

# **George Mason University**

## **Medical Surveillance Program**



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## **Foreword**

George Mason University is required by US Code of Federal Regulation 29 and Virginia Administrative Code (16 VAC 25-90) to ensure that employees exposed to health hazards at work are included in a medical surveillance program. This program is supplemented with a robust air and noise monitoring program to help establish exposure levels while performing job tasks.

The following document outlines George Mason University's *Medical Surveillance Program* and describes specific policies and procedures designed to satisfy federal and state safety and health requirements.

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## Acronyms

<b>ACGIH</b>	American Conference of Governmental Industrial Hygienists
<b>ACM</b>	Asbestos-containing Materials
<b>APHIS</b>	Animal, Plant Health Inspection Service
<b>CFR</b>	Code of Federal Regulations
<b>CBC</b>	Complete Blood Count
<b>CDC</b>	Centers for Disease Control and Prevention
<b>dBA</b>	Decibel, A-weighted
<b>DHRM</b>	Virginia Department of Human Resources Management
<b>EKG</b>	Electrocardiogram
<b>EHS</b>	Environmental Health and Safety Office
<b>FEV(1.0)</b>	Forced Expiratory Volume at 1 second
<b>FVC</b>	Forced Vital Capacity
<b>HBV</b>	Hepatitis B virus
<b>HHS</b>	Department of Health and Human Services
<b>HIV</b>	Human Immunodeficiency Virus
<b>JSA</b>	Job Safety Analysis
<b>MRI</b>	Magnetic Resonance Imaging
<b>MSDS</b>	Material Safety Data Sheet
<b>NRC</b>	U.S. Nuclear Regulatory Commission
<b>OPIM</b>	Other Potentially Infectious Material
<b>OSHA</b>	Occupation Safety and Health Administration
<b>OSO</b>	Occupational Safety Office
<b>PACM</b>	Presumed Asbestos-Containing Material
<b>PEL</b>	Permissible Exposure Limit
<b>PFT</b>	Pulmonary Function Test
<b>PLHCP</b>	Physician or Other Licensed Healthcare Provider
<b>PPD</b>	Purified Protein Derivative
<b>PPE</b>	Personal Protective Equipment
<b>ppm</b>	Parts Per Million

<b>PRF</b>	Project Review Form
<b>SHS</b>	Student Health Services
<b>SLSP</b>	Supplemental Laboratory Safety Plan
<b>SOP</b>	Standard Operating Procedures
<b>STEL</b>	Short-Term Exposure Level
<b>TB</b>	Tuberculosis
<b>TSI</b>	Thermal System Insulation
<b>TWA</b>	Time-Weighted Average
<b>USDA</b>	United States Department of Agriculture

## Document History

Version	Date	Comments
1	February, 2009	Initial <i>Medical Surveillance Program</i>

## **1.0 Introduction**

George Mason University employees may be exposed during the course of their work to occupational hazards which increase the risk of injury or illness. The Environmental Health and Safety Office (EHS) will make every effort to reduce exposure to occupational hazards through the implementation of engineering controls, administrative controls, proper work practices, and personal protective equipment (PPE). Medical surveillance may be recommended or required in addition to these controls to monitor potential personnel exposure.

Medical surveillance is a series of medical services by a Physician or Other Licensed Healthcare Professional (PLHCP) for the primary prevention of occupational injuries and illnesses, including a review of occupational and medical history, physical exams, diagnostic and performance testing, and vaccinations. Secondary prevention of occupational injuries is provided by Workers' Compensation medical providers and post-exposure treatment and prophylaxis. This *Medical Surveillance Program* complies with applicable regulations and guidelines and establishes minimum medical surveillance requirements to prevent occupational injuries and illnesses for George Mason University employees whose job duties place them at risk of exposure to occupational hazards. Elements of this Program include: roles and responsibilities, hazard assessment, medical surveillance for employees exposed to occupational hazards, medical removal, recordkeeping and reporting, and program evaluation.

## **2.0 Scope**

This *Medical Surveillance Program* covers all George Mason University employees, including faculty, staff, and wage employees.

## **3.0 Roles and Responsibilities**

This *Medical Surveillance Program* for George Mason University is a cooperative effort between EHS, PLHCP, the Workers' Compensation Department, Workers' Compensation medical providers, supervisors, and employees. Specific responsibilities relating to the *Medical Surveillance Program* are outlined below.

