FESHM 4190: SPECIAL TOXIC HAZARDS

Beryllium and Beryllium Alloys
Chronic Beryllium Disease Prevention Program

Revision History

Author	Description of Change	Revision Date
Rich Ruthe	1. Updated the chapter to reflect applicable portions of the OSHA 29CFR1910.1024, which became effective May 20, 2017. 2. Minor editorial changes and updated FESHM Chapter links.	August 2017
David Baird	1. Formatted the chapter according to ESHS requirements. 2. Defined a Beryllium Activity to an airborne exposure. 3. Modified the surface contamination level to match the DOE 10 CFR 850 standard. 4. Updated the Beryllium Operations table found in Attachment A.	November 2011

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1.0 INTRODUCTION

Inhalation of beryllium has been associated with short and long term adverse health effects to individuals with a hypersensitivity to the metal. Acute effects include pneumonia-like symptoms such as inflammation of the respiratory system, substernal pain, moderate shortness of breath, and weight loss. Chronic beryllium disease is manifest primarily by similar respiratory symptoms, however, the disease progresses to severe lung impairment. Symptoms may not develop for years following the last beryllium exposure. There is no cure for this disease.

Sophisticated medical tests have been developed that can detect individuals who are sensitized to beryllium well before overt symptoms develop. These tests have suggested that the sensitization can occur in individuals at extremely low air exposure concentrations.

Fermilab uses beryllium, beryllium alloys and ceramic beryllia for targets and beamline components. These materials are primarily used as "articles" as defined by Department of Energy (DOE) 10 Code of Federal Regulations (CFR) Part 850, and as such, most beryllium uses are exempt from the requirements of the DOE's Chronic Beryllium Disease Prevention Program. Handling of solid components does not normally result in measurable airborne beryllium particulate. Nevertheless, every effort must be made to limit employee exposure by controlling how beryllium is used at the laboratory.

Note: This document contains the detail, scope and content commensurate with the hazard of the Beryllium activities performed at Fermilab. As required by DOE 10 Code of Federal Regulations (CFR) Part 850.12, any new tasks that involve the potential for exposure to airborne beryllium outside the scope of this document will result in the modification of this program and a re-submittal for approval by the Head of DOE Field Element.

2.0 DEFINITIONS

Action Level - Air (AL) - Employee exposure, without regard to the use of respirators, to an airborne concentration of beryllium of 0.0001 milligrams per cubic meter of air (mg/m^3) calculated as an 8-hour time-weighted average (TWA) as measured in the worker's breathing zone.

Action Level - Surface (ALS) - surface concentration levels in excess of 0.03 micrograms per square centimeter (0.03 $\mu g/cm^2$ or 3.0 $\mu g/100\ cm^2$).

Beryllium - elemental beryllium and insoluble beryllium compound or alloy containing 0.1% or greater beryllium by weight that may release airborne beryllium particulates.

Beryllium Activity – means an activity that has the potential to expose workers to total airborne beryllium above 0.00005 mg/m^3 calculated as an 8-hour time-weighted average (TWA) as measured in the worker's breathing zone. Activities include, but are not limited to, cutting, grinding, sanding, and soldering.

Beryllium Article - manufactured item formed to a specific shape or design during its 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-associated worker - means a current worker who is or was exposed or potentially exposed to airborne concentrations of beryllium above detectable limits, including:

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

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

Beryllium Worker - a current worker who is regularly employed in a beryllium activity.

Breathing Zone - defined as a hemisphere forward of the shoulders, centered on the mouth and nose, with a radius of 6 to 9 inches.

Chronic Beryllium Disease Prevention Program (CBDPP) – the program that supplements and is integrated into existing worker protection programs that are established for DOE contractor employees. This chapter describes the Fermilab CBDPP.

Competent Person - One who can identify beryllium hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.

Permissible Exposure Limit Time-Weighted Average (PEL TWA) - the time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek. The Occupational Safety and Health Administration (OSHA) has established a PEL-TWA of 0.2 $\mu g/m^3$ for beryllium, without regard to the use of respirator averaged over an 8-hour period.

Regulated Areas - area demarcated in which airborne concentration of beryllium exceeds, or can reasonably be expected to exceed the AL.

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

Short Term Exposure Limit (STEL) – OSHA has established a STEL of 2.0 $\mu g/m^3$ for beryllium as determined over a 15-minute sampling period.

