medical services meet the requirements of this Program and 10 CFR 850.34. It is the contractors' responsibility to identify employees to the SOMD who are beryllium workers. Additionally, it is the contractors' responsibility to communicate to the workforce the existence of the beryllium medical surveillance program. The contractors must also inform affected workers of the right to additional medical opinions if there is a disagreement between the employee and the SOMD concerning medical care.

Contractors will identify beryllium workers through the Employee Job Task Analysis (EJTA) system, which is administered by AMH. Beryllium workers are identified during the hazards analysis phase of project planning, or from the review of IH monitoring data. The employee's Supervisor reviews the classification with the employee and has the EJTA reviewed and approved by the project IH. The EJTA is then submitted to the SOMD, and the employee is scheduled for an initial beryllium medical exam. The contractor will revise the EJTA if any worker is removed from beryllium worker status.

An employee cannot be designated as a beryllium worker until the individual's medical results have been completed and received by the worker and the contractor, indicating that he/she is medically cleared for work in beryllium locations and that the employee has received the appropriate training.

Current employees whose previous work at a DOE Site (including Hanford) may have resulted in exposure to beryllium can participate in the past exposure program by identifying themselves to AMH through the Hanford Site beryllium employee questionnaire. This questionnaire is available at www.hanford.gov/safety/beryllium/index.htm. The questionnaire is filled out by the employee, sent to AMH for evaluation of past occupational exposure to beryllium and for scheduling of the employee for medical evaluation. Contractors shall inform all workers of the program and the opportunity to self-identify past exposures. See the above Web site for more information on this program. If workers do not have Internet access, contractors will provide hard copies upon request.

Copies of all personal monitoring data reports are transmitted to the SOMD and are included in the worker's medical folder. These reports include a description of the work being conducted, respiratory protection worn, and monitoring results. In addition, periodic reports shall be made by the contractors to the SOMD summarizing the current or planned use of PPE, current and planned beryllium activities, baseline data on beryllium-controlled facilities, and overall trends in monitoring data and hazards assessment. Reporting of this data provides the SOMD with adequate information to link workplace conditions and health outcomes identified during periodic medical surveillance of workers.

Workers who exhibit signs or symptoms of beryllium exposure will be identified through routine medical surveillance or by self-identification. Incidences of chronic beryllium disease shall be reported by the responsible contractor on the applicable Occupational Safety and Health Administration reporting form. Contractors shall maintain current identification of all of the above classifications of workers, as well as workers that are receiving medical removal protection benefits.

Persons identified as being beryllium-affected have the option of obtaining further medical evaluations. During medical evaluation, AMH shall inform workers of their opportunity for multiple physician reviews. Expenses for this process are reimbursable.

6.26 MEDICAL REMOVAL

The Site Occupational Medical Director (SOMD) shall provide a written recommendation when it is medically appropriate to remove the worker from beryllium exposure. The recommendation of the SOMD must be based on one or more positive Be-LPT results, diagnosis of chronic beryllium disease, an examining physician's recommendation, or any other symptoms/signs/testing that the SOMD deems medically appropriate to warrant removing the worker.

6.26.1 Worker Consultation before Temporary or Permanent Medical Removal

When the SOMD determines that a beryllium-affected worker should be temporarily or permanently removed from exposure to beryllium, the SOMD must advise the beryllium-affected worker of the determination that medical removal is necessary to protect the worker's health. The SOMD shall provide the beryllium-affected worker with a copy of 10 CFR 850 and its preamble and any other information the SOMD deems necessary regarding the risks of continued exposure to beryllium and the benefits of removal.

The beryllium-affected worker will have the opportunity to obtain answers to any questions concerning medical removal. The SOMD shall obtain the beryllium-affected worker's signature acknowledging that the worker has been advised to accept medical removal from beryllium exposure as provided in this section, and has been provided with the information specified in this paragraph on the benefits of removal and the risks of continued exposure to beryllium.

6.26.2 Temporary Removal Pending Final Medical Determination

Contractors will offer a beryllium-affected worker temporary medical removal from exposure to beryllium on each occasion that the SOMD recommends, in a written determination, that the worker should be temporarily removed from such exposure pending a final medical

determination on whether the worker should be removed permanently. A final medical determination can be the outcome of the multiple physicians review process, or the alternate medical determination process provided for in paragraphs (c) and (d) of 10 CFR 850.34.

When a beryllium-affected worker is temporarily removed from beryllium exposure pursuant to 10 CFR 850.35(1), the contractor 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 in accordance with Section 6.14 of this Program.

The contractor will maintain the beryllium-affected worker's total normal earnings, seniority, and other worker rights and benefits as if the worker had not been removed. When there is no such job available, the contractor will provide the beryllium-affected worker the medical removal protection benefits specified in paragraph (b)(2) of 10 CFR850.35 for one year, or until a job becomes available, whichever comes first.

6.26.3 Permanent Medical Removal

When a beryllium-affected worker is removed permanently from beryllium exposure, based on the SOMD's recommendation that is pursuant to 10 CFR 850.35(a), the contractor shall provide medical removal protection as required in 10 CFR 850.35(b).

6.26.4 Return to Work after Medical Removal

The contractor will not return a beryllium-affected worker who has been permanently removed to the worker's former job status unless the SOMD first determines, in a written determination, that continued medical removal is no longer necessary to protect the worker's health. When the SOMD determines that continued exposure to beryllium will not pose an increased risk to the beryllium-affected worker's health, and medical removal is an inappropriate remedy in the circumstances, then the SOMD must fully discuss these matters with the worker. Following the discussion between the SOMD and the beryllium-affected worker, the SOMD, in a written determination, may authorize the contractor to return the worker to his or her former job status. Thereafter, the returned beryllium-affected worker must continue to be provided with medical surveillance under 10 CFR 850.34.

6.26.5 Medical Removal Protection Benefits

If or when a beryllium-affected worker has been permanently removed from beryllium exposure, the contractor will provide the worker, if necessary, the opportunity to transfer to another position, which is available, or later becomes available, for which the beryllium-affected 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 of this CBDPP. When the beryllium-affected worker cannot be transferred to a comparable job where beryllium exposures are at or below the DOE approved CBDPP Action Level, then the contractor will provide a maximum of two years of permanent medical removal benefits. Based on DOE Interpretation D04-12-002 and Richland Operations Office letter 07-AMSE-0011, if the SOMD or a multiple physician review determines that a beryllium-affected worker is too sick to work, due to chronic beryllium disease, or a consequential illness related to chronic beryllium disease, the beryllium-affected worker shall be entitled to Permanent Medical Removal Benefits pursuant to 10 CFR 850.35 (b). For up to two years, the responsible employer must maintain the removed

worker's total normal earnings, seniority, and other worker rights and benefits as though the worker had not been removed.

It is DOE's expectation that contractors will be able to identify jobs for beryllium-affected workers that shall not involve a decrease in wages or benefits and are not exposed at or above the Action Level.

When required to provide medical removal protection benefits, the contractor will maintain the removed worker's total normal earnings, seniority, and other rights and benefits including overtime, as though the worker had not been removed.

When a removed beryllium-affected worker files a claim for workers' compensation payments for a beryllium-related disability, the contractor will continue to provide medical removal protection benefits pending disposition of the claim. The contractor will receive no credit for the worker's compensation payments received by the worker for treatment-related expenses. However, the contractor's obligation to provide medical removal protection benefits to a removed beryllium-affected worker is reduced to the extent that the worker receives compensation for earnings lost during the period of removal, either from a publicly funded or employer funded compensation program, or from employment with another employer that is made possible by virtue of the worker's removal.

For the purposes of 10 CFR 850.35, the requirement that the contractor provides medical removal protection benefits is not intended to expand upon, restrict, or change any rights to a specific job classification or position under the terms of an applicable collective bargaining agreement.

The contractor may condition the provision of the medical removal protection benefits upon the beryllium-affected worker's participation in medical surveillance provided in accordance with 10 CFR 850.34.

6.26.6 Total Normal Compensation Calculations

When a beryllium-affected worker is placed on Permanent Medical Removal and the responsible employer will be paying Permanent Medical Removal Benefits, total normal compensation includes regular pay, overtime, bonuses, and any other monetary upgrades. Total normal compensation will be calculated for a two-year time frame preceding acceptance of Permanent Medical Removal Benefits.

Overtime compensation shall be based upon the past two years of actual overtime worked by the affected worker, or the average of the affected worker's work group, whichever is greater. The two-year average will be calculated from the date that the affected worker is medically removed by the SOMD.

In cases where the medically removed worker had any upgrades in hourly pay, those upgrade totals shall also be calculated for a two-year time period, preceding the date of removal, and added to the individual's salary. Upgrades are considered part of the worker's total normal compensation.

In cases where the medically removed worker received bonuses for work performed, those bonuses shall also be calculated for the two-year time period preceding the date of removal and added to the individual's salary. This type of compensation will be prevalent in affected workers

who are non-bargaining or exempt and who received bonuses as part of total normal compensation.

6.27 TRAINING AND COUNSELING

6.27.1 Training

Hanford Site contractors shall ensure all employees receive the appropriate level of training on the hazards of beryllium. The level of training shall be based on the workers' current and past beryllium activities.

All employees will receive information on the general hazards of exposure to beryllium, appropriate controls, and medical information on chronic beryllium disease. This information is included in the Hanford General Employee Training (HGET), which will be administered to all employees prior to beginning work at Hanford and thereafter on an annual basis. Information will also be provided to employees through letters, safety meetings, and internal publications.

Beryllium-associated workers will be provided with formal training on beryllium work hazards upon initial hire, and every two years, or if the employer has reason to believe that the worker lacks the proficiency, knowledge, or understanding needed to work safely with beryllium. The level of training required will be based upon the employee's current job assignment. Beryllium-associated workers include workers who do not currently have potential exposure to beryllium but who have potentially been exposed to beryllium in the past. Hanford Site contractors shall ensure that they have a method for identifying workers who have had past beryllium exposure. Formal training for beryllium-associated workers shall meet the requirements of 10 CFR 850-37, Section (b). As a minimum, these requirements shall:

- Be in accordance with 29 CFR 1910.1200, Hazard Communication
- Include the contents of the CBDPP
- Include potential health risks to the family members and others who may come in contact with beryllium on beryllium workers, the clothing or other personal items of a beryllium worker as the result of a beryllium control failure at a DOE facility

Consistent training is critical to successful implementation of the Program, therefore, it is recommended that training be provided by the Volpentest HAMMER Training and Education Center ("HAMMER"). Contractors may provide their own training. The CBDPP Committee reviews the training for equivalency to the training provided by HAMMER.