### **3.1. Environmental Health and Safety Office (EHS)**

Specific responsibilities of EHS related to Medical Surveillance are to:

- Administer the *Medical Surveillance Program*.
- Upon supervisor request, conduct hazard assessments to identify occupational hazards that require inclusion in a medical surveillance program.
- Conduct air/noise monitoring to determine exposure level for inclusion in the *Medical Surveillance Program*.
- Provide employees results of monitoring.
- Coordinate with PLHCP to provide required medical surveillance to employees.

- Pay all costs associated with required medical surveillance and follow-up examinations.
- Work with PLHCP, Workers' Compensation Department, Equity and Diversity Services, and supervisors to coordinate an employee's medical removal and reassignment when necessary.
- Obtain written opinion within 15 days of an employee receiving medical surveillance or treatment.
- Coordinate maintenance of all records related to medical surveillance with PLHCP according to 29 (Code of Federal Regulations) CFR 1910.1020 *Access to Employee Exposure and Medical Records*.
- Provide requested records within 15 working days to an employee, former employee, or designated representative upon written receipt of permission from the employee or former employee.
- Evaluate this *Medical Surveillance Program* at least annually and update as needed.

### **3.2. Physician or Other Licensed Healthcare Professional**

A PLHCP is an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the medical surveillance listed in this *Medical Surveillance Program*. Specific responsibilities of PLHCP related to Medical Surveillance are to:

- Conduct required medical evaluation for employees upon request by EHS.
- Determine the extent of follow-up medical surveillance or treatment required.
- Provide required follow-up medical surveillance or treatment.
- Provide written opinion to EHS within 15 business days of conducting medical surveillance or follow-up treatment to employees.
- Inform employees of any medical condition identified that may require further treatment.
- Notify the employee and EHS if an employee demonstrates a need for a follow-up examination.
- Make recommendations for medical removal, if necessary, per applicable regulations.
- Provide any vaccinations that are required or recommended, but not available through Student Health Services (SHS).
- Maintain a copy of George Mason University employees' records per 29 CFR 1910.1020.
- Provide any counseling or follow-up required by Occupational Safety and Health Administration (OSHA) standards or make a referral to appropriate health care provider.

### **3.3. Human Resources and Payroll Workers' Compensation Department**

Specific responsibilities of the Workers' Compensation Department related to Medical Surveillance are to:

- Work with the PLHCP, EHS, and supervisor to coordinate an employee's medical removal and reassignment.
- Maintain medical and exposure records according to OSHA standards *Access to Employee Exposure and Medical Records* (29 CFR 1910.1020) and *Recording and Reporting Occupational Injuries and Illnesses for Employees* (29 CFR 1910.1904).

### **3.4. Occupational Health Physician/Workers' Compensation Medical Provider**

An Occupational Health Physician/Workers' Compensation medical provider is a licensed healthcare facility or individual with expertise in occupational medicine who is approved by Virginia Department of Human Resource Management (DHRM) to provide medical treatment. Specific responsibilities of related to Medical Surveillance are to:

- Determine the extent of follow-up medical surveillance or treatment required.
- Provide required follow-up medical treatment.
- Make recommendations for medical removal, if necessary, per applicable regulations.
- Provide Workers' Compensation Department with information necessary to file Workers' Compensation claims.
- Develop and provide copies to EHS, any protocols that need to be in place to respond to specific hazards unique to George Mason University employees.
- Maintain a copy of George Mason University employees' records, consistent and in compliance with 29 CFR 1910.1020.

### **3.5. Supervisors**

Supervisors oversee George Mason University employees and their work. Specific responsibilities of supervisors related to Medical Surveillance are to:

- Work with EHS and employees to identify engineering and administrative controls to reduce exposure to hazardous substances.
- Implement engineering and administrative controls and work practices per EHS recommendations.
- Notify EHS when:
  - Changes are made to the materials or equipment used or job processes that present additional occupational hazards.
  - A new employee is assigned duties for which the Job Safety Analysis (JSA) or Supplemental Laboratory Safety Plan (SLSP) describes required medical surveillance.
- Ensure employees participate in required medical surveillance.
- Work with the PLHCP, EHS, and Workers' Compensation Department to coordinate an employee's medical removal and reassignment.
- Develop JSA or SLSP for specific high hazard tasks.
- Follow-up with employees to ensure available vaccinations have been offered.
- Ensure completion of all required medical surveillance and training.

