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Beryllium Safety Criteria and Review Approach Document

Authorization and Approval

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1.0 PURPOSE

The mission of the U.S. Department of Energy (DOE) Office of Environment, Safety and Health Assessments (EA-30) is to assess the effectiveness of safety and emergency management systems and practices used by line and contractor organizations and to provide clear, concise, rigorous, and independent evaluation reports of performance in protecting workers, the public, and the environment from the hazards associated with DOE activities.

In addition to the general independent oversight requirements and responsibilities specified in DOE Order (O) 227.1A, *Independent Oversight Program*, this criteria and review approach document (CRAD), in part, fulfills the responsibility assigned to the Office of Enterprise Assessment (EA) in DOE O 226.1B, *Implementation of Department of Energy Oversight Policy*, and DOE O 440.1B, *Worker Protection Program for DOE (Including the National Nuclear Security Administration) Federal Employees*, to ensure contractors implement the requirements of 10 CFR 851, *Worker Safety and Health Program*, and DOE O 450.2, *Integrated Safety Management*. This CRAD specifically relates to assessments of beryllium programs under 10 CFR Part 850, *Chronic Beryllium Disease Prevention Program*.

The CRADs are available to DOE line and contractor assessment personnel to aid them in developing effective DOE oversight, contractor self-assessment, and corrective action processes. The current revision of EA’s CRADs is available at <http://www.energy.gov/ea/criteria-and-review-approach-documents>.

2.0 APPLICABILITY

The following CRAD is approved for use by the Office of Worker Safety and Health Assessments.

3.0 FEEDBACK

Comments and suggestions for improvements on this CRAD may be directed to the Director, Office of Environment, Safety and Health Assessments.

4.0 CRITERIA REVIEW AND APPROACH

The review of beryllium safety assesses the effectiveness of programs and processes for implementation of a comprehensive Chronic Beryllium Disease Prevention Program (CBDPP). The *Integrated Safety Management Policy*, DOE P 450.4A, establishes the Department's policy for work to be conducted safely and efficiently and in a manner that ensures protection of workers, the public, and the environment. To achieve this, the implementation of Integrated Safety Management (ISM) requirements is established through DOE Orders, and for contractor organizations through contract clauses. This includes identification of existing and potential workplace hazards and assessment of risk, development and implementation of hazard controls, assurance that work is performed within established hazard controls, and implementation of a formal mechanism and process to gather feedback and implement continual improvement by the site contractor. Additionally, assessments can include an evaluation of the DOE field element's process to assess the adequacy of procedures and the implementation of the contractor's CBDPP.

The objectives and lines of inquiries are supported by the following regulations and orders:

- 48 C.F.R. § 970.5223-1, *Integration of Environment, Safety, and Health into Work Planning and Execution*
- 10 C.F.R. § 850, *Chronic Beryllium Disease Prevention Program (CBDPP)*
- 10 C.F.R. § 851, *Worker Safety and Health Program*
- 29 C.F.R. 1910.1024, *Beryllium*
- 29 C.F.R. 1910.134, *Respiratory protection*
- 29 C.F.R. 1910.120, *Hazardous waste operations and emergency response*
- 29 C.F.R. 1910.1200, *Hazard communication*
- 29 C.F.R. 1910.132, *Personal protection equipment general requirements*
- 29 C.F.R. 1910.145, *Specification for accident prevention signs and tags*
- DOE O 226.1B, *Implementation of Department of Energy Oversight Policy*
- DOE O 231.1B, *Environmental Safety and Health Reporting*
- DOE 232.2A, *Occurrence Reporting and Processing of Operations Information*
- DOE O 440.1B, *Worker Protection Program for DOE (including the National Nuclear Security Administration) Federal Employees*
- DOE Order 450.2, *Integrated Safety Management*

Resources/Guidance:

- DOE G440.1-7A, *Implementation Guide for Use With 10 C.F.R. 850*
- DOE HDBK 1211-2014, *Activity-Level Work Planning and Control Implementation*
- DOE STD 1187 -2019, *Beryllium Associated Worker Registry Data Collection and Management Guidance*
- DOE SPEC 1142 - 2019, *Beryllium Lymphocyte Proliferation Testing*
- Memorandum, Title 10, Code of Federal Regulations, Part 851, *Worker Safety and Health Program*, Incorporation by Reference Technical Amendment, March 18, 2018
- ANSI/ASSE Z88.2-2015, *American National Standard Practices for Respiratory Protection*

- Department of Energy, (2023, December 15), *Worker safety and health program* (88 FR 86811), Office of the Federal Register

The following objectives are designed as stand-alone sections that can be used in any combination based on the needs of the specific assessment.