Beryllium associated workers' training will include a hands-on element. The hands-on element may be a part of other training if the Systematic Approach to Training (SAT) documents the appropriateness and maintains applicability.

Beryllium workers shall receive additional training on any revisions to the CBDPP. Changes to the approved training programs will be submitted to the CBDPP Committee for review. The Committee will review the changes, evaluate the impacts to workers, and make recommendations as to any necessary communications.

6.27.2 Counseling

Counseling will be provided to beryllium-affected workers by both AMH, and the contractor. Counseling from AMH should be at the time of confirmed diagnosis of sensitization, CBD, or medical removal.

AMH shall provide counseling to beryllium-affected workers on the following subjects:

- Medical surveillance program
- Why have they become Beryllium-affected?
  - What is going on in the body?
- Medical/Diagnosis Process/Treatment
  - Percent of people that go from BeS to CBD
- Medical and Psychological counseling available
  - In house
  - Outside
- Risk of continual beryllium exposure
  - Explain the $0.02\mu g/m^3$
  - The SOMD opinion letter to the contractor

Within 10 working days after receiving notification from the SOMD that an individual has been diagnosed with sensitivity or CBD, not exceeding 14 calendar days, contractors shall provide counseling to beryllium-affected workers on the following subjects:

- Career counseling
- Procedures limiting beryllium-affected worker exposure to beryllium. Explain the CBDPP sections pertaining to managing beryllium-affected workers
- Medical removal protection
- Medical removal protection benefits
- Administration procedures and worker rights. Applicable worker's compensation laws and regulations
- Provide point-of-contact for information pertaining to setting up travel, pay, per diem, and explain travel companion for diagnosis
- Provide to the worker contacts in addition to the contractor if they choose to discuss further
- Explain long term and short term and Social Security disability benefits
- CCSI requirements

6.28 POSTINGS

6.28.1 Posting of Beryllium Areas

The determination of the appropriate posting for areas where beryllium hazards have been identified shall be the responsibility of the IH. The Facility Manager is responsible for placing the postings. Required Signs/Postings designating beryllium hazards are presented in Attachment 5, *Warning Signs & Labels.*

Post and attach signs:

- At each access/entry point so that they are clearly visible
- To ropes/chains and/or posts as necessary to control access
- In a manner to minimize inadvertent removal of the sign by environmental conditions
- In a manner so that they remain visible if changes in configuration should occur, such as opening/closing doors

For outdoor areas, post signs at approximate distances of 40 feet apart on each side or avenue of approach to an area, but in no case greater than 100 feet apart. To prevent inadvertent access, in all cases, spacing between signs should ensure that the area is clearly and conspicuously posted, no matter what the avenue of approach.

6.28.2 Posting of Beryllium Facilities

Buildings/facilities that have not been determined to be Beryllium-Clean Facilities shall be posted as Beryllium-Controlled Facilities, and access shall be controlled so individuals will not engage in work activities that may present health hazards. Such scenarios may occur due to property transfers or facilities being vacant for long periods without having assessments conducted. Every entrance into a Beryllium-Controlled Facility shall be posted.

6.29 LABELING OF MATERIAL AND SURFACES

Items removed from a BRA or BCA without decontamination verification shall be labeled per Attachment 5, D, *Warning Signs & Labels.*

Potential Beryllium Contamination Caution labels will be used to identify equipment or items that have potential contamination. This includes items such as respirators that are being transferred to contracted laundry facilities located off-site. Beryllium samples that are controlled under a chain-of-custody do not need to be labeled.

Potentially contaminated systems, such as piping, ductwork, tanks, shall be labeled. Beryllium-containing or contaminated systems that are removed from a beryllium-regulated or beryllium-controlled area shall be labeled according to the requirements of the Beryllium Work Permit. Items inside a beryllium-regulated or beryllium-controlled area do not necessarily require labels.

The responsible contractor must affix warning labels to all containers of beryllium (including waste shipping containers used to transport beryllium waste), beryllium compounds, or beryllium-contaminated clothing, equipment, waste, scrap, or debris. See Attachment 5, *Warning Signs & Labels.*

6.30 RECORD KEEPING AND USE OF INFORMATION

The responsible contractor must establish and maintain accurate records of all beryllium inventory information, hazard assessments, exposure measurements, and exposure controls. The recordkeeping system developed by the contractor must be compliant with the contractor requirements of 10 CFR 850.39 and Attachment 6, *DOE Letter of Direction of Aug. 11, 2006, CONTRACT NO. DE-ACO6-RL13200 – REGISTRY OF BERYLLIUM-ASSOCIATED WORKERS.* The site occupational medical contractor is responsible for establishing and maintaining medical surveillance records.

6.31 PERFORMANCE FEEDBACK

Responsible contractors must conduct periodic analyses and assessments of the effectiveness of the Program.

- Monitoring activities
- Hazard analysis
- Medical surveillance
- Exposure reduction and minimization
- Occurrence reporting data

NOTE: These elements may be evaluated generically rather than specifically for beryllium.

Additional self-assessments, and internally conducted surveillances, will be conducted in accordance with the schedule established by each responsible contractor. The results of assessment and surveillance reports will be communicated to line managers, planners, worker protection staff, workers, and other applicable organizations. Self-assessments and surveillance reports that identify issues with the language/implementation of the Hanford Site CBDPP will be forwarded to the CBDPP Committee.

7.0 REFERENCES

10 CFR 850, "Chronic Beryllium Disease Prevention Program," *Code of Federal Regulations.*

10 CFR 851, "Worker Safety and Health Program," *Code of Federal Regulations.*

29 CFR 1910, "Occupational Safety and Health Standards," *Code of Federal Regulations.*

DOE/RL-92-24, 2001, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes,* U.S. Department of Energy, Richland, Washington.

AIHA, 2006, *A Strategy for Assessing and Managing Occupational Exposures, Third Edition,* American Industrial Hygiene Association, Fairfax, Virginia.

ASTM D7144-05a, 2005, "Standard Practice for Collecting Surface Dust by Micro-vacuum Sampling for Subsequent Metals Determination," American Standard Testing Methods, Committee D22, West Conshohocken, Pennsylvania.

ANSI Z535.1, 2006, *Safety Color Code*, American National Standards Institute, New York, New York.

RRD 005: CONTRACT NO. DE-AC06-96RL13200 – RICHLAND REQUIREMENTS DOCUMENT (RRD) 005, REVISION 1, WORKER SAFETY, July 27, 2007, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

APPENDIX A: FACILITY CHARACTERIZATION PROCESS FOR BERYLLIUM

Introduction

In 1999, the United States Department of Energy (DOE) promulgated the Chronic Beryllium Disease Prevention Program and published it as 10 CFR 850 (the beryllium rule). While this standard devotes its efforts to inhalation hazards and controls, housekeeping and equipment/material release criteria were developed as well. In the case of releasing equipment and materials from a beryllium area, 10 CFR 850 has designated beryllium surface contamination levels must be less than or equal to 3 $\mu g/100cm^2$ for release to other DOE beryllium facilities. If equipment or items are being transferred to a non-beryllium or public location (regardless of beryllium use), surface contamination must be less than or equal to 0.2 $\mu g/100cm^2$ or less than or equal to the concentration level of beryllium in soil at the point of release.

In addition, the beryllium rule requires a hazards assessment of DOE Facilities that have a potential for beryllium air exposures at or above the Action Level. Part of this hazard assessment is a characterization study to evaluate the degree of beryllium surface contamination, if warranted after a review of the facilities' historical probability for contamination.

Specifically, 10 CFR 850.31 states:

> The removable contamination level of equipment or item surfaces does not exceed the higher of 0.2 $\mu g/100cm^2$ or the concentration level of beryllium in soil at the point of release, whichever is greater. (DOE, 1999)

While it was past practice to use the release criterion of 0.2 $\mu g/100cm^2$ as the de-minimus level of beryllium in order to declare characterized buildings and facilities as clean, there were many instances of false positives. This was because, in an attempt to find beryllium contamination, if it existed, drove the samples to be taken from those areas with large amounts of accumulated background materials (soils, dust, dirt, etc). This accumulated background material was so abundant, that the typical surface wipe sample would result in a false positive because of the overwhelming amount of material picked-up on the wipe.

Beryllium is ubiquitous. Elemental beryllium is a native constituent in soils. Collection of this background beryllium on a wipe sample caused the erroneous conclusion that there was beryllium contamination, when compared to the 0.2 $\mu g/100cm^2$ release criterion.

As a result of such "false positives," other sampling methodologies were explored so that background beryllium would not influence the detection of anthropogenic (man-made) beryllium contamination, and therefore could be used to provide a consistent approach for building characterization.

Therefore, a sampling methodology for bulk sampling was developed. Approval to use bulk sampling as a means of characterizing buildings was given, in DOE Occupational Safety and Health Standards Response Line, Response D06-08-001.

Hanford Site Background Established Level

The United States Department of Energy conducted a study of metals in the soils at the Hanford Site, publishing the data in January 2001, as DOE/RL-92-24, Rev. 4, Vol. 1 of 2. The final statement found in the summary of this study is the following, "These Site-wide soil background data are recommended for use in all environmental restoration and remediation activities on the Hanford Site because the data provide a consistent, technically credible, and efficient basis for identifying and evaluating soil contamination." The study presented data that, when performing a 95 percent upper tolerance limit ($UTL_{95\%}$), resulted in a beryllium soil concentration of 1.81 micrograms of beryllium to one gram of soil (µg/gm). Therefore, it can be said that 95 percent of the soils within the Hanford Site will have a beryllium soil concentration of 1.81 µg/gm or less.

In DOE/RL Memorandum 00-ESD-116, the background beryllium level in soil was established as 2.0 µg/gm. In conducting calculations requiring the $UTL_{95\%}$, 1.81 µg/gm has been used. 2.0 µg/gm should be used when determining whether bulk samples are at or below the background level for soil at the Hanford Site.

Multi-Agency Radiation Surveys and Site Investigation Manual (MARSSIM)

While the $UTL_{95\%}$ beryllium soil concentration has been established, an acceptable sampling method must be instituted that, once performed, will result in an industry-accepted confidence level for which a conclusion (regarding whether a specific facility/equipment/material is within beryllium background levels) may be ascertained.