### **3.6. Employees**

Employees include faculty (professional, administrative, and research), staff (classified, wage, and student wage), affiliates (visiting faculty, volunteers, visiting research associates), and paid students (graduate students, undergraduate students, laboratory assistants, etc.). This does not refer to students enrolled in instructional courses. Specific responsibilities of George Mason University employees related to Medical Surveillance are to:

- Work with EHS and supervisors to identify engineering and administrative controls to reduce exposure to hazardous substances.
- Participate in all required medical surveillance.
- Report physiological changes that could affect the ability to safely complete assigned duties to EHS.
- Complete all training required, prior to beginning work.
- Abide by all administrative controls deemed necessary for reduced exposure risk.
- Use all engineering controls available.
- Wear all PPE determined to be necessary to complete job assignment.
- Provide feedback for annual program evaluation upon request.

### **4.0 Hazard Assessment**

EHS will conduct hazard assessments to identify occupational hazards at George Mason University. Hazard assessments will be completed by:

- Interviewing supervisors and employees.
- Observing work practices.
- Reviewing supporting documents that may include applicable regulations and guidelines, chemical and biological inventories, Material Safety Data Sheet (MSDS), Project Review Forms (PRF), and Standard Operating Procedures (SOP).
- Conducting air, noise, or surface sampling.

EHS will provide recommendations to supervisors of engineering controls, administrative controls, work practices, and PPE as they are identified. EHS will also identify required medical surveillance based on the anticipated occupational hazards and required PPE. If medical surveillance is required, supervisors must include the medical surveillance requirements in the SLSP or JSA.

Supervisors must notify EHS when:

- Changes are made to the materials or equipment used or to job processes that present additional hazards.
- New employees are assigned job duties for which medical surveillance is required.

## **5.0 Medical Surveillance for Employees Exposed to Occupational Hazards**

Based on applicable regulations and guidelines, EHS has identified specific chemical, physical, and biological hazards George Mason University employees may be exposed to during the course of their work. This *Medical Surveillance Program* establishes minimum requirements and recommendations for medical surveillance for employees whose job duties are considered at risk because of their potential for exposure to these specific hazards.

### **5.1. Chemical Hazards**

This *Medical Surveillance Program* complies with applicable OSHA regulations and establishes minimum medical surveillance requirements for George Mason University employees who use hazardous chemicals over the course of their work. Medical surveillance for employees working with specific chemicals may include the following elements:

- Review of medical and occupational history.
- Physical examinations.
- Diagnostic and performance testing targeting specific biomarkers and organs, respectively.
- Medical removal.

#### **5.1.1. Inorganic Arsenic and Compounds**

Minimum medical surveillance requirements for employees exposed to airborne concentrations of inorganic arsenic in excess of the OSHA action level are described in the OSHA standard *Inorganic Arsenic* (29 CFR 1910.1018). The OSHA action level for inorganic arsenic is 5  $\mu\text{g}/\text{m}^3$  based on an 8-hour time-weighted average (TWA).

Employees included in the medical surveillance for inorganic arsenic are required to receive a medical evaluation from a PLHCP upon initial assignment, annually thereafter, and upon termination of employment, including the following elements:

- Review of medical and occupational history.
- Physical examination of the skin and nasal cavities.
- A standard posterior-anterior chest X-ray.
- Any other tests deemed necessary by the examining PLHCP.

#### **5.1.2. Benzene**

Minimum medical surveillance requirements for employees exposed to airborne concentrations of benzene in excess of the OSHA action level for 30 or more days per year or employees exposed to the OSHA Permissible Exposure Limit (PEL) for 10 or more days per year are described in the OSHA standard *Benzene* (29 CFR 1910.1028). The OSHA action level and PEL for benzene is 0.5 and 1.0 ppm, respectively, based on an 8-hour TWA.