OBJECTIVES

BE.1: Site contractor line management has established and implemented a CBDPP, including organizational structure and administration, to ensure effective implementation and control of all beryllium protection activities. (10 CFR 850.10, 850.11, 850.12, and 850.13)

Criteria:

1. A documented CBDPP has been established that adequately addresses the flow down of regulatory requirements including how each element of 10 CFR 850 applicable to worker exposures to beryllium hazards is implemented. (10 CFR 850.10)
 - Has the site contractor developed a comprehensive written beryllium program that binds all applicable beryllium work activities at the worksite?
 - Have policies and procedures been developed to mitigate the risk from identified and potential beryllium hazards?
 - How are regulatory requirements related to beryllium work flowed down to subcontractor management, workers, authorized employee representatives, and occupational medical personnel?
2. All the general CBDPP requirements have been met as required by 10 CFR 850.11.
 - Does the CBDPP specify the existing and planned operational tasks within the scope of the CBDPP and integrated into existing worker protection programs at cover facility activities?
 - Are the details, scope and content of the CBDPP commensurate with the hazard of activities including formal plans and measures to maintain exposures to beryllium at or below the permissible exposure level prescribed in 10 CFR 850.22 (29 CFR 1910.1024)?
 - Does the CBDPP contain provisions for: (1) minimizing the number of workers exposed or potentially exposed to beryllium; (2) minimizing the opportunities for workplace exposure; (3) minimizing the disability and lost work time for workers due to chronic beryllium disease, beryllium sensitization and associated medical care; and (4) setting specific exposure reduction and minimization goals that are appropriate for the beryllium activities covered by the CBDPP to further reduce exposure below the permissible exposure limit prescribed in 10 CFR 850.22 (29 CFR 1910.1024)?
3. The employer manages and controls beryllium exposures in all DOE beryllium activities consistent with the approved CBDPP, including ensuring that no person employed by DOE or a DOE contractor takes or causes any action inconsistent with the requirements of 10 CFR 850, an approved CBDPP and any other Federal statute or regulation concerning the exposure of workers to beryllium at DOE facilities. (10 CFR 850.12, 850.13)
 - How does the site contractor ensure consistent implementation and compliance of the approved CBDPP and of any other Federal statute or regulation concerning the exposure of workers to beryllium?

BE.2: Specific CBDPP requirements and implementation are in accordance with 10 CFR 850 and all Federal statute or regulations related to beryllium. (10 CFR 850, subpart C)

Criteria:

1. The responsible employer has developed a baseline inventory of the locations of beryllium operations and potential locations of beryllium contamination and identified workers' exposure or potential exposure to beryllium at these locations. (10 CFR 850.20)
 - Has a baseline inventory of the locations of beryllium operations and potential locations of beryllium contamination been created?
 - Have workers that are exposed to or potentially exposed to beryllium in these locations been identified?
 - During the creation of the baseline inventory include: (1) a review of the current and historical records of beryllium activities; (2) interviews with workers; (3) documentation of the characteristics and locations of beryllium at the facilities; (4) and performance of air, surface and bulk sampling?
 - How does the responsible employer ensure that the baseline beryllium inventory is managed by a qualified individual (e.g., a certified industrial hygienist) and that the individuals assigned to the task have sufficient knowledge and experience to properly perform such activities?
2. The employer responsible has conducted a beryllium hazard assessment that includes an analysis of existing conditions, exposure data, medical surveillance trends and the exposure potential of planned activities, including prioritization so that activities with the greatest risks of exposure are evaluated first. (10 CFR 850.21)
 - Has the responsible employer comprehensively assessed all existing beryllium hazards?
 - Has the responsible employer gathered beryllium exposure data that is representative of the current workplace hazards?
 - What medical surveillance trends have been analyzed by the responsible employer?
 - How has the beryllium exposure potential of planned activities been analyzed and activities with the greatest risk of exposure been prioritized?
3. The responsible employer assures that workers are not exposed to airborne concentrations of beryllium greater than the permissible exposure limit established by OSHA of 0.2 µg/m³ calculated as an 8-hour Time Weighted Average (TWA) (1910.1024(c)(1)).
 - Has personal monitoring been performed for beryllium to assess the airborne concentration of beryllium to assure that the permissible exposure limits established in 29 CFR 1910.1024(c) have not been exceeded?
4. An action level is included in the CBDPP that is no greater than 0.2 µg/m³, calculated as an 8-hour TWA exposure as measured in the worker's breathing zone by personal monitoring. (10 CFR 850.23)
 - Has the airborne concentration of beryllium been measured at or above the action level and if so, is the responsible employer implementing the following: periodic monitoring, exposure reduction and minimization, regulated areas, hygiene facilities and practices, protective clothing and