Through the use of the Multi-Agency Radiation Surveys and Site Investigation Manual (MARSSIM), such a strategy can be developed. MARSSIM is collaborative effort over a four-year period, by a multi-agency workgroup consisting of The Departments of Defense and Energy, the Environmental Protection Agency, and the Nuclear Regulatory Commission as the primary developers. This manual documents a detailed guidance for planning, implementing, and evaluating environmental and facility radiological surveys conducted to demonstrate compliance with a dose-based or risk-based regulation.

While the MARSSIM manual is designed to investigate and assess radiological contamination, the technical foundation, fundamental concepts and statistical analysis can be applied to other fields of investigation, in this case industrial hygiene.

A main function of MARSSIM is to divide a facility into smaller units, referred to as survey units. Depending on the history (with respect to beryllium use) survey units are categorized into classes: each class with a corresponding suggested size.

Classification	Suggested Area
Class 1 Structure	Up to 100 m^2 floor area
Class 1 Land Area	Up to 2000 m^2
Class 2 Structure	From 100 to 1000 m^2
Class 2 Land Area	From 2000 to 10,000 m^2
Class 3 Structure	No limit
Class 3 Land Area	No limit

Class 1: Areas that have, or had prior to remediation, a potential for contamination.

Class 2: Areas that have, or had prior to remediation, a potential for contamination, but not to exceed the UTL.

Class 3: Any impacted areas that are not expected to contain any residual contamination, or expected to contain small fractions of the contaminant (i.e. beryllium), based on operating history and previous surveys (MARSSIM, 2000).

According to MARSSIM, the actual survey unit size is only a suggestion, and therefore, users may develop their own survey unit size to fit their specific needs or requirements (MARSSIM, 2000). Smaller survey units may be used if beryllium contamination is suspected to be localized to certain areas of the facility.

Determining the Number of Samples for Each Survey Unit

Once the facility has been divided into appropriate survey units, the number of samples for each survey unit needs to be calculated. This is determined by the following:

$$N = (Z_{1-\alpha} + Z_{1-\beta})^2 / [3(Pr-0.5)^2] \qquad \text{Eqtn 2 (MARSSIM, 2000)}$$

Where $Z_{1-\alpha} + Z_{1-\beta}$ are type I and II probability errors, and Pr is the probability that a measurement within the survey unit may be within the grey region. The grey region is established as the range between the background average beryllium-soil concentration and the $UTL_{95\%}$.

Using data from the previously cited DOE soil metals study, DOE/RL-92-24, the average beryllium soil concentration is 1.05 µg/gm for the Hanford Site. The $UTL_{95\%}$ is established as 1.81 µg/gm. These values are then used to calculate the relative shift, which MARSSIM describes as:

$$(DCGL - LBGR)/\sigma$$

Where DCGL is the Derived Concentration Guideline Level (in this specific case is the UTL), LBGR is the Lower Bound of the Grey Region (the average beryllium soil concentration), and σ is the standard deviation (0.382 per data from DOE/RL-92-24). Using the Hanford-specific values, the Hanford relative shift calculates to 1.974.

Continuing with the MARRSIM protocol, Table 5.1 of MARSSIM will produce a Pr-value of 0.9213, based on the Hanford relative shift. Using the one-sided 95 percent confidence level for both $Z_{1-\alpha}$ and $Z_{1-\beta}$ as 1.645 (assuming a normal distribution), and the Pr-value of 0.9213, N

calculates to 20.45. This number is divided by 2 (per the MARSSIM reasoning that half of N is based on an equal number of background samples), the number collected for each survey unit, whether a Class I or Class II, would be ten (10.225 rounded down).

Sample Collection

Sampling shall be conducted in a biased random method to ensure that if beryllium is present it is detected during the sampling evolution at a 95 percent confidence level. Where no data exists on the possible locations of beryllium contamination, a random sampling method shall be used. Even when random sampling is appropriate, sampling shall be biased to take samples from areas where visible dust is present over recently cleaned surfaces.

Depending on the media substrate, bulk samples could be either collected via a sampling pump, drawing ambient air into a collection media, or physically transferring material (spatula, cup, etc.) into a container.

For surface sampling within buildings/facilities, it is recommended that the American Society of Testing and Materials' (ASTM's) recently published method, D7144-05a, "Standard Practice for Collection of Surface Dust by Micro-Vacuum Sampling for Subsequent Metals Determination (ASTM 2005)" be used. Depending on laboratory requirements, this method may require the use of either a matched-weight 37 millimeter diameter 0.8 micron pore mixed cellular ester fiber filter, or a pre-weighed PVC filter cassette connected to a sampling pump operating at 2.5 liters per minute. According to this ASTM method, the filter should have a flexible plastic tubing extension from the filter inlet which functions as a collection nozzle. The collection nozzle should be placed close to the sampling surface, moving at a rate of 10 centimeters per second, repeating in a sweeping motion until there is enough material that completely covers the filter.

While ASTM D7144 specifies a sampling area of 10 centimeters x 10 centimeters up to 25 centimeters by 25 centimeters, the actual sampling area is not as important as collecting enough material to enable the analytical laboratory to provide meaningful data.

Contacting the laboratory prior to sampling would provide information regarding an adequate amount of material in order to provide reliable data. A basic rule-of-thumb, is that there should be enough material so that the entire filter paper is covered with collected material.

Beryllium samples are analyzed by NIOSH 7300 method; ICP AE.

Interpretation of Results

For a given survey unit, if all required bulk samples are below background and/or all required wipe samples are below 0.2 $\mu g/100cm^2$, the survey unit can be declared beryllium-clean.

If one or more bulk samples are above background, the survey unit cannot be declared clean until the entire survey unit has been decontaminated and re-sampled per this Appendix.

If one or more wipe samples exceed the 0.2 μg/100cm², the survey unit cannot be declared clean until either:

- the survey unit has been decontaminated and re-sampled per this Appendix
- the survey unit has been re-sampled using bulk samples per this Appendix
- an adequate number of wipe samples have been collected to demonstrate, with a 95 percent confidence level, that the initial wipe sample was a statistical outlier.

Conclusion

Surface sampling based on the release criterion of 0.2 μg/100cm^2 is most appropriate for assessing the level of contamination associated with materials/equipment after decontamination. Surface sampling, however lacks the ability to adequately characterize a facility based on the fact that areas most likely to have beryllium contamination, for the most part, also have large accumulations of dirt and debris, causing false positive results. By using the beryllium soil concentration of 2 ppm as background, it can be determined if beryllium in a facility can be attributed to background soil conditions or is from past operations. Application of fundamental concepts and statistical analysis found in the MARSSIM gives a technical basis for building characterization. This method has been presented to DOE, Headquarters in Washington D.C., and verified as being an appropriate assessment method.

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APPENDIX B: EXPOSURE ASSESSMENT GUIDELINE

Beryllium Work Permit #

Work Description

- Dust-generating activities
- Approximate number of potentially exposed employees involved in the work activity
- Length of time for the work taking place
- Is the work recurring?

Facility Description

- Characterization data (bulk, wipe, and air sampling)
- Baseline hazard assessment data (if conducted)
- Employee reports of potential exposure sources
- Descriptions of work previously conducted
- Status of the facility
- Location where the work will take place

Hazard Description

- Known exposure sources/types (e.g. airborne, surface)
- Suspected exposure sources/types
- Activities that have the potential to cause exposure (including skin exposure)
- Any conditions that have the potential to increase the risk of exposure
- Special conditions/hazards (e.g. confined spaces, elevated work)

Sampling Data

- Employee exposure monitoring and area sampling data collected during similar work
- Employee exposure monitoring and area sampling data collected during other work within the facility

Controls

- Engineering Controls
- Administrative Controls
- Training/Medical Surveillance
- Personal Protective Equipment
- Basis for controls

Sampling Plan

- Additional characterization sampling (bulk or wipe)
- Air sampling (Breathing Zone or area)
- Direct reading/real-time monitoring
- Basis for sampling requirements

APPENDIX C: SAMPLING PROTOCOLS FOR BERYLLIUM-AFFECTED WORKERS

Work Environment	Required Sampling Frequency
Single work area – No credible potential contamination sources	Initial then offered annually. If worker declines annual sampling, area samples shall be collected at least every three years or on change of conditions.
Single work area – Potential cross-contamination sources	Initial then annually or on change of conditions.
Multiple work areas – No credible potential contamination sources	Initial then sample at least annually (alternating area sampled) or on change of conditions
Multiple work areas – Potential contamination sources	Initial then semi-annually or on change of conditions

NOTE: Employees may request sampling more frequently per the Hanford Worker Bill of Rights.

Single work area – No credible potential contamination sources
Example – office employee in a beryllium clean facility

Single work area – Potential cross-contamination sources
Example – Employee who works in a beryllium clean area adjacent to a beryllium suspect facility

Multiple work areas – No credible potential contamination sources
Example – employee who goes to multiple beryllium clean facilities

Multiple work areas – Potential contamination sources
Example – Employee who goes to multiple clean areas adjacent to a beryllium suspect facilities or an employee who enters beryllium suspect/legacy facilities to do non-intrusive work

Sampling protocol

Beryllium-affected workers will be offered personal (breathing zone) sampling to evaluate exposure. If a worker declines personal sampling, either an area sample will be conducted in the principal work area of the employee or a personal sample will be collected on a similarly exposed employee. During preparations to conduct air sampling, the project IH shall discuss with the affected employee if they have concerns regarding surface contamination. If the employee and the project IH identify potential surface contamination sources, the project IH shall conduct additional surface sampling (wipe and/or bulk).

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ATTACHMENT 1: HANFORD SITE CHRONIC BERYLLIUM DISEASE PREVENTION PROGRAM (CBDPP) COMMITTEE CHARTER

1.0 CHARTER

The Hanford Site Chronic Beryllium Disease Prevention Program (CBDPP) Committee is established to serve as the advisory group providing consensus direction for the consistent administration and implementation of the Hanford Site CBDPP. The participating contractors and organizations are responsible for appointing representatives to the committee.

The DOE Richland Operations Office (RL), Office of River Protection (ORP), and affected Contractors acknowledge that a joint committee provides the best approach for implementing a consistent, effective, and compliant interpretation of requirements for the Program. The parties agree to cooperate in a teambuilding manner to ensure that the full intent of the Program is met and will be responsibly carried out by their respective organizations.

1.1 Mission

The mission of the Hanford Site CBDPP Committee is to ensure consistent and standard application of the Program to promote and maintain a safe work environment. The Committee will achieve this consistent approach through sharing best practices, lessons learned, and matters that affect multiple contractors to foster continuous improvement.