Site Occupational Medical Director (SOMD) - the Fermilab physician responsible for the overall direction and operation of the site occupational medicine program.

3.0 RESPONSIBILITIES

A responsibilities section is included only if there are any responsibilities which are unusual, i.e., different than those indicated in FESHM 1010.

3.1 Divisions/Section/Project Heads

Division/Section/Project (D/S/P) heads shall be aware of the materials, operations, and related hazards with which their personnel may be involved. They shall assure the policies, procedures, and requirements as set forth in this FESHM chapter are followed.

3.2 Supervisors, Construction Coordinators, and Task Managers

Supervisors, construction coordinators, and task managers shall conduct their operations in a safe manner. They shall assure competent personnel use adequate protective measures and that appropriate personal protective equipment is available and used properly. They shall be familiar with potential hazards and assure that their personnel are trained and understand procedures, hazards, protective measures & equipment, and emergency procedures to prevent adverse effects from their work.

3.3 Individuals working with or handling beryllium

Individuals working with or handling beryllium shall have sufficient knowledge and training to perform their work safely. Before performing work, which involves beryllium materials, they shall be familiar with the potential hazards, protective measures, proper use of all materials and equipment, and emergency procedures. They shall follow the precautions listed in this chapter and on the hazard analysis or Toxic Material Handling Permit, if a permit is required. Employees may consult with their Division Safety Officer (DSO) or the ESH&Q Industrial Hygiene Group for additional information.

3.4 Occupational Medical Office

The Occupational Medical Office shall provide a medical surveillance program for beryllium workers as defined by this chapter (see Medical Surveillance).

4.0 PROGRAM DESCRIPTION

4.1 Scope

This chapter applies to all present and past exposure, or the potential for exposure to beryllium at Fermilab.

4.2 Inventory

D/S/P heads will utilize their records, process knowledge, employee interviews, and hazard assessment of beryllium locations to determine if they have beryllium or beryllium contamination areas. Locations

where beryllium was previously used and residual contamination exist, must be included in the inventory. Conduct air, surface, and bulk sampling if necessary. An inventory of current beryllium locations and operations shall be maintained by the ESH&Q Section. The inventory shall also identify the workers exposed or potentially exposed to beryllium at these locations. The inventory shall be reviewed and updated annually. A list of those operations that involve beryllium that are currently being performed, or are planned can be found in Attachment A.

4.3 Storage and Labeling

Label beryllium to identify it from other, less toxic, metals. Individual pieces need not be labeled when stored in a labeled container or cabinet. Where possible, components used in experiments should be labeled, however, in some cases this may be impossible due to the complex nature of the component.

Beryllium must be stored in designated storage areas and must be stored in sealed containers, labeled, and secured in a dry location. Surplus beryllium must be stored in a locked storage facility maintained by the ESH&Q Section. Activated beryllium may be stored at the Railhead Facility.

4.4 Medical Surveillance

The Fermilab Occupational Medical Office shall implement a beryllium medical surveillance program for beryllium-associated workers who voluntarily participate in the program. See Attachment B for further details of Fermilab's Beryllium Medical Surveillance Program.

To aid the Occupational Medical Office in this endeavor, the ESH&Q Section shall provide, and when necessary assist, the SOMD with the information needed to operate and administer the medical surveillance program. This includes:

1. List of beryllium-associated workers
2. Beryllium inventories
3. Job Hazard Analysis
4. Exposure monitoring data
5. Copies of any Toxic Material Handling permits
6. A copy of the current 10 CFR Part 850 and its preamble.

The medical requirements in this CBDPP shall be performed by or under the supervision of a licensed physician familiar with the health effects of beryllium.

4.5 Training

Several levels of training are offered for distinct worker classifications:

Hazard Communication Training is required for all new Fermilab employees and is given as part of New Employee Orientation.

Beryllium Handling Training is an awareness-level course required for all workers who may handle non-oxidized beryllium articles, and therefore are not exposed above 0.00005 mg/m^3. This training shall include information on the health effects of beryllium, safe work practices, proper handling, and control of beryllium.

Beryllium Worker Training is required for current Beryllium workers only. This shall include Beryllium Handling Training, and additional information on use of personal protective equipment, required medical monitoring, waste management, and decontamination procedures. Beryllium Worker training shall take place before or at the time of initial assignment and every two years thereafter.