equipment, and warning signs (10 CFR 850.24, 850.25, 850.26, 850.27, 850.28, 850.29, and 850.38)?

5. Exposure monitoring is managed by a qualified individual and the individuals assigned have sufficient industrial hygiene knowledge and experience to perform the activities properly. (10 CFR 850.24)
 - Is beryllium exposure monitoring managed and implemented by qualified individuals with sufficient industrial hygiene knowledge and experience to perform such activities properly?
 - Has all initial monitoring in areas that may have airborne beryllium been performed as shown by the baseline inventory and hazard assessment information?
 - Have statistically based monitoring strategies been applied to adequately characterize exposures before reducing or terminating monitoring?
 - In areas where airborne concentrations of beryllium are at or above the action level, does the responsible employer describe the periodic monitoring protocol as specified in the CBDPP?
 - Does the responsible employer use a methodology to assure monitoring accuracy not less than +/- 25%, with a confidence level of 95% for airborne concentrations of beryllium at the action level?
 - Are all samples analyzed in a laboratory accredited for metals by the American Industrial Hygiene Association (AIHA) or an equivalent laboratory that demonstrates quality assurance for metals analysis?
 - Have all beryllium monitoring results been provided to the worker in writing within 10 days after receiving lab results as required by 10 CFR 850.24?
 - If results are at or above the action level, has the responsible employer provided a corrective action plan to the worker that describes actions that will be taken to reduce the worker's exposure to beryllium?
 - Has worker exposure to beryllium reached or exceeded that action level? If so, were DOE and the Site Occupational Medical Director (SOMD) notified of the results within 10 working days of receipt?
6. Where exposure levels are at or above the action level, a formal exposure reduction and minimization program to reduce exposure levels to below the action level are in place and effective. This program must be described in the responsible employer's CBDPP. Where exposure levels are below the action level, actions to reduce or minimize exposure are implemented, if practicable. (10 CFR 850.25)
 - In areas where exposure levels are at or above the action level, is there a formal exposure reduction and minimization program in place that includes (1) annual goals for exposure reduction and minimization; (2) rationale and strategy for meeting the goals; (3) actions to achieve the goals; and (4) method to track progress or demonstrate that the goals have been met?
 - Has the hierarchy of industrial hygiene controls been implemented in areas where the beryllium monitoring results are below the action level (i.e., elimination, engineering controls, administrative controls, and personal protective equipment, in that order)?
7. Beryllium regulated areas have been established if the airborne concentrations of beryllium in areas in DOE facilities are measured at or above the action level. (10 CFR 850.26)
 - How has the responsible employer established and demarcated regulated areas that airborne concentrations of beryllium have been measured at or above the action level?