1.2 Committee Structure/Membership/Qualification

The Committee shall be comprised of two primary representatives each from the following prime contractors to the DOE at Hanford:

- Project Hanford Management Contract (PHMC)
- Plateau Remediation Contract (PRC)
- River Corridor Contract (RCC)
- Tank Operations Contract (TOC)

One representative shall be the contractor's Technical Representative for the CBDPP Program as determined by their contractor; the second representative shall be a Hanford Atomic Metal Trades Council (HAMTC) representative (as appointed by the HAMTC President or delegate).

In addition, one representative each from the following organizations will be appointed to serve on the Committee:

- Central Washington Building and Construction Trades Council (CWB&TC) (as approved by the Union President or delegate)
- Beryllium Awareness Group (BAG)
- HAMTC/Employee Health Advocate (EHA)
- Advanced Med Hanford (AMH)
- Volpentest HAMMER Training and Education Center, Training Department

These representatives comprise the voting membership. An alternate member shall be identified to serve during any absence of a primary representative. The alternate will have the same authority as the primary representative.

Members of the CBDPP Working Group will serve as ad hoc members of the Committee through the implementation phase of the Hanford Site CBDPP.

A Committee member's length of duty may be indeterminate, but rotation of representative assignments is encouraged by all parties.

A chair and co-chair will be elected by a simple majority by the voting membership of the Committee every two years. The chair and co-chair may be reelected to their respective positions.

The PHMC will provide a recording secretary for the Committee. The recording secretary will be a non-voting position. A facilitator will be provided by the PHMC as requested by the Committee.

Meetings shall be open to others to observe, however, participation in consensus decisions resides solely with the Committee members described herein. The Committee has the authority to allow ad hoc members as needed. Ad hoc groups will be used to conduct research and provide recommendations to the Committee.

Representatives of RL and ORP shall be invited to participate at each meeting as non-voting attendees. Either of the two DOE Field Offices may invite visitors to observe the proceedings.

1.3 Functions of the Hanford Site CBDPP Committee

The functions of the Committee shall be:

Assist the PHMC with the maintenance of the written Program

- Communicate and submit Program changes to RL and ORP through the PHMC
- Maintain the Committee charter and review annually
- Review and verify that training is consistent and appropriately covers the content of the CBDPP
- Review and ensure distribution of lessons learned as appropriate
- Evaluate trends in performance and recommend actions for improvement
- Reviews beryllium related events, issues and lessons learned as appropriate
- Evaluate and recommend resolution for issues/disputes pertaining to the Program
  - Issues shall not include any actions regarding applicable Collective Bargaining Agreements
- Recommend topics/information for communication to the workforce
- Provide Program status to senior contract and DOE management when requested

1.4 Chair Roles and Responsibilities

- Coordinates CBDPP Committee activities
- Schedules and conducts meetings
- Prepares agendas for meetings
- Ensures meeting minutes are taken and comments are documented
- Functions as a point of contact and spokesperson for the Committee
- Interfaces with other site-wide safety program committees as necessary
- Coordinates assignments of ad hoc members to the committee to provide technical support
- Maintains action item list and ensures members complete their assignments in a timely manner

1.5 Co-Chair Roles and Responsibilities

- Acts as the Chair when the Chair is absent
- Performs roles and responsibilities as delegated by the Chair

1.6 Member Roles and Responsibilities

- Attends and participate in meetings when scheduled; designate/appoint an alternate when unable to attend
- Fosters communication between the Committee and affected organizations relative to issue identification, interpretations, and consensus resolution
- Provides the chairperson with the identity of an alternate Committee member who is designated as the organizational representative
- Works in good faith toward consensus on issues without compromising safety or Program compliance
- Maintains current knowledge of the requirements of the Program

1.7 Meetings

- Meet regularly, but at least quarterly, via scheduled meetings; hold special meetings to address urgent or emerging issues
- Record and retain meeting minutes and action items, and distribute to the membership, alternates, and DOE
- Document and maintain record copies of voting decisions

1.8 Meeting Agenda

- The chairperson will prepare an agenda for each meeting, using input from the membership, and forward a copy to all members, alternates, and DOE in advance of the meeting time and date
- Action items will be assigned and tracked

1.9 Quorum and Voting

The Committee shall be considered to have a quorum when all Committee members who are eligible to vote (or their designated alternates) are present. One or more dissenting votes from the voting membership will be cause for an issue to escalate into a secondary phase of discussion and comment.

1.10 Secondary Phase of Discussion and Issue Resolution

Matters not agreed upon by the Committee through the initial voting process will be elevated to the secondary phase of discussion. This phase could include up to two additional meetings.

Further discussion/investigation beyond the two additional meetings may be conducted if there is unanimous agreement by the Committee. If consensus cannot be reached by the Committee, these issues may be elevated to the senior management of the appropriate Prime Contractor. If satisfactory resolution is not achieved in a timely manner, the Committee has the ability to bring the issue to DOE for resolution.

David G. Ruscitto, President
Chief Executive Officer
Fluor Hanford, Inc.

John G. Lehew III, President
Chief Executive Officer
CH2M HILL Plateau Remediation Company

Charles G. Spencer, President
Washington Closure Hanford LLC

William J. Johnson, President
Washington River Protection Solutions LLC

Martin E. Zizzi
Principal Manager
AdvanceMed Hanford

Dave Davis, President
Central Washington Building and
Construction Trades Council

David E. Molnaa, President
Hanford Atomic Metal Trades Council

Mark W. Fisher, Chairman
Beryllium Awareness Group

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ATTACHMENT 2: BERYLLIUM FACILITY ASSESSMENT FORM

Beryllium Facility Assessment Form

(attach additional pages and/or documentation if needed)

Date: Assessor(s):

Facility Information

Building: Building Administrator:

Project: Date Built: Square Footage:

Current Status Active: Inactive: # Employees Based in Facility:

Facility Usage:

Assessment Information

Individuals Contacted:

Known Usage of Beryllium Materials in Facility: Yes: No:

Facility Historical Usage : Fully Known: Partially or Incompletely Known:

Assessment Summary

Recommendation for Characterization: Yes: No:

If No, Current Status: Beryllium Clean Facility: Beryllium Controlled Facility:

If Yes, # of Recommended Survey Units and Locations:

Recommendations for Beryllium Controlled Areas in Facility:

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ATTACHMENT 3: HANFORD BERYLLIUM WORK PERMIT

Responsible Organization		
1) Beryllium Work Permit (BWP) #: Rev. #:	**2)** Work Document if applicable:	**3)** Point of Contact (POC): Name: Phone #:
4) Location (Bldg./Area): Area: Building: Room: Other:	**5)** Start Date:	MSIN:
6) Contractor:	**7)** End Date:	**8)** Permit Type: ☐ General ☐ Job Specific
9) Job Description:		

Industrial Hygiene (IH)

BERYLLIUM CONTROL INFORMATION

10) RESPIRATORY PROTECTION EQUIPMENT	**11) PROTECTIVE CLOTHING**	**12) SAMPLING**
□ Yes □ No	□ Work Gloves (Leather)	□ Breathing zone A/S
□ APR w/P100	□ Gloves	□ Work Area A/S
□ PAPR w/P100	□ Shoe covers/disposable booties	□ Wipe
□ Other (specify)	□ Tape openings	□ Bulk
13) DECONTAMINATION	□ Cap	□ Other (specify)
□ Wet-wipe	□ Hood	**14) AREA POSTING & BARRIERS**
□ HEPA Vac	□ Coveralls	□ Controlled
□ Hand Wash	□ Disposable Coveralls	□ Regulated
□ Shower	□ Other (specify)	□ Material/Equipment Storage Area
□ Undress Assistance	□ None	□ Other (specify)
□ Other (specify)	**15) ENGINEERING/WORK CONTROLS**	□ None Required
□ None	□ Ventilation	**16) WASTE LABELING & HANDLING**
17) IH COVERAGE	□ Containment	□ Mark and label waste
□ Beginning of Project	□ Wet method	□ Designated container
□ Intermittent	□ Fixative	□ Double bag
□ Continuous	□ HEPA Vac Area Prior to Working	□ Other (specify)
□ Release/Clearance	□ Other (specify)	**18) TRAINING**
□ None	□ None	□ Beryllium Worker Qualified
		□ Beryllium Awareness
		□ Other (specify)

	19) □ Special Instructions:
Approvals	**20)** Printed Name & Signature:	**21)** Date / Time:
	Industrial Hygiene	
	Line Management	
	Other (specify)	

Note: When changes occur in the field that could impact the validity of this completed form and the Job Hazards Analysis (JHA) it supports, this BWP should be reviewed and updated as required, to reflect the field changes.

Completion Guidelines

1. Enter a unique, Contractor-specific number along with revision number of the BWP.

2. If this BWP is specific to a single work document, list that number. If it applies to multiple documents, write "multiple." If this BWP applies to skill-based work and no work document exists, write "N/A."

3. Individual completing the form.

4. Where work is being conducted (e.g., building number, facility number, or geographical area).

5. Date initiated.

6. Hanford Site Contractor.

7. Date no greater than one year from approval date (see note at bottom of form).

8. Check appropriate box.

9. Briefly describe the scope of work to be performed.

10. – 18. Check appropriate boxes per summary of the Exposure Assessment.

19. Briefly describe any special instructions.

20. – 21 Approval printed names, signatures, dates and times

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ATTACHMENT 4: ADVANCEMED HANFORD BERYLLIUM SUPPORT PLAN

AdvanceMed Hanford
Occupational Health Services

AMH-CS-135A1	**Effective:**		
	Supersedes:	3/31/08	
	Revision #:	8	
	Old #:	AMH-MP-MP120	
☑Approved By:	**Signature**		**Date**
Principal Manager, Martin Zizzi			
☑Author:			
Site Occupational Medical Director, Brian P. Fawcett, MD MPH			
☑Subject Matter Expert:			
Beryllium Case Management Nurse, Mary Sams, RN, COHN			
Scheduling Team Leader, Lisa Whitmore			
Population Health Specialist, Lynn Gates			
☑Editor:			
Sr. Administrative Assistant, Patricia Davison			

1.0 Introduction

1.1 Purpose

This plan defines roles and responsibilities of the Site Occupational Medical Contractor (SOMC) for the medical elements of the Chronic Beryllium Disease Prevention Programs (CBDPP).

1.2 Applicability

This plan is applicable to all current Hanford workers who are provided services under U.S. Department of Energy (DOE) Occupational Health Services Contract No. DE-AC06-04RL14383, including those with past or present, current or potential, exposure to beryllium at any DOE site.

1.3 Implementation

Effective upon publication

1.4 Definitions

Generally, the same definitions used in 10 CFR 850 (The Rule) are used in and apply to this Medical Support Plan (MSP).