Beryllium Associated Worker Training is required for any employee who self identifies by opting into the Beryllium Associated Worker Program or any employee who was previously considered to be a Beryllium Worker. The training includes, but is not limited to, information on the chemical and physical properties of beryllium, the health effects of beryllium exposure, exposure standards, and who/what is the Oak Ridge Institute for Science and Education (ORISE).

Retraining shall be provided if there is reason to believe a trained individual lacks the proficiency, knowledge, or understanding needed to work safely with beryllium. Such situations include, but may not be limited to, a change in the operations, procedures, or beryllium controls about which the individual was not previously trained.

4.6 Records

Documentation concerning this program shall be maintained per electronic format for 75 years. Records shall be maintained as follows:

Industrial Hygiene Sampling Results - the electronic database is maintained by the ESH&Q Section. Employee exposure results are available for viewing by the Occupational Medicine Office and inclusion into the employee's medical file.

Inventories - database maintained by the ESH&Q Section.

Training - database maintained by the ESH&Q Section.

Permits and Hazard Analyses - shall be maintained by the D/S/P and the ESH&Q Section. Not all records are maintained electronically.

Medical - maintained by the Occupational Medical Office. These are not maintained electronically.

Information from these documents can be combined if a need arises to link hazard assessment, exposure monitoring, and medical surveillance activities. This information is being captured in the DOE Office of Epidemiologic Studies, Beryllium-Associated Worker Registry. Registry information is submitted biannually by the ESH&Q Section in cooperation with the Fermilab Occupational Medicine Office.

4.7 Experimenters and Outside Contractors

Experimenters and subcontractors that may be exposed to beryllium while at Fermilab shall be subject to the requirements of this chapter.

When beryllium is sent off-site for machining or other activity that may release airborne dust or fume, Fermilab shall inform the recipient of the hazard with warning labels or other appropriate warning methods. The Purchase Requisition and contract exhibits shall be reviewed and approved by the DSO. The ESH&Q Section shall be consulted regarding contract exhibits and contractor selection.

Experimenters and subcontractors shall notify the ESH&Q Section prior to bringing any beryllium on-site.

4.8 Emergency Preparedness

The Fire Department shall be **immediately** informed of any beryllium emergency.

4.9 Performance Feedback

The ESH&Q Section must conduct periodic analyses and assessments of this program, including monitoring activities, hazards, medical surveillance, exposure reduction and minimization, and occurrence reporting. The Tripartite Assessment Program described in QAM 12080, *Self-Assessments*, is the vehicle best utilized to fulfill this requirement.

5.0 PROCEDURES

HAZARD ASSESSMENT AND CONTROL OF BERYLLIUM ACTIVITIES

Every effort shall be made to minimize employee exposure to beryllium. All beryllium activities that are performed at Fermilab must be reviewed by the ESH&Q Section.

5.1 Exposure Assessment

Exposure assessment is conducted by an ESH&Q professional using the following guidelines:

Initial Monitoring

Eight-hour TWA personal breathing zone exposure sampling shall be conducted in all areas that may have airborne beryllium above 0.00005 mg/m^3, as indicated by the baseline inventory and hazard assessment.

Note: In some instances, the activity being performed may be of short duration, and therefore the eight-hour sampling period may not be possible.

a. Beryllium activities are assumed to be above the AL unless there is data for similar previous work, which documents exposures below the AL.

b. Exposure above the AL is assumed when handling a significant number of beryllium pieces with surface oxidation in excess of 0.03 $\mu g/cm^2$ unless there is data for similar prior work, documenting exposures below the AL.

Periodic Monitoring

a. Eight-hour TWA personal breathing zone exposure sampling shall be performed at least every 3 months (quarterly) in areas where airborne concentrations of beryllium are at or above the Action Level.

b. If operations, maintenance or procedures change additional exposure monitoring must be performed.

Reduce or Terminate Monitoring

Professional judgement shall be used to reduce or terminate monitoring. Whenever practical, a statistically-based monitoring strategy will be applied to ensure that a sufficient number of sample results were performed that adequately characterize exposures.

General Monitoring Requirements

a. The method of monitoring and analysis must have an accuracy of not less than plus or minus 25 percent, with a confidence level of 95 percent, for airborne concentrations of beryllium at the Action Level.

b. The laboratory must be accredited for metals by the American Industrial Hygiene Association (AIHA).

Notification of Monitoring Results

a. The ESH&Q Section shall personally notify, in writing, the affected worker within 10 working days after receipt of any monitoring results.

b. If the monitoring results indicate that the worker's exposure is at or above the action level, the notice shall include a statement that the Action Level has been met or exceeded, a description of the corrective action(s) being taken to reduce the worker's exposure to below the Action Level, and be sent to both DOE and the SOMD within 10 working days after receipt of any monitoring results.