- How is limited access to regulated areas been established to allow only authorized persons in the area?
 - What method is used to keep records of all individuals entering regulated areas?
8. Hygiene facilities and practices have been created in areas where workers are exposed to beryllium at or above the action level, without regard to the use of respirators. (10 CFR 850.27)
- Change rooms or areas – Have clean change rooms for beryllium workers who work in regulated areas been established and are they designed in compliance with 10 CFR 850.27(b)(1) and (2) to prevent cross-contamination between work and personal clothing and the subsequent spread of beryllium off-site?
 - Showers and handwashing facilities – Have handwashing and shower facilities been provided for beryllium workers who work in regulated areas?
 - Lunchroom facilities – Has the employer provided lunchroom facilities that are readily accessible to beryllium workers? How does the employer ensure the tables are free of beryllium surface contamination and ensures beryllium workers are not entering with contaminated equipment or clothing?
 - Sanitation – How does the employer ensure the change rooms, shower and handwashing facilities and lunchrooms meet the sanitation requirements of 29 CFR 1910.141?
 - Location of hygiene facilities – Have the entry and exit procedures for hygiene facilities been designed as technically sound, clearly communicated and consistently followed to minimize cross-contamination of protective clothing and equipment and dispersion of beryllium contamination into clean areas?
9. A respiratory protection program has been implemented that complies with the requirements of 29 CFR 1910.134, *Respiratory Protection*, and respirators are provided to employees whenever airborne concentration of beryllium is at or above the action level. (10 CFR 850.28)
- Are the responsible employer's respiratory program and its implementation in compliance with the requirements of 29 CFR 1910.134, *Respiratory Protection*, with regards to areas in which the airborne concentration levels of beryllium are at or above the action level?
 - Regardless of the measured exposure level, have beryllium workers been offered respiratory protection upon request?
 - Are all respirators used in the workplace approved by the National Institute of Occupational Safety and Health (NIOSH)?
10. The employer responsible has provided protective clothing and equipment to beryllium workers and ensures its appropriate use and maintenance where dispersible forms of beryllium may contact the worker's skin, enter openings in workers' skin, or contact workers' eyes. (10 CFR 850.29) (29 CFR 1910.132)
- Where dispersible forms of beryllium exist in the workplace, have workers been provided protective clothing and equipment, including to any beryllium-associated worker who requests the use of protective equipment against airborne beryllium, regardless of the measure exposure levels?
 - Are procedures established for donning, doffing, handling and storing protective clothing and equipment that prevent beryllium workers from exiting areas that contain beryllium with contamination on their bodies or personal clothing?

- Are methods established to ensure that protective clothing and equipment are cleaned, laundered, repaired or replaced as needed to maintain effectiveness and placed in containers that prevent dispersion of beryllium dust and labeled according to 10 CFR 850.38?
 - Have organizations that launder or clean DOE beryllium-contaminated protective clothing or equipment or that is potentially contaminated been notified and their methods of laundering and cleaning appropriate as to prevent the release of airborne beryllium?
11. Routine beryllium surface sampling and housekeeping procedures have been established to ensure that surfaces contaminated with beryllium do not exceed a removable contamination level of 3 $\mu\text{g}/100\text{ cm}^2$. (10 CFR 850.30)
- Does the routine beryllium surface sampling protocol ensure that surface contamination does not exceed a removable contamination level of 3 $\mu\text{g}/100\text{ cm}^2$ during non-operational periods?
 - Are methodologies established for facilities where beryllium is present to clean beryllium contaminated floors and surfaces to avoid producing airborne dust?
 - Are all portable or mobile vacuum units used to clean beryllium-contaminated areas equipped with HEPA filters and filters changed frequently to maintain their capture efficiency?
 - Is all equipment used to clean beryllium-contaminated surfaces appropriately labeled, controlled and not used for non-hazardous materials?
12. Beryllium contaminated equipment and other items are cleaned to the lowest contamination level practicable and do not exceed removable contamination level of 0.2 $\mu\text{g}/100\text{ cm}^2$ or the concentration level of beryllium in soil at the point of release and the removable contamination level of equipment or item surfaces do not exceed 3 $\mu\text{g}/100\text{ cm}^2$. (10 CFR 850.31)
- How does the employer ensure that beryllium cleaning procedures, processes and implementation achieve the lowest contamination level practicable and do not exceed the regulatory removable contamination and surface contamination levels?
13. The employer has controlled the generation of beryllium containing waste and beryllium-contaminated equipment and other items through applying the waste minimization principles and in accordance with containment requirements regarding bags, containers, or enclosure to prevent the release of beryllium during handling and transportation. (10 CFR 850.32)
- What waste minimization principles are in place to control the generation of beryllium containing waste, equipment and other items?
 - Are all beryllium containing waste, equipment, and other items disposed of in sealed, impermeable bags, containers, or enclosure to prevent the release of beryllium dust during handling and transportation and labeled according to 10 CFR 850.38?
14. Warning signs and labels have been established at each beryllium access area and for all containers of beryllium and its compounds and beryllium-contaminated clothing, equipment waste, scrap and debris. (10 CFR 850.38)
- Are all warning signs and labels posted at each access point to beryllium-regulated areas and affixed to containers of beryllium, beryllium compounds, or beryllium-contaminated items?
 - Do all warnings and labels meet the specific language and criteria required by 10 CFR 850.38, visibility and wording effectiveness as requirement by 29 CFR 1910.145 and in compliance with 29 CFR 1910.1200? (Employers with multilingual workforces must ensure vital instructions (like chemical hazards under 1910.1200) are comprehensible to meet the standard's intent).