Employees included in the medical surveillance for benzene are required to receive a medical evaluation from a PLHCP upon initial assignment and annually thereafter including the following elements:

- Review of medical and occupational history.
- Complete physical examination.
- Blood sample and analysis, including a complete blood count (CBC) with leukocyte count and differential, quantitative thrombocyte count, hematocrit, hemoglobin, and erythrocyte count and erythrocyte indices.
- For any employee who is also required to wear respiratory protection at least 30 days per year, a pulmonary function test (PFT) must be completed during the initial evaluation and every 3 years thereafter.
- Any other tests deemed necessary by the examining PLHCP.

According to the OSHA standard *Benzene*, any employee referred to a hematologist/internist by the PLHCP must be medically removed from work areas where the OSHA action level for benzene is exceeded, temporarily or permanently depending on the recommendation of the examining hematologist/internist. Medical removal and return to work shall be implemented per 29 CFR 1910.1028.

### **5.1.3. Formaldehyde**

Minimum medical surveillance requirements for employees exposed to airborne concentrations of formaldehyde in excess of the OSHA action level or the OSHA Short-Term Exposure limit (STEL) are described in the OSHA standard *Formaldehyde* (29 CFR 1910.1048). For formaldehyde, the OSHA action level is 0.5 ppm based on an 8-hour TWA and the OSHA STEL is 2 parts per million (ppm) based on a 15-minute TWA.

Employees included in the medical surveillance for formaldehyde are required to receive a medical evaluation from a PLHCP upon initial assignment and annually thereafter including the following elements:

- Review of a medical disease questionnaire based on 29 CFR 1910.1048 Appendix F, *Nonmandatory Medical Disease Questionnaire*.
- Per the PLHCP discretion, a physical examination with emphasis on evidence of irritation or sensitization of the skin and respiratory system, shortness of breath, or irritation of the eyes.
- Annual medical exam for employees wearing respiratory protection at least 30 days per year, including:
  - Physical examination.
  - PFT.
  - Any other tests deemed necessary by the examining PLHCP.
  - Counseling for employees with medical conditions that would be aggravated by exposure to formaldehyde.

According to the OSHA standard *Formaldehyde*, a PLHCP may recommend medical removal for an employee exhibiting signs or symptoms of possible overexposure to

formaldehyde. Medical removal and return to work shall be implemented per 29 CFR 1910.1048.

#### **5.1.4. Laboratory Chemicals**

Minimum medical surveillance requirements for employees working with laboratory chemicals are specified in the OSHA standard, *Occupational Exposure to Hazardous Chemicals in Laboratories* (29 CFR 1910.1450). OSHA defines laboratories as a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis. For George Mason University employees working with hazardous chemicals in the laboratory, medical surveillance will be provided per the PLHCP discretion when:

- Exposure monitoring reveals an exposure level routinely above the action level (or in the absence of an action level, the PEL) for an OSHA regulated substance;
- An employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed in the laboratory; or
- A spill, leak, or explosion occurs resulting in the likelihood of a hazardous exposure.

#### **5.1.5. Lead**

Minimum medical surveillance requirements for employees exposed to airborne concentrations of lead in excess of the OSHA action level more than 30 days per year are described in the OSHA standard *Lead* (29 CFR 1910.1025). For lead, the OSHA action level is 30  $\mu\text{g}/\text{m}^3$  based on an 8-hour TWA.

Employees included in the medical surveillance for lead are required to receive a medical evaluation from a PLHCP upon initial assignment including the following elements:

- Review of medical and occupational history.
- Complete physical examination with emphasis on teeth, gums, hematologic, gastrointestinal, renal, cardiovascular, pulmonary, and neurological systems.
- Blood sample and analysis for blood lead level, hemoglobin and hematocrit determinations, red cell indices, examination of peripheral smear morphology, zinc protoporphyrin, blood urea nitrogen, and serum creatinine.
- Urinalysis with microscopic examination.
- A PFT for any employee required to wear respiratory protection.
- Any other tests deemed necessary by the examining PLHCP.

Blood sampling and analysis for blood lead level and zinc protoporphyrin shall be repeated every 6 months. If any employee's blood lead level exceeds 40  $\mu\text{g}/100\text{ g}$  blood, EHS must notify the employee within 5 working days of receiving the results and additional biological monitoring and medical exams are required per the standard.

Additional medical exams by the PLHCP must also be provided if an employee develops signs or symptoms associated with lead intoxication or an employee desires medical advice concerning the effects of current or past exposure to lead.

According to the OSHA standard *Lead*, an employee must be medically removed from a work area where the exposure to lead exceeds the action level if:

- An employee's blood lead level exceeds 60 µg/ 100 g blood during periodic testing.
- The average of the last three blood sampling tests (or the average of all blood sampling tests conducted over the previous six (6) months, whichever is longer) indicates that the employee's blood lead level is at or above 50 µg/ 100 g of whole blood.
- The PLHCP detects a medical condition which places the employee at increased risk of material impairment to health from exposure to lead.

Medical removal and return to work shall be implemented per 29 CFR 1910.1025.

#### **5.1.6. Methylene chloride**

Minimum medical surveillance requirements for employees exposed to airborne concentrations of methylene chloride in excess of the OSHA action level more than 30 days per year or in excess of the OSHA PEL or the OSHA STEL for any amount of time are described in the OSHA standard *Methylene Chloride* (29 CFR 1910.1052). For methylene chloride, the OSHA action level and PEL are equal to 15 ppm and 25 ppm, respectively, based on an 8-hour TWA. The OSHA STEL for methylene chloride is equal to 125 ppm, based on a 15-minute TWA.

Employees included in the medical surveillance for methylene chloride are required to receive a medical evaluation from a PLHCP upon initial assignment, periodically thereafter, and upon termination, including the following elements:

- Review of medical and occupational history.
- Complete physical exam physical examination with emphasis on the nervous system, cardiovascular system, lungs, liver and skin.
- Any other tests deemed necessary by the examining PLHCP.

At a minimum, periodic physical exams must be completed annually for employees 45 years of age or older and every 3 years for employees under the age of 45. Physical exams may be required more frequently per the discretion of the PLHCP.

According to the OSHA standard *Methylene chloride*, a PLHCP may recommend medical removal if the employee's exposure to methylene chloride may contribute to or aggravate the employee's existing cardiac, hepatic, neurological (including stroke), or skin disease. Medical removal and return to work shall be implemented per 29 CFR 1910.1052.

### **5.1.7. Organophosphates**

Organophosphates are cholinesterase inhibiting compounds that may be used in laboratory research or as a component of some restricted use pesticides. All employees working with organophosphates should be tested for red blood cell count and cholinesterase level, prior to initial assignment and periodically thereafter.

Exposure to organophosphates may occur on an infrequent basis. As a result, periodic monitoring should be conducted after completion of a task using organophosphates or monthly, whichever is more frequent.

### **5.1.8. Radioisotopes**

The use of radioactive materials is regulated by the U.S. Nuclear Regulatory Commission (NRC) with specific regulations outlined in *Standards for Protection Against Radiation* (10 CFR 20). Medical surveillance is required for employees working with radioiodine and tritium. No radioiodine is currently used. Monthly urine analysis is required for any employee working with more than 100 mCi of H-3 in a month. For additional information on the Radiation Safety Program at George Mason University, please see the Radiation Safety Manual.

*George Mason University does not use large enough quantities to require inclusion in a medical surveillance program for tritium at this time.*

### **5.1.9. Vinyl chloride**

Minimum medical surveillance requirements for employees exposed to airborne concentrations of vinyl chloride in excess of the OSHA action level are described in the OSHA standard *Vinyl Chloride* (29 CFR 1910.1017). For vinyl chloride, the OSHA action level is equal to 0.5 ppm, based on an 8-hour TWA.

Employees included in the medical surveillance for vinyl chloride are required to receive a medical evaluation from a PLHCP upon initial assignment and annually thereafter including the following elements:

- Review of medical and occupational history.
- Physical examination with emphasis on the liver, spleen or kidneys, or dysfunction in these organs, and for abnormalities in skin, connective tissues and the pulmonary system.
- A serum specimen analyzed for total bilirubin, alkaline phosphatase, serum glutamic oxalacetic transaminase, serum glutamic pyruvic transaminase, and gamma glutamyl transpeptidase.
- Any other tests deemed necessary by the examining PLHCP.

## 5.2. Physical Hazards

This *Medical Surveillance Program* complies with applicable OSHA regulations and establishes minimum medical surveillance requirements for George Mason University employees exposed to physical hazards over the course of their work. Medical surveillance for employees exposed to physical hazards may include the following elements:

- Review of medical and occupational history.
- Review of questionnaires similar in content to those included in appendices in applicable regulations.