Release Criteria

Beryllium contaminated equipment being released to the general public or a DOE facility for non-beryllium use, or to another facility for work involving beryllium must be labeled in accordance with

section 3 on "Signage and Labeling" and cleaned to the lowest level practicable, but not to exceed the following levels:

a. Removable beryllium contamination on equipment or other items released to the general public or for use in non-beryllium area of a DOE facility must not exceed the higher of 0.002 μg/cm^2 (0.2 μg/100 cm^2) or the concentration level of beryllium in soil at the point of release, whichever is greater. The release is conditioned on the recipient's written commitment to implement controls that will prevent foreseeable beryllium exposure, considering the nature of the equipment or item and its future use, and the nature of the beryllium contamination.

b. Removable beryllium contamination on equipment or other items released to another facility performing work with beryllium must not exceed 0.03 μg/cm^2 or (3.0 μg/100 cm^2). The equipment or item must be enclosed or placed in sealed, impermeable bags or containers to prevent the release of beryllium dust during handling and transportation.

5.2 Exposure Reduction and Minimization

a. Where exposure levels are at or above the Action Level (AL), an exposure and minimization plan will be established which includes the following:

Toxic Material Handling Permit - The permit includes the start and expiration dates of the permit, the location of the work, the description of the work, the name(s) of the employees and an indication as to whether the employee has received both beryllium training and medical approval. Other information required by the permit includes; pre-job conditions, required controls, required personal protective equipment and required sampling, what hygiene facilities are needed, waste disposal instructions and special instructions. The permit also contains signature approval space for the Task Manager and the DSO or other Fermilab ESH professional.

1. Beryllium Worker training and respiratory protection training, as a minimum, is required of all employees assigned to the job.

2. The Occupational Medicine Office must be notified prior to any job for which a permit is needed. Medical approval including respiratory protection approval is needed for each worker assigned to the job.

3. As part of the permit process, preparation for the job may include wipe samples to determine beryllium contamination of work area or beryllium components, safety or ergonomic concerns, etc. Surfaces contaminated because of work operations must be cleaned to below 0.03 μg/cm^2.

4. The required controls and subsequent required personal protective equipment are based upon the conventional hierarchy of industrial hygiene

controls (i.e., engineering controls, administrative controls, and personal protective equipment). Examples of engineering and administrative controls include exhaust ventilation, hygiene practices, enclosing and restricting access to the work area, etc.

5. The permit should indicate the type of respirator selected by the ESH&Q professional for the job. Employees that use respirators must also receive medical surveillance, fit testing and training. Disposable coveralls or similar full-body work clothing, gloves, hoods, and disposable shoe coverlets shall be worn when exposure may exceed the AL. Contaminated protective clothing and equipment shall be collected in a sealable container or bag and labeled as beryllium contaminated (Section 5.3.b).

6. The number and frequency of personal and area air samples should be indicated on the permit. It should also indicate the number and location of wipe samples if surface contamination is of concern.

7. All working surfaces shall be maintained as free as practicable of accumulations of beryllium. Floors and other surfaces shall be routinely sampled and cleaned, as necessary, by vacuuming or other methods (i.e., sticky tack cloths) that minimize the likelihood of beryllium becoming airborne. Where vacuuming methods are used, the vacuums shall be equipped with High Efficiency Particulate Air (HEPA) filters and used and emptied in a manner, which minimizes the re-entry of beryllium into the workplace. HEPA filters shall be changed as often as needed to maintain their capture efficiency. All cleaning equipment used to clean beryllium-contaminated surfaces shall be labeled, controlled, and not used for non-hazardous materials. Compressed air or dry methods must not be used for such cleaning.

   Food and/or beverage shall not be stored or consumed and tobacco products shall not be present or used in areas where employees may be exposed to beryllium above the Action Level. Employees who may be exposed above the AL shall be required to wash their hands and face prior to eating, drinking, smoking, or applying cosmetics.

   Whenever employee exposure to beryllium may exceed the Action Level, employees shall not leave the workplace wearing any protective clothing or equipment that is required to be worn during the work shift. Employees shall be provided with a clean change area having separate facilities for protective work clothing and street clothes to prevent cross contamination.