BE.3: The responsible employer is in compliance with 29 CFR 1910.120(l) for handling beryllium emergencies related to decontamination and decommissioning operations and with 29 CFR 1910.120(q) for handling beryllium emergencies related to all other operations. The beryllium program confirms that the site safeguards and security plans and emergency management programs address beryllium hazards. (10 CFR 850.33)

Criteria:

1. The employer has complied with 29 CFR 1910.120(l) for handling beryllium emergencies related to decontamination and decommissioning operations.
 - For facilities and spaces designated for decontamination and decommissioning, have beryllium hazards been assessed with respect to the potential for release?
 - For facilities and spaces contaminated with beryllium and scheduled for decontamination, have beryllium emergencies been considered?
2. The employer has complied with 29 CFR 1910.120(q) for handling beryllium emergencies related to all other operations.
 - Do emergency management plans address beryllium regulated and contamination areas and hazards?
 - Do site safeguards and security plans address beryllium regulated and contamination areas?

BE.4: The responsible employer has established and implemented a medical surveillance program and designated a Site Occupational Medical Director to administer the medical surveillance program. The program maintains compliance with all requirements of 10 CFR 850.34, 850.35, and 850.36. (Note: this section will be assessed by the Occupational Medicine SME on the assessment team.)

Criteria:

1. A SOMD has been designated as responsible for administering the medical surveillance program and ensuring that the medical evaluations and procedure required are performed by or under the supervision of a licensed physician who is familiar with the health effects of beryllium. (10 CFR 850.34(a))
 - Has the employer established and implemented a medical surveillance program for voluntary participant beryllium-associated workers?
 - Has the employer designated a SOMD responsible for the administration of the medical surveillance program?
 - Has a list of beryllium-associated workers who may be eligible for protective measures under this part been developed and based on hazard assessment, exposure records, and other information to identify beryllium-associated workers and adjusted at regular intervals based on periodic evaluations of beryllium-associated workers performed under 10 CFR 850.34(a)(4)?
 - Has the SOMD and examining physicians been provided comprehensive information needed to administer and operate a medical surveillance program which includes all the requirements in 10 CFR 850.34(a)(5) and (6)?
 - Has the employer provided initial baseline and periodic evaluations to beryllium workers annually and to other beryllium-associated workers every three years that includes a detailed

medical and work history, respiratory symptoms questionnaire, respiratory physical examination, a Be-LPT, and any other medical evaluations deemed appropriate by the examining physician, including a chest radiograph every five years for beryllium-associated workers? (10 CFR 850.34(b))