AdvanceMed Hanford (AMH) uses "Beryllium-Associated Worker" as defined in §850.3, as the governing definition of current workers who have in the past, or currently have the potential for exposure to beryllium. At Hanford, a sub-set of this broad-based definition has been developed to further classify workers according to their health status or job requirements. These definitions are described below:

- *Beryllium-affected worker:* Beryllium-affected workers are those workers who are affected (medically) by beryllium exposure, e.g. beryllium sensitization, chronic beryllium disease (CBD), or a medical condition otherwise associated with beryllium exposure.
- *Beryllium worker:* A Hanford Site-specific term that refers to a current worker who has been designated in the Hanford Site Employee Job Task Analysis (EJTA) System by his/her manager to be available to perform work that is anticipated to involve exposure to airborne beryllium at or above the employer designated control levels. It is a subset of "Beryllium-Associated Worker" as discussed in 10 CFR 850.3.

In addition, other terms used in the MSP are:

EJTA: The Hanford Site database to which worker-specific input is provided by the employee, the manager, and the company Industrial Hygienist (IH), defines the work activities, hazards, and exposures (physical, chemical, biological) to which the worker is subjected or exposed.

2.0 Project Definition

AMH provides medical monitoring as defined in the Hanford Site CBDPP and provides support to Site contractors in meeting the requirements of 10 CFR 850 for beryllium as the SOMC to DOE. AMH's medical director is the designated Site Occupational Medical Director (SOMD) and is responsible for administering the medical monitoring program. A qualified physician will be appointed as AMH medical beryllium manager by the SOMD.

The AMH beryllium case management nurse assists in coordinating contractor procedures as described in the individual contractor appendices with the medical monitoring program. AMH coordinates the self-identification process to identify workers who may have been exposed to beryllium.

Beryllium worker: A Hanford Site-specific term that refers to a current worker who has been designated in the Hanford Site Employee Job Task Analysis (EJTA) System by his/her manager to be available to perform work that is anticipated to involve exposure to airborne beryllium at or above the employer designated control levels. It is a subset of "Beryllium-Associated Worker" as discussed in 10 CFR 850.3. In addition, other terms used in the MSP are:

EJTA: The Hanford Site database to which worker-specific input is provided by the employee, the manager, and the company Industrial Hygienist (IH), defines the work activities, hazards, and exposures (physical, chemical, biological) to which the worker is subjected or exposed.

AMH administers the beryllium monitoring programs using information provided by the DOE contractor which includes:

- A list of beryllium-associated workers
- Baseline and updated inventory of beryllium-listed facilities
- Hazard assessment and personal air monitoring (exposure) data including tasks and activities
- Types of personal protective equipment used.

2.1 AMH Beryllium Monitoring Programs

AMH provides two beryllium medical monitoring programs and two beryllium-related services. Both incorporate the required elements of the exams specified by 10 CFR 850.

2.1.1 Beryllium-Associated Worker Program

This program provides medical monitoring for current beryllium workers. Participants are enrolled through the EJTA process by their employer. The program consists of a baseline evaluation followed by annual periodic evaluations.

2.1.2 Beryllium: Previous Exposure

This program provides periodic medical monitoring for those who may have been exposed to beryllium at any DOE site in the past. Enrollment and related testing, including the Beryllium Lymphocyte Proliferation Test (BeLPT), are voluntary. Participants are identified by their employers or self-identified. A worker is offered enrollment when he or she is removed as a beryllium-associated worker by their EJTA. Workers will remain enrolled in a beryllium program for the duration of their eligible Hanford employment, but can decline further examinations or testing at any time. If an employee declines further participation, he/she may request participation again at any time. The examination consists of periodic evaluations every three years or as medically indicated.

2.1.3 Initial Exam for Workers with Previous Exposure to Beryllium

This service provides the baseline evaluation for workers identified as having had a potential previous exposure to beryllium at Hanford, or another DOE site through one or more of the following processes:

- Completing the Hanford Site Beryllium Questionnaire
- Completing the DOE Historic Health Exposure Questionnaire
- Contacting the beryllium case management nurse
- Recommendation from their employer
- Recommendation from an AMH licensed Medical Staff member.

2.1.4 Exposure to Beryllium

This service is applied in situations where overexposure to beryllium may have occurred. Based on the results of the examination, the worker is placed in a beryllium monitoring program and is offered referrals to Behavioral Health Services and the beryllium case management nurse.

2.2 Medical Evaluation

The AMH licensed medical providers perform beryllium evaluations based on medical protocols. Medical evaluations will be conducted in accordance with, but not be limited to, CFR 10 850 .34(b). When appropriate, at no cost to the worker, an external provider, who has experience and knowledge in diagnosing and treating beryllium related medical conditions may be consulted as an extension of the medical monitoring program.

2.2.1 Review of Initial (Baseline) Medical Evaluation

AMH acts on behalf of the responsible employer in performing initial and periodic beryllium medical monitoring evaluations and consultations. For beryllium associated workers enrolled in an AMH beryllium medical monitoring program, AMH also facilitates the multiple physician review process. This may include scheduling and payment for medical tests and evaluations for the purpose of diagnosing beryllium sensitization and/or CBD. If the beryllium-associated worker chooses to make his/her own arrangements for second and subsequent medical opinions, AMH will not facilitate scheduling or payment for those services. In these cases, AMH advises the worker to notify the employer of his or her intent to seek another opinion independent of AMH and discuss payment options. The worker can then proceed with setting up an appointment. AMH counsels the worker that employer notification should be done within 15 days of his/her receipt of the most recent test results. AMH does not provide specific medical care or treatment of beryllium disease within the scope of the medical monitoring program.

The Multiple Physician Review process is explained to the worker during initial and periodic evaluations. Written notification of the results of the initial evaluation, including notification to the worker of the right to seek a second written medical opinion, is given to the worker within 10 work days of receiving all test results related to that evaluation. The worker may request a second opinion at any time following the initial evaluation. AMH assists the worker in identifying medical facilities or providers, in scheduling appointments, and completing the multiple physician review process.

In the event the initial evaluation and the second opinion are in disagreement, AMH actively engages the second provider in discussions in an attempt to reach agreement. If this activity is not successful, AMH works with the employee and his/her private medical provider to identify a third medically qualified provider to review all relevant medical information and conduct any medical evaluations necessary to arrive at a definitive diagnosis. AMH acts consistently with the findings, determinations, and recommendations of the third provider or attempts to reach an agreement with the worker that is consistent with the recommendations of at least one of the other two providers.

If the worker desires an alternate approach to the one described here, AMH counsels the individual to make the necessary arrangements as long as the process is timely and protective of the worker and is consistent with 10 CFR 850. In all cases, the consulting providers and evaluating facilities are to be the worker's choice so long as the providers are licensed providers who are familiar with the health effects of beryllium.

Medical information resulting from second and third opinion evaluations will be provided to AMH so that it can be incorporated into the medical record as part of beryllium medical monitoring. A Release of Information (ROI) form will be completed.

If a diagnosis of beryllium sensitization or CBD is reached for a worker, he/she is informed of his/her right to file for worker's compensation coverage either under the Department of Labor (DOL) and/or through the Washington State worker's compensation-based systems managed by the DOE third party administrator. Workers are encouraged to contact their employer's Human Resources or other responsible department to arrange and obtain details concerning these programs and to determine other benefit options. At the point that a worker's compensation and/or DOL claim is accepted for CBD, AMH will continue to facilitate the referral and appointment scheduling, but funding and other provisions of the referral will fall under the responsible worker's compensation jurisdiction. (See Sections 6.1 and 6.2.)

2.2.2 Other Referrals (Beryllium-related Medical Issues)

After the definitive diagnosis is made, beryllium-affected workers may require additional medical evaluation and/or testing. AMH coordinates medical referrals as needed or requested by any worker enrolled in an AMH beryllium medical monitoring program. The process is consistent with already established medical referral processes used by AMH and the Hanford Site contractors. These referrals are based on medical necessity and appropriateness for the purpose of determining a medical diagnosis, and are considered as an extension of the medical monitoring process. They may be arranged in conjunction with, or separate from, the previously discussed multiple physician review process.

2.3 Reporting

2.3.1 Reporting to the Responsible Employer

As required by 10 CFR 850.34(e), the SOMD will provide the responsible employer with a medical examination report (excluding non-affected workers under 2.1.2 Beryllium: Previous Exposure). This report is provided within 10 working days of receiving all beryllium related test results for that particular examination. Included in the report are:

- Medical diagnoses that are relevant to occupational exposure to beryllium (e.g. Affected Worker or Non-Affected Worker, Evaluations Pending, or secondary effects of, or complications relating to, chronic beryllium disease that compromise the worker's ability to function in the workplace)
- A notification that all recommendations and test results have been communicated to the worker.

The report will not include any specific records, findings or diagnoses that are not related to the medical conditions that may be affected by beryllium exposure.

2.3.2 Reporting to the Worker

The beryllium-associated worker receives written communication from the examining provider explaining beryllium-related test results, any positive findings and medical recommendations. Any worker with positive findings also has an opportunity to meet personally with the examining provider. The beryllium-associated worker receives a copy of the written medical opinion letter that is sent to the employer. All reports are provided to the worker within 10 working days of receiving all beryllium-related test results for that particular examination.

When a worker is determined to be beryllium-affected, the beryllium case management nurse, if desired by the employee, will coordinate a meeting among the AMH staff, the worker, and IH or Safety personnel as appropriate. All available information will be reviewed in an attempt to determine where past exposures may have occurred and discuss future protective measures and accommodations if indicated.

2.3.3 Medical Removal Protection Benefits

10 CFR 850 and interpretive guidance from DOE Headquarters (Record ID D04-12-002) provide two separate pathways for initiation of medical removal benefits. (1) A written medical opinion from the SOMD that an individual should be removed from further exposure to beryllium. (2) A written medical opinion that secondary effects of, or complications relating to, chronic beryllium disease compromise the worker's ability to function in the workplace.

The SOMD will provide the responsible employer a written medical opinion for a current Beryllium worker with the diagnosis as an Affected Worker, a Non-Affected Worker, or a temporary diagnosis pending further evaluation. If the worker is a Beryllium-Associated worker, and there is a potential health risk associated with further exposure to beryllium, an immediate phone notification will be made to the employee and manager informing him/her of the employee status and recommending immediate implementation of the applicable parts of the Hanford Site CBDPP. The DOE approved Hanford Site Chronic Beryllium Disease Prevention Programs (CBDPP) contain the necessary procedures and Control Levels to prevent future exposures to Affected Workers. If the diagnosis is temporary, it will be so specified in the medical opinion, and a follow-up opinion will be made available once the diagnosis is either determined to be present or ruled out.