   Showers shall be taken at the end of the work shift or job. Employees shall be provided with shower and hand washing facilities close to the work area, when feasible, when beryllium exposure may be above the AL.

Lunchroom facilities must be readily accessible to beryllium workers and contain tables that are free of beryllium and at no time shall the worker be exposed to beryllium at or above the Action Level in a lunchroom facility.

The change rooms/areas, shower and hand washing facilities and lunchroom facilities must comply with 29 CFR 1910.141, Sanitation.

Employees exposed to beryllium above the AL shall not leave the area with PPE or equipment unless surface dust has been removed by HEPA vacuuming or other cleaning methods that limit beryllium dust dispersion.

8. Every reasonable effort shall be made to limit the release of beryllium residues into air, ground, or water. To the extent practical, all beryllium-contaminated residues must be contained, collected and containerized for disposal. All generated waste shall be disposed of per Fermilab's regulated chemical waste disposal program. See Section 3, Signage and Postings, of this chapter for waste labeling requirements.

9. The permit shall be signed by the ESH&Q professional supervising the project and by the task manager, project supervisor or lead technician.

10. Every reasonable effort shall be made to minimize the number of workers exposed and potentially exposed to beryllium. A log (reverse side of the permit) must be maintained by the task manager, project supervisor, or lead technician for the job to track all individuals who enter regulated areas. These records must include the name, date, time in and time out, and work activity.

11. Upon the completion of the job, a copy of the permit must be sent to the ESH&Q Section.

b. Where exposure levels are above 0.00005 mg/m^3 but below the Action Level of 0.0002 mg/m^3, and when practicable, implement the following actions to reduce employee exposures; written hazard analysis (FESHM 2060), engineering controls (i.e., ventilation), administrative controls (i.e., personal hygiene, warning signs and labels, work practices) and personal protective equipment (i.e., gloves, respirators).

5.3 Signage and Postings

a. Regulated areas shall be posted with a warning sign, which states:

DANGER BERYLLIUM WORK AREA BERYLLIUM CAN CAUSE LUNG DAMAGE CANCER HAZARD AUTHORIZED PERSONNEL ONLY CONTACT _____ PRIOR TO ENTRY

b. Containers of beryllium, beryllium compounds, beryllium-contaminated clothing, equipment, waste, scrap, or debris shall be labeled with a warning, which at a minimum contains the following information:

DANGER CONTAMINATED WITH BERYLLIUM DO NOT REMOVE DUST BY BLOWING OR SHAKING CANCER AND LUNG DISEASE HAZARD

6.0 STANDARDS

Department of Energy 10 CFR Part 850, "Chronic Beryllium Disease Prevention Program; Final Rule.

Implementation Guide for use with DOE 10 CFR Part 850, “Chronic Beryllium Disease Prevention Program”.

Occupational Safety and Health Administration 29 Code of Federal Regulations 1910.1024, Beryllium effective date May 20, 2017.

Department of Energy Position, February 2, 2009 regarding “American Conference of Governmental Industrial Hygienists® Adopts TLV for beryllium of 0.05 μg/m^3.”

Fermilab Environmental, Safety and Health Manual (FESHM) Chapter 4130 – Personal Protective Equipment (PPE)

FESHM Chapter 4150 – Respiratory Protection

FESHM Chapter 8021 –Chemical and Radioactive Waste Management

FESHM Chapter 8022 – Recycling, Waste Minimization and Pollution Prevention Program

FESHM Chapter 8023 – General Refuse

7.0 ATTACHMENTS

ATTACHMENT A
Beryllium Operations
&
Storage Locations

Facility	Location	Job Description
Accelerator Division	MI-8 Service Building, MuCool Test Area	Handling Beryllium Components (vacuum windows, targets, electrodes)
Accelerator Division	Linac Gallery (NTF), Cross Gallery, MI-8 Service Building, AP0 Service Building, Neutrino Target Service Building, C0 Assembly Building, MuCool Test Area	Stored Beryllium Components (vacuum windows, targets, electrodes)
Accelerator Division	Linac (NTF), NuMI Target Hall, MiniBooNE MI-12B Enclosure, MI 400 Area Lambertson Magnet, MuCool Test Area	Beryllium Components in Operating Beamline or Experiment Apparatus (vacuum windows, targets, electrodes)
Accelerator Division	RF Barn Site 50	Beryllium Beam Tube Beryllium Beam Tube Sections
Particle Physics Division	ME-7 Worm	Parts Storage
Technical Division	IB-3 locked cabinet (Winding Room)	Cu-Be wire storage