- Has the employer provided medical evaluations as soon as possible to workers who may have been exposed to beryllium due to a beryllium emergency and did those evaluations include the requirements of 10 CFR 850.34(b)(2)?
 - Has the employer established a multiple physician review process for beryllium-associated workers which allows the worker to designate a second physician to review any findings, determinations or recommendations of the initial physician and to also conduct additional examinations, consultations and laboratory tests that the second physician designates? (10 CFR 850.34(c))
 - Has the employer established processes regarding multiple physician disagreements with medical findings, determinations, or recommendations and SOMD direction in acting upon the disagreements in compliance with the requirements of 10 CFR 850.34(c)?
 - Has the employer promptly notified beryllium-associated workers of the right to seek a second medical opinion after an initial physician's exam? (10 CFR 850.34(c)(2))
 - Has the employer established processes that address an alternative form of physician determination in lieu of a multiple physician review process and is it expeditious and at least as protective of the worker? (10 CFR 850.34(d))
 - Do written medical opinions and recommendations comply with the requirements of 10 CFR 850.34(e)?
 - Does the SOMD provide the employer, within two weeks of receipt of results, with a written, signed medical opinion for each evaluation performed on each beryllium-associated worker which takes into consideration the findings, determinations and recommendations of the other examining physicians who may have examined the worker? (10 CFR 850.34(e)(1))
 - Does the SOMD's opinion contain the diagnosis, recommendations for removal or limitations on the worker's activities, and a statement that the examining physician has discussed all details with the worker according to 10 CFR 850.34(e)(1)?
 - Are workers medically removed under the beryllium medical surveillance program appropriately recorded on the OSHA 300 Log as required by 29 CFR 1904.9(a)?
 - Does information provided to the beryllium-associated worker include the written medical opinion containing all results of all medical tests/procedures, explanations of abnormal findings and recommendations that the worker be referred for additional testing for evidence of chronic beryllium disease (CBD) within 10 working days after the SOMD receives results of medical tests/procedures? (10 CFR 850.34(f)(1))
 - After worker requests, has the employer provided workers with the information the employer is required to provide the examining physician under paragraph 10 CFR 850.34(a)(6)? (10 CFR 850.34(g))
 - How does the employer routinely and systematically analyze medical, job and exposure data to identify individuals or groups of individuals potentially at risk for CBD and working conditions that contribute to that risk? (10 CFR 850.34(h)(1))
 - Does the employer ensure that the results of data analyses are used to identify additional workers to whom the employer must provide medical surveillance and to determine the need for additional exposure controls? (10 CFR 850.34(h)(2))
2. The employer offers beryllium-associated workers medical removal from exposure to beryllium if the SOMD determines in a written medical opinion that it is medically appropriate to remove the worker from exposure. (10 CFR 850.35)

- Has the employer implemented procedures/processes that provide for the medical removal of workers from exposure to beryllium if the SOMD determines it to be appropriate and addresses: temporary removal pending final medical determination, permanent medical removal, worker consultation before temporary or permanent medical removal, and return to work after medical removal in accordance with 10 CFR 850.35(a)?
 - Has the employer established and implemented medical removal protection benefits in accordance with the requirements of 10 CFR 850.35(b)?
3. The employer provides each beryllium-associated worker a summary of the medical surveillance program and with information on the benefits and risks of medical tests and examinations. (10 CFR 850.36)
- Has the employer provided each beryllium-associated worker with a summary of the medical surveillance program, and does it include the types of data to be collected, how the data will be collected and maintained, the purpose for which the data will be used, and a description of how confidential data will be protected? (10 CFR 850.36(a))
 - Has the SOMD obtained beryllium-associated worker's signatures on the informed consent form found in Appendix A of 10 CFR 850 before performing medical evaluations or any tests?

BE.5: Training and counseling for all beryllium-associated workers has been established, implemented and effective in compliance with 10 CFR 850.37 and 29 CFR 1910.1200, *Hazard Communication*.

Criteria:

1. The employer responsible has developed and implemented a beryllium-training program. (10 CFR 850.37)
- Does the training for beryllium-associated workers cover the contents of the CBDPP and address the potential health risks to family members and others who may come into contact with beryllium either on the workers themselves, their clothing or personal items as a result of a beryllium control failure at a DOE/NNSA facility?
 - Is the training conducted in accordance with 29 CFR 1910.1200, *Hazard Communication*?
 - Have all beryllium workers been trained before or at the worker's initial assignment to the job, every 2 years after and retraining whenever they have reason to believe that beryllium workers lack the proficiency, knowledge, or understanding needed to work safely with beryllium?
2. The responsible employer has developed and implemented a beryllium-counseling program. (10 CFR 850.37)
- Has the employer developed and implemented a counseling program to assist beryllium-associated workers who have been diagnosed to be sensitized to beryllium or to have CBD?
 - Does the counseling program meet the requirements of providing sensitized and CBD-diagnosed workers with information pertaining to:
 - Medical surveillance program requirements (10 CFR 850.34)
 - Medical treatment options
 - Medical, psychological, and career counseling
 - Medical benefits (10 CFR 850.35)
 - Procedures and workers' rights under workers' compensation laws and regulations

- Work practices designed to limit exposure to beryllium; and
- Risk of continued exposure after sensitization?

BE.6: The employer complies with recordkeeping and use of information requirements in 10 CFR 850.39.

Criteria:

1. The employer must establish and maintain accurate records of all beryllium inventory information, hazards assessments, exposure measurements, exposure controls, and medical surveillance. (10 CFR 850.39)
 - Has the employer established and maintained accurate records of all beryllium inventory information, hazards assessments, exposure measurements, exposure controls, and medical surveillance? (10 CFR 850.39(a))
 - Has the employer conveyed all record series required under this rule to DOE if the employer ceases to be involved in the CBDPP? (10 CFR 850.39(c))
 - How does the employer link data on workplace conditions and health outcomes to establish a basis for understanding beryllium health risk? (10 CFR 850.39(d))
 - How is confidentiality maintained of all work-related records that are transmitted to other parties to ensure they do not include names, social security numbers or any other variables or combinations that could be used to identify individuals? (10 CFR 850.39(e)(1))
 - How does the employer ensure that individual medical information generated by the CBDPP is included as part of the worker’s site medical records and maintained by either the SOMD or another designated physician, separated from other records and only used or disclosed by the employer in conformance with requirements imposed by the Americans with Disabilities Act, the Privacy Act of 1974, the Freedom of Information Act and any other applicable law? (10 CFR 850.39(e)(2))
 - How does the employer maintain all records in current and accessible electronic systems that includes maintaining confidentiality while having readily retrievable data? (10 CFR 850.39(f))
 - How does the employer maintain confidentiality of individuals while transmitting all records generated by this rule, to the Director, Office of Environment, Health, Safety and Security when requested? (10 CFR 850.39(g))
 - How does the employer maintain confidentiality of individuals when transmitting an electronic registry of beryllium-associated workers to the Office of Domestic and International Health Studies, Office of Environment, Health, Safety and Security, semi-annually? (10 CFR 850.39(h))

BE.7: A formal process is established and implemented to gather feedback and implement continuous improvement of CBDPP elements, implementation, and the adequacy of hazard identification, prevention, abatement and controls. The results are given to line managers, planners, worker-protection staff, workers, medical staff and labor organizations that represent beryllium-associated workers who request such information. (10 CFR 850.40)

Criteria:

1. The employer conducts periodic analyses and assessments of beryllium monitoring activities, hazards, medical surveillance, exposure reduction and minimization, and occurrence reporting data.

- How does the employer conduct periodic analyses and assessments of beryllium monitoring activities, hazards, medical surveillance, exposure reduction and minimization and occurrence reporting data and how are the results used to maintain and improve all elements of the CBDPP?
 - Are effective self-assessments of the CBDPP performed routinely to ensure adequate implementation of 10 CFR 850? (DOE O 226.1B, attachment 1)
 - How are the results given to line managers, planners, worker protection staff, workers, medical staff and labor organizations? (10 CFR 850.40(a) and (b))
2. The CBDPP provides for submission to the appropriate Head of the DOE field element for review and approval of the CBDPP. (10 CFR 850.10(a) and (b))
- Has the contractor prepared and submitted a CBDPP to the Head of DOE field element and provided updates when significant changes or additions to the CBDPP occur?
 - Has the contractor, if employing or supervising beryllium-associated workers represented by a labor organization, provided timely notice and bargained in accordance with Federal labor laws regarding the development, implementation, and updates of the Chronic Beryllium Disease Prevention Program (CBDPP)?
3. Management performs and documents periodic self-assessment to ensure the effectiveness of the implementation of the CBDPP and assure quality. Such self-assessments shall include reviews of each of the following: (see DOE O 226.1B, attachment 1)
- Adequacy and use of CBDPP resources.
 - All exposure assessment records, including medical exposure data, injury and illness logs and supporting information, and any other records relevant to the maintenance of the CBDPP.
 - Compliance with applicable CBDPP requirements and established performance measures.
 - Success in receiving and responding to employee occupational health concerns.
 - CBDPP evaluation records to assess progress in abating health hazards.
 - All required written programs that include beryllium hazard elements (e.g., the industrial hygiene monitoring program); and
 - Training effectiveness program.
4. Management evaluates and resolves any issues revealed by self-assessment by ensuring that corrective actions are implemented, effective, and have long-term sustainability. (see DOE O 226.1B, attachment 1) (10 CFR 850.40)
- Does management adequately address any deficiencies identified by the CBDPP self-assessment in a timely manner? (See DOE O 226.1B, attachment 1)
 - How does management communicate the results of these assessments communicated to the management and workers?
 - What are the procedures for the development of corrective actions?
 - How does management ensure the corrective actions are implemented, effective, and have long-term sustainability?
 - Have management incorporated lessons learned into future work planning and activities for continuous improvement?

BE.8: Federal Oversight. The DOE field/site office periodically assesses the effectiveness of the contractor's CBDPP procedures and implementation, particularly concerning hazard identification, prevention, abatement, and controls. This includes verifying the Contractor

Assurance System's effectiveness through scheduled and unscheduled evaluations (e.g., self-assessments, independent assessments, management walkthroughs) that identify issues, concerns, and opportunities for improvement within the work planning and control (WP&C) program. (DOE O 226.1B)

Criteria:

1. The DOE field office ensures contractors effectively manage beryllium-related issues by analyzing and tracking internal/external data, evaluating performance against established metrics, implementing corrective actions, and conducting effectiveness reviews for continuous improvement of the CBDPP. (DOE O 226.1B) (10 CFR 850.39(b))
 - Has the Head of the DOE field element reviewed and approved the CBDPP and any subsequent updates?
 - Do records or observations demonstrate that identified issues and concerns are analyzed, tracked, trended, and evaluated for collective significance?
 - Do records or observations demonstrate that this information is compared to established performance objectives to measure the effectiveness of CBDPP?
 - Do records or observations demonstrate that corrective actions are developed and implemented for identified issues, concerns, or negative performance trends?
 - Do records or observations demonstrate that effectiveness reviews for implemented corrective actions are conducted to ensure corrective actions taken for a given issue, concern, or trend result in a reduction or elimination of similar issues?
 - Do records or observations demonstrate that corrective action effectiveness reviews include observation of work in the field to validate work execution improvement?
 - Have the Heads of the DOE departmental elements designated all record series under 10 CFR 850 as agency records, subject to all applicable agency records management and access laws and ensured that the record series are retained for at least seventy-five years?

APPROACH

Records Review:

- Chronic Beryllium Disease Prevention Program
- Beryllium related procedures, as applicable
- Beryllium sampling procedures and protocols
- Beryllium hazard and characterization procedures
- Beryllium inventory procedure
- Beryllium permit procedure
- Beryllium area and article “free release” procedures
- Current site-wide beryllium inventory
- Reviews of current and previous beryllium inventories
- Beryllium training program procedures
- Exposure assessment procedure and samples of documented exposure assessments involving beryllium hazards
- Samples of completed work packages involving beryllium hazards
- Samples of beryllium sampling plans
- Sample of completed hazard assessments with sampling plans for beryllium inventory records.
- Assessments of the beryllium program during the past 5 years
- External assessments of the beryllium program during the past 5 years

- Annual reviews of the beryllium program (10 CFR 850)
- Assessments of repurposed beryllium areas
- ORPS reports involving beryllium during the past 5 years.
- Beryllium emergency procedures
- Beryllium medical surveillance program
- Investigation documents of CBD cases, if any
- Beryllium registry <https://oriseapps.ornl.gov/BAWR/OtherResources.aspx>

Interviews:

- Beryllium Program Manager
- Industrial Hygiene Program Manager
- Respiratory Protection Program Manager
- Industrial Safety Program Manager
- Beryllium sampling personnel
- Beryllium training personnel
- Facility managers of beryllium regulated areas
- Operational managers of beryllium regulated areas
- Site Occupational Medicine Director
- Occupational Medicine staff involved with beryllium medical surveillance
- DOE field office personnel involved with beryllium program oversight
- Employees conducting beryllium related work

Observations:

- Work involving beryllium parts, stock material, and tools
- Beryllium air sampling
- Beryllium surface sampling
- Beryllium inventory reviews
- Selectively walk-through beryllium regulated areas
- Beryllium classroom training