If, as a result of a medical evaluation(s) performed in accordance with 10 CFR 850. 34, it is determined that an individual has either secondary effects of or complications relating to chronic beryllium disease that compromise the worker's ability to function in the workplace, the SOMD will provide this information in a written medical opinion.

Where a contractor determines, independent of a medical evaluation, that an affected worker is no longer able to perform the essential job functions for medical reasons, the contractor may request a work suitability evaluation and a written medical opinion. The contractor may then use the medical opinion to implement 10 CFR 850.35 as interpreted by DOE Interpretation D04-12-002, and specified in the contractor's CBDPP.

2.4 Medical Consent *(§850.36)*

AMH uses 10 CFR 850, Appendix A, "Informed Consent Form" to obtain consent of the worker scheduled for beryllium medical monitoring. The medical consent is obtained at the time of the medical evaluation (See Section 6.2 – Informed Consent Form Sample). One week before the first medical evaluation or procedure (or upon worker's request), AMH provides (or has provided) each worker with a summary of the medical monitoring program and information on program testing and examinations. The summary includes:

- Medical testing included in the monitoring program
- Explanation and risks of tests and examinations
- Type of data collected in the medical monitoring and epidemiology programs
- Where the data are kept and how they are used
- How confidential data are protected

2.5 Counseling *(§850.37)*

As part of the medical counseling process (§850.37(f)(3), the provider furnishes information to the worker regarding the risks of exposure to beryllium and refers them to the Hanford Site CBDPP. This counseling and consultation, as well as the employee's acknowledgement of the same, is documented on the *Beryllium Information Checklist* form. The contractor will provide additional counseling to meet the non-medical counseling requirements.

Counseling includes an explanation of the provisions and procedures of the medical monitoring program (§850.37(f)(1), information about follow-up medical diagnostic evaluation and treatment options (§850.37(f)(2), and the risk of continued beryllium exposure for sensitized workers and those with CBD (§850.37(f)(7). AMH provides psychological counseling to sensitized workers and workers with CBD through the Employee Assistance Program (§850.37(f)(3).

Records may be released for appropriate official purposes of DOE, National Institute of Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), state health department, or Congress. Medical information without personal identifiers, such as name, social security number, address, or phone number or other information that could be used to identify particular workers, is provided to certain individuals, such as DOE officials responsible for CBDPP, scientists and researchers working under DOE agreements, and the Oakridge Institute for Science and Education (ORISE).

AMH works cooperatively with Site contractors to analyze medical, job, and exposure data in order to identify workers or groups of workers potentially at risk for beryllium sensitization or CBD, and working conditions that may contribute to that risk. AMH maintains a database of beryllium-associated workers, including workers with previous exposure to beryllium (self-

identified or identified by employer) and current beryllium-assigned workers (identified through the EJTA).

As the Beryllium Site Coordinator, AMH maintains the Hanford Beryllium Registry and submits encrypted information semi-annually to the DOE Office of Epidemiological Surveillance Studies within the Office of Environment, Safety and Health or designee, i.e., ORISE, to be included in the national beryllium registry. Personal identifiers are removed from any transmitted information.

3.0 Project Schedule

This program has been continuously used since inception of Occupational Health Services Contract No. DE-AC06-04RL14383, and is updated with new guidance, direction, and medical standards and considerations.

4.0 Roles and Responsibilities

4.1 AdvanceMed Hanford

AMH administers the functions of the SOMC, providing medical monitoring as defined in this MSP, which is provided as an attachment to the Hanford Site CBDPP and as a support to Site contractors in meeting the requirements of 10 CFR 850. AMH will administer a Memorandum of Agreement with each contractor that utilizes its services to clearly define roles and responsibilities pertaining to 10 CFR 850 and 851

The AMH SOMD is responsible for administering and determining the provisions of the medical monitoring program.

The AMH Beryllium Case Management Nurse assists in coordinating contractor procedures as described in the individual contractor appendices with the medical monitoring program. AMH coordinates the self-identification process to identify workers who may have been exposed to beryllium in the past.

4.2 Contractor

As the responsible employer, a contractor has responsibility for determining all reasonable accommodations. They also have full discretion and responsibility for offering, considering, and providing medical removal plan benefits and all related elements, as specified in 10 CFR 850, including interpretation of 10 CFR 850 provided by DOE.

Contractors supply the following to the SOMC:

- A list of beryllium-associated workers
- Attachment 4: AdvanceMed Hanford Beryllium Medical Support Plan (cont.)
- A baseline inventory of beryllium listed facilities
- Hazard assessment and exposure monitoring data, including past and current related duties of beryllium-associated workers as they pertain to beryllium exposure
- Records of beryllium exposure
- Types of personal protective equipment used

- A description of personal protective and respiratory protective equipment used in the past, present, or anticipated for future use.

4.3 Department of Energy

DOE provides oversight and direction of the SOMC Medical Programs. DOE also has approval over any Memorandum of Agreement between AMH and the Hanford Site contractors.

5.0 References

10 CFR 850. 1999.

Occupational Health Services Contract No. DE-AC06-04RL14383.

DOE Technical Standard: Beryllium Associated Worker Registry Data Collection and Management Guidance, DOE-STD-1187-2005, May 2005.

DOE Interpretation D04-12-002.

6.0 Sample Forms and Letters

6.1 Sample-Informed Consent Form

AdvanceMed Hanford
Occupational Health Services

CHRONIC BERYLLIUM DISEASE PREVENTION PROGRAM INFORMED CONSENT FORM

I, _____, have carefully read and understand the attached information about the BE-LPT and other medical tests. I have had the opportunity to ask any questions that I may have had concerning these tests and have had my questions answered to my satisfaction.

I understand that the tests are confidential, but not anonymous. I understand that if the results of any test suggest a health problem, the examining physician will discuss the matter with me, whether or not the result is related to my work with beryllium. I understand that my employer will be notified of my diagnosis only if I have a beryllium sensitization or chronic beryllium disease. My employer will not receive the results or diagnoses of any health conditions not related to beryllium exposure.

I understand that, if the results of one or more of these tests indicate that I have a health problem related to beryllium, additional examinations will be recommended. If additional tests indicate I do have a beryllium sensitization or CBD, the Site Occupational Medical Director may recommend that I be removed from working with beryllium.

If I agree to be removed, I understand that I may be transferred to another job for which I am qualified (or can be trained for in a short period) and where my beryllium exposures will be as low as possible, but in no case above the action level. I will maintain my total normal earnings, seniority, and other benefits for up to two years if I agree to be permanently removed.

I understand that if I apply for another job or for insurance, I may be requested to release my medical records to a future employer or an insurance company. I understand that AMH will maintain all medical information relative to the tests performed on me in segregated medical files separate from my personnel files, treated as confidential medical records, and used or disclosed only as provided by the Americans with Disability Act, the Privacy Act of 1974, or as required by a court order or under other law.

I understand that the results of my medical tests for beryllium will be included in the Beryllium Registry maintained by DOE, and that a unique identifier will be used to maintain the confidentiality of my medical information. Personal identifiers will not be included in any reports generated from the DOE Beryllium Registry. I understand that the results of my tests and examinations may be published in reports or presented at meetings, but that I will not be identified.

I consent to having the following medical evaluations if determined by the AMH examiner to be needed:

- ☐ Physical examination (respiratory system, skin and eyes)
- ☐ Chest x-ray
- ☐ Spirometry (breathing test)
- ☐ Be-LPT (blood test called the beryllium-induced lymphocyte proliferation test)
- ☐ Other test(s) (Specify): _____

Beryllium-Previous Exposure: I understand that this program is voluntary and I am free to withdraw at any time from all or any part of the medical surveillance program.

Signature: _____ Date: _____

Beryllium-Assigned Worker: In order to continue to perform this work I agree to participate fully in the requirements of the medical surveillance program.

Signature: _____ Date: _____

I have explained and discussed any questions that the employee expressed concerning the Be-LPT, physical examination, and other medical testing as well as the implications of those tests.

Print Name of AMH Beryllium Educator/Examiner: _____

Signature: _____ Date: _____

BC-8809-731 (07/04)

6.2 Sample Statement of Patient Rights

AdvanceMed Hanford
Occupational Health Services

P.O. Box 150 G3-70

Richland, WA 99352

STATEMENT OF PATIENT RIGHTS RELATING TO BERYLLIUM RESULTS

A physician or physician assistant has informed me that I have a borderline or positive test result from the beryllium lymphocyte proliferation test (Be-LPT).

As a result of the multiple borderline or positive test results from the Be-LPT:

- I have the right to be protected from ongoing significant exposure to beryllium.
- If I am concerned about a risk at any time for exposure above the levels indicated in my company CBDPP, I am encouraged to discuss my concern with my employer's management, safety professionals, or AMH medical providers.
- I have discussed with the physician, physician assistant or beryllium case management nurse my right to have current, industrial-hygiene monitoring data provided by my employer when I am asked or required to enter posted or suspected beryllium buildings.

I am aware of my right to file an application for benefits for occupational disease with the following agencies:

State Workers' Compensation (CCSI)

- Workers must file for worker's compensation within 2 years from the date a physician gives them written notice of the existence of an occupational disease. Contact your company's workers' compensation office for additional information.
- Energy Employees Occupational Illness Compensation Program Act (EEOICPA). Workers who have had one positive Be-LPT test result are eligible for medical benefits that include ongoing medical surveillance and medical treatment. Contact the EEOICPA resource center for additional information.

Employee Signature	Date
AMH Beryllium Educator/Provider Signature	Date

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ATTACHMENT 5: WARNINGS SIGNS AND LABELS

A. – Beryllium-Regulated Area Posting

DANGER	(White text on Red oval, Black background)
Beryllium-Regulated Area	(Black text on White background)
Beryllium Can Cause Lung Damage	(Red text on White background)
CANCER HAZARD	(Red text on White background)
Authorized Personnel Only	(Black text on White background)
BWP Required for Entry	(Black text on White background)
(Optional contractor-specific information)	(White box, Black outline, White background)

B. – Beryllium-Controlled Facility Posting

CAUTION	(Black text on Yellow oval, Black background)
Beryllium-Controlled Facility	(Black text on Yellow background)
BWP Required For Controlled Areas	(Black text on Yellow background)
(Optional contractor-specific information)	(White box, Black outline, Yellow background)

C. – Beryllium-Controlled Area Posting

WARNING	(Black text on Yellow oval, Black background)
Beryllium-Controlled Area	(Black text on Yellow background)
BWP Required for Entry	(Black text on Yellow background)
(Optional contractor-specific information)	(White box, Black outline, Yellow background)

D. - Warning Label

DANGER	(White text on Red oval, Black background)
Contaminated with	(Black text on White background)
Beryllium	(Red text on White background)
Do Not Remove Dust	(Black text on White background)
By Blowing or Shaking	(Black text on White background)
Cancer & Lung Disease Hazard	(Red text on White background)

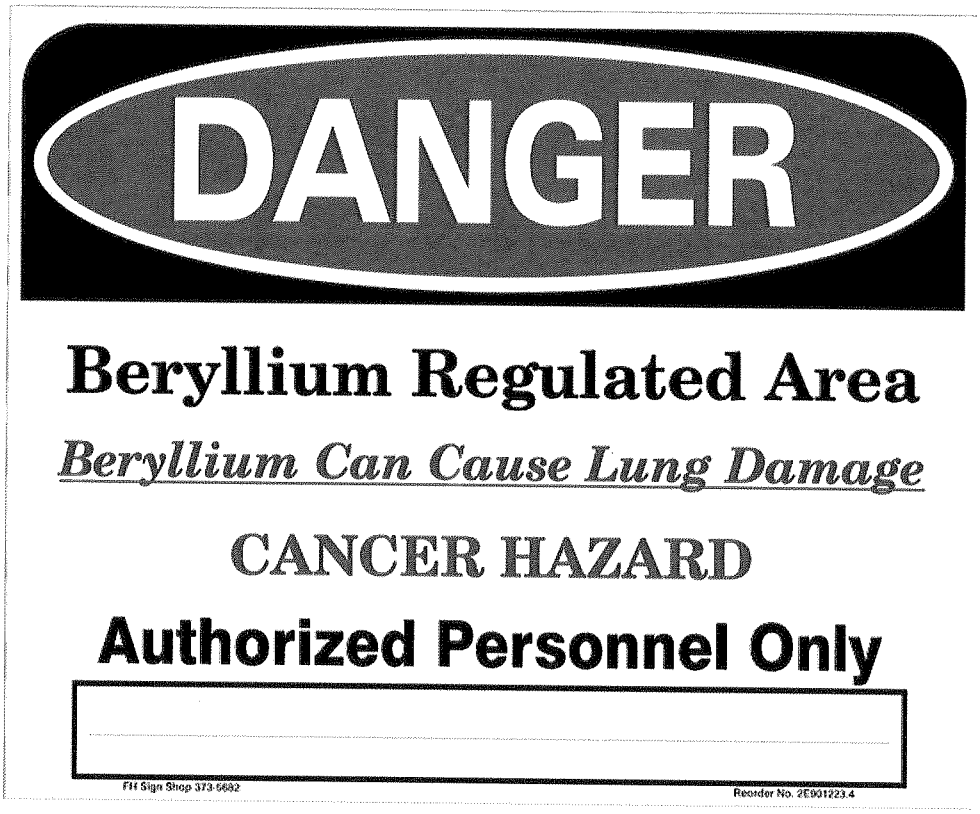
E. - Caution Label

CAUTION	(Black text on Yellow oval, Black background)
POTENTIAL BERYLLIUM CONTAMINATION	(Black text on Yellow background)
Contact Industrial Hygiene Before Opening	(Black text on Yellow background)
this System and/or Components	(Black text on Yellow background)
(Optional contractor-specific information)	(White box, Black outline, Yellow background)

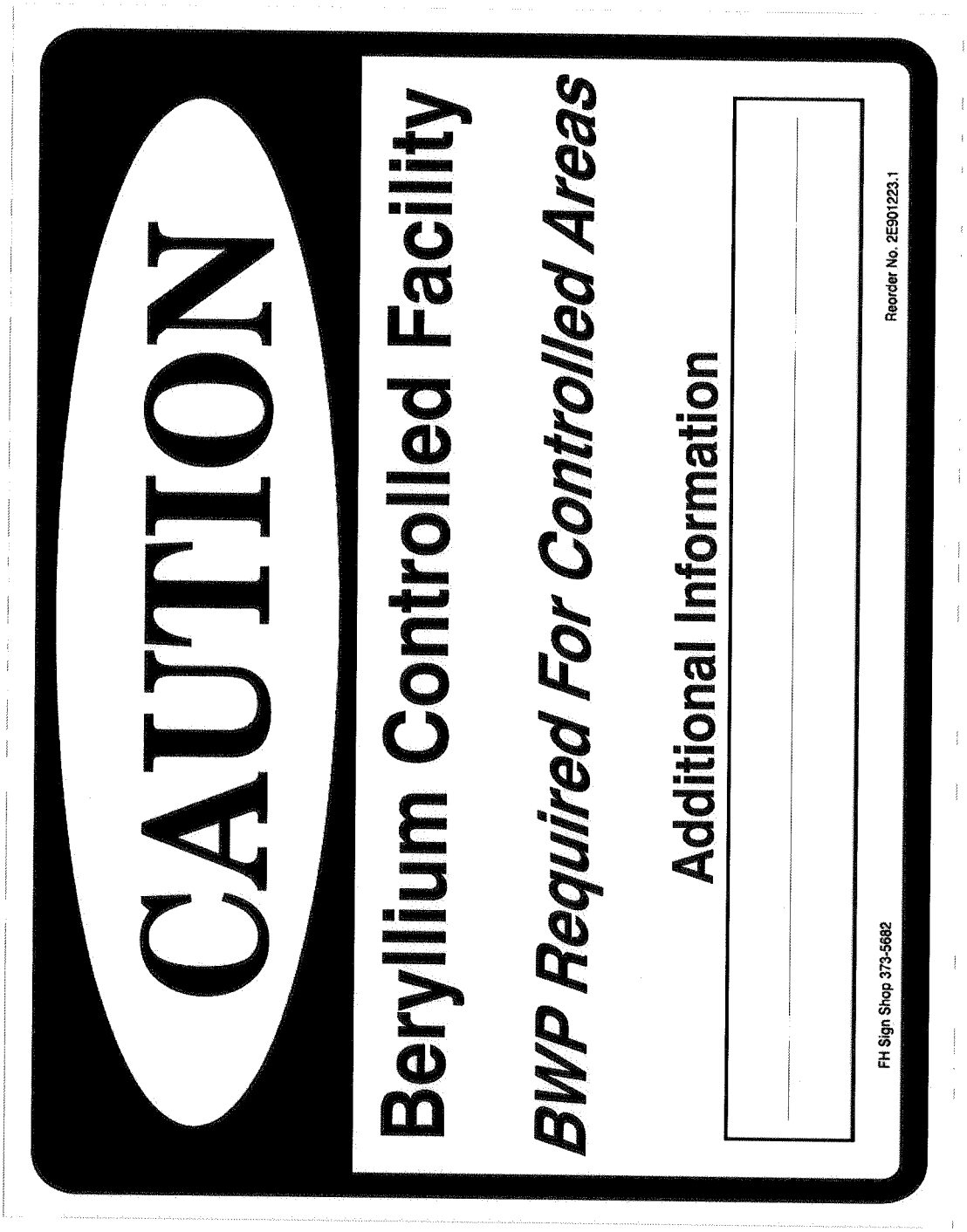
E.1 Caution Label is 12 cm by 9.5 cm.

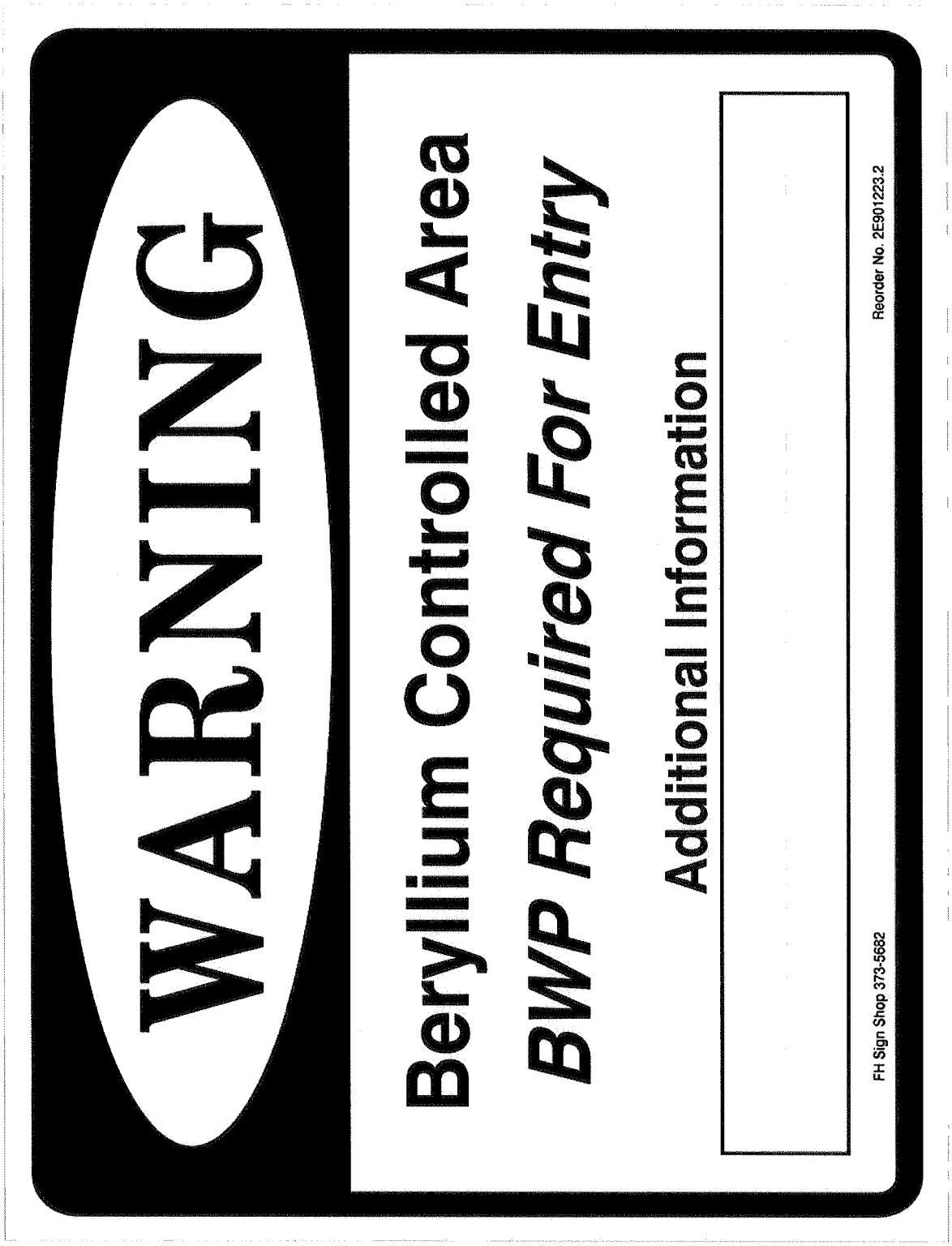
E.2 Caution Label is 9.3 cm by 7.5 cm.

E.3 Caution Label is 4.6 cm by 3.5 cm.

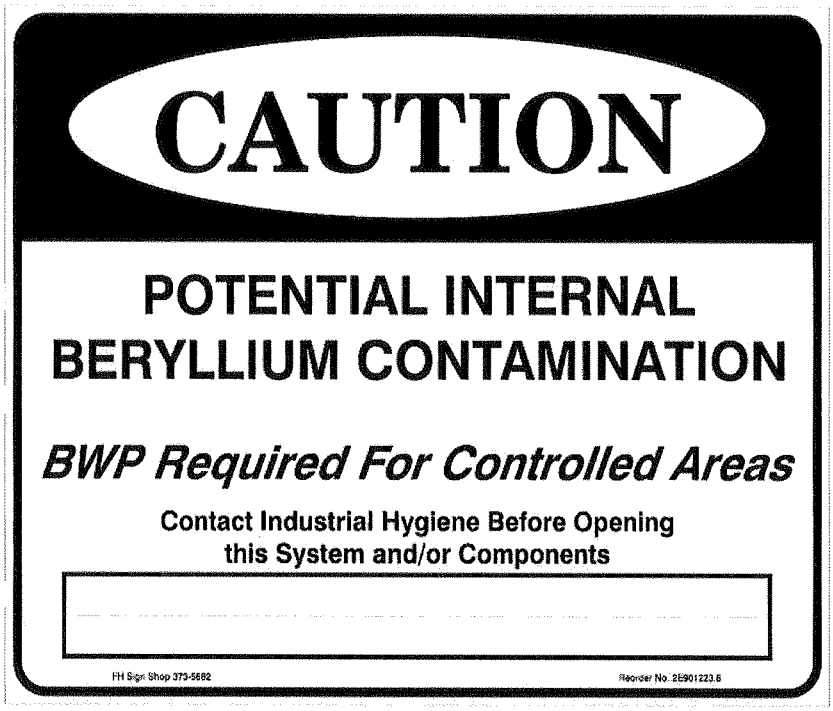


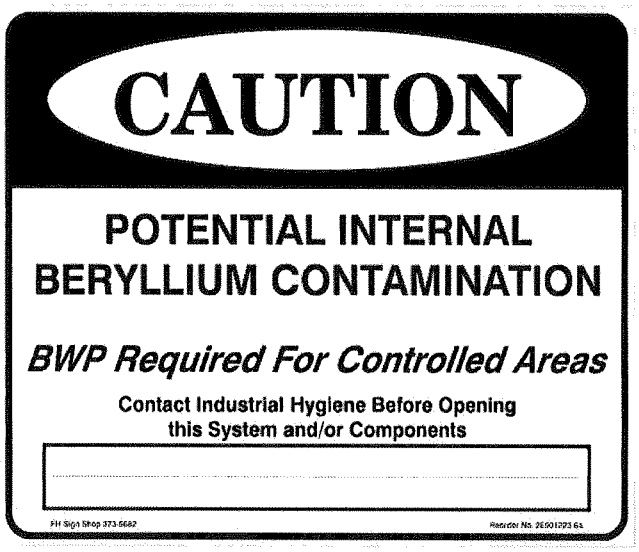
A. - Beryllium Regulated Area Posting

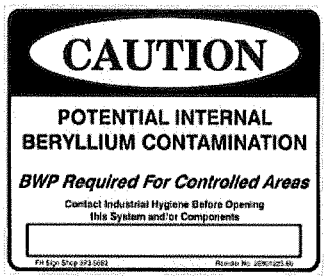

CAUTION
Beryllium Controlled Facility
BWP Required For Controlled Areas
Additional Information
FH Sign Shop 373-5682
Reorder No. 2E901223.1


WARNING
Beryllium Controlled Area
BWP Required For Entry
Additional Information
FH Sign Shop 373-5682
Reorder No. 2E901223.2

DANGER
Contaminated with
Beryllium
Do Not Remove Dust
By Blowing or Shaking
Cancer & Lung Disease Hazard
FH Sign Shop 373-5682
Reorder No. 2E305129.1DC


CAUTION
POTENTIAL INTERNAL
BERYLLIUM CONTAMINATION
BWP Required For Controlled Areas
Contact Industrial Hygiene Before Opening
this System and/or Components
FH Sign Shop 373-5682
Reorder No. 2E901223.6


CAUTION
POTENTIAL INTERNAL
BERYLLIUM CONTAMINATION
BWP Required For Controlled Areas
Contact Industrial Hygiene Before Opening
this System and/or Components
FH Sign Shop 373-5682


CAUTION
POTENTIAL INTERNAL
BERYLLIUM CONTAMINATION
BWP Required For Controlled Areas
Contact Industrial Hygiene Before Opening
this System and/or Components

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ATTACHMENT 6. DOE LETTER OF DIRECTION

Attached is an example of the letter that was distributed to all RL contractors providing direction on information to be submitted for the Beryllium Registry in accordance with 10 CFR 850.39, Recordkeeping and Use of Information.

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

0602141 A

AUG 1 1 2006

06-SED-0179

Mr. R. G. Gallagher, President
and Chief Executive Officer
Fluor Hanford, Inc.
Richland, Washington 99352

Dear Mr. Gallagher:

CONTRACT NO. DE-AC06-96RL13200 - REGISTRY OF BERYLLIUM-ASSOCIATED WORKERS

The beryllium rule [10 CFR 850.39(a)] requires data be submitted to the beryllium registry semi-annually. In order to meet these requirements FHI shall submit job history and exposure measurement data for each beryllium-associated worker in accordance with attachment 1 to AdvanceMed Hanford (AMH) who will add medical data and submit the data to EH (see attachment 2). The first submittal since 2002 will be made during September 2006 with another one to follow in January 2007 and semi-annually from that point forward. Data for each beryllium-associated worker must be provided to AMH electronically by September 1, 2006 to address this non-compliance to the rule.

For employees who have self-identified to the medical provider as being potentially exposed to beryllium, AMH will identify those employees who are either sensitized or have chronic beryllium disease and request the employer provide the work history and exposure measurement data for those employees. This data must be submitted by January 1, 2007 to AMH.

The employer providing the data is responsible for the accuracy of the data. AMH will not edit data provided by the employer, but will serve as data coordinator. The data coordinator responsibility includes receiving and appropriately addressing comments received from DOE HQ or its contractor on data submitted to the registry. The attached document reflects the minimum data that is required to be submitted to comply with the rule.

The Government considers this direction to be within the scope of the existing contract and therefore, the action does not involve or authorize any delay in delivery or additional cost to the Government, either direct or indirect.

Mr. R. G. Gallagher -3- AUG 11 2006
06-SED-0176

If you have any questions, please contact me on (509) 376-8948.

Sincerely,

Sally A. Sjoraaki
Contracting Officer

SED:CKK

Attachments:
1. Information to AMEs to comply with 10 CFR 850.30
2. Beryllium Registry Submission Tables

cc w/attachs:
M. S. Strickland, FHI

Attachment 1

Information to be provided to AMH to comply with 10 CFR 850.39

1. Unique Employee Identification Number- This number will be the employee's Hanford Identification Number (HID)
2. Employer Type- Federal, Contractor, Sub-Contractor
3. Date of First Potential Be Exposure- For the purposes of complying with the Be Registry, this date will be the date the employee received training as a Beryllium Assigned/Associated Worker.
4. Responsible Contractor- The responsible employer per 10 CFR 850.
5. Organizational Code- The employee's department or division number as assigned by the responsible contractor. The responsible contractor will also provide the data dictionary or organizational key to identify the assigned code.
6. Job Duty – A general categorical description of the employee's assigned functions, e.g. Administration, D&D, Operations.
7. Job Title – The employee's job title, e.g. NCO, Electrician, Pipe Fitter.
8. Be Monitoring Results- The results of any personal, breathing zone Be monitoring conducted on this employee (actual exposure).
9. Actual Exposure Less than the Limit of Quantification- Yes or No; See Appendix D of DOE Technical Standard 1187-2005.
10. Sample Volume- Volume of air, in liters, used to determine the monitoring results identified in Item 8 above.
11. 8 Hour TWA- The employee's time weighted average exposure to Be as calculated from the monitoring results identified in Item 8 above
12. Analytical Method- Laboratory analytical method used to analyze samples collected as identified in Item 8 above.
13. Exposure Sampling Time- The length of time of the sampling that generated the actual exposure level.
14. Sample Number- Unique identifier that allows for tracking of the sample(s) taken to determine the actual exposure level.
15. Monitoring Date- Date actual exposure level monitoring was conducted.

ATTACHMENT 7: DOE LETTER, MEDICAL REMOVAL PROTECTION BENEFITS OVERTIME

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

0801396
CC Recd: 06/02/2008

08-SED-0153

MAY 29 2008

Mr. C. M. Murphy, President
and Chief Executive Officer
Fluor Hanford, Inc.
Richland, Washington 99352

Dear Mr. Murphy:

CONTRACT NO. DE-AC06-96RL13200 – MEDICAL REMOVAL PROTECTION BENEFITS OVERTIME

The purpose of this letter is to respond to the May 15, 2008, (FH-0801252) letter requesting Contracting Officer authorization to pay overtime as part of a workers medical removal protection benefits as required by 10 CFR 850, Chronic Beryllium Disease Prevention Program. Overtime payments are required by 10 CFR 850 if overtime was routinely part of the medically removed worker's total normal compensation. Therefore, FHI is authorized to pay overtime to medically removed workers if overtime was routinely part of the worker's total normal compensation. If you have any questions, please contact me, or your staff may contact Pete J. Garcia, Jr., Director, Safety and Engineering Division on (509) 372-1909.

Sincerely,

Sally A. Sieracki
Contracting Officer

SED:SLB

cc: M. S. Strickland, FHI

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