ATTACHMENT B
Beryllium Medical Surveillance

Baseline examination-done post offer—pre-placement

1. History including questionnaires.
2. Physical examination.
3. Spirometry
4. B-reader chest x-ray.
5. Beryllium Proliferation test (Be-LPT)

Current Beryllium Worker examination---done annually

1. History including questionnaires.
2. Physical examination.
3. Spirometry annually.
4. B-reader chest x-ray every 5 years.
5. Be-LPT

Beryllium Associated Worker examination---done biannually

1. History including questionnaires.
2. Physical examination.
3. Spirometry biannually.
4. B-Reader chest x-ray every 5 years.
5. Be-LPT

The following is the detailed description:

1. History and documentation of previous Beryllium exposure - medical will question employees on this topic in the medical office.

2. Baseline medical office evaluation for current Beryllium worker, or Beryllium associated workers: SOMD will obtain history, emphasizing pulmonary and beryllium issues and utilizing the Fermilab Beryllium Medical Questionnaire and the OSHA Respirator Medical Evaluation Questionnaire. The SOMD will perform comprehensive physical exam, with attention to lungs, skin, and eyes. Investigations offered will include chest radiograph (posterior-anterior, 14x17 inches) interpreted by a National Institute for Occupational Safety and Health (NIOSH) B- reader of pneumoconiosis or a board-certified radiologist (unless a baseline chest radiograph is already on file). Spirometry consisting of forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV1), and Be-LPT.

3. Beryllium worker follow up medical surveillance: SOMD history, Fermilab Beryllium Medical Questionnaire and the OSHA Respirator Medical Evaluation Questionnaire, SOMD

physical exam, and Spirometry will be offered annually. B-reader chest X-ray will be offered every 5 years. Be-LPT will be offered annually.

4. Beryllium associated worker follow up medical surveillance: SOMD history, Fermilab Beryllium Medical Questionnaire and the OSHA Respirator Medical Evaluation Questionnaire, and Spirometry will be offered every two years. B-reader chest X-ray will be offered every 5 years. Be-LPT will be offered at a minimum of every 3 years.

5. Emergency treatment - Any occurrence such as, but not limited to, equipment failure, container rupture, or failure of control equipment or operations that results in an unexpected and significant release of beryllium. The medical evaluation will include the requirements of paragraph (b)(2) of 10 CFR PART 850.

    a. Detailed medical and work history with emphasis on past, present, and anticipated future exposure to beryllium;
    b. Respiratory symptoms questionnaire;
    c. Physical examination with emphasis on the respiratory system;
    d. Be-LPT;
    e. Any other medical evaluations deemed appropriate by the examining physician for evaluating beryllium-related health effects.

6. If a beryllium associated worker is diagnosed by the Site Occupational Medical Director (SOMD) to be sensitized to beryllium or to have Chronic Beryllium Disease, a counseling program will be initiated which includes communications on:

    a. Medical surveillance program provisions and procedures (i.e., Written Medical Reporting (opinion and recommendation), Data Analysis, Medical Removal Protection, etc.;
    b. Medical treatment options;
    c. Medical, psychological, and career counseling;
    d. Medical benefits;
    e. Administrative procedures and workers' rights under applicable Worker Compensation laws and regulations;
    f. Work practice procedures limiting beryllium associated worker exposure to beryllium;
    g. The risk of continued beryllium exposure after sensitization.

7. Multiple Physician Review. Fermilab shall have a multiple physician review process in place that meets the requirements of 10CFR850.34(c) and (d). A copy of this rule and preamble shall be provided to any physician performing an evaluation.

8. Questionnaires utilized in all above exams will consist of the attached Fermilab Beryllium Medical Questionnaire and the OSHA Respirator Medical Evaluation Questionnaire.

9. At least one week prior to the first medical evaluation, the employee is to be given a summary of the medical surveillance program which includes:

a. Type of data to be collected
b. How data will be collected and maintained
c. Purpose for data use
d. Description of how confidential data will be protected
e. A statement as to the benefits and risks of the tests
f. A notice to the employee that they are free to ask questions about this process at the time of their visit

A copy of the consent form, Appendix A to Part 850 - *Chronic Beryllium Disease Prevention Program*, will be included with the summary of the medical surveillance program. The SOMD will meet with the employee and obtain the employee's signature on the informed consent form prior to performing medical evaluations and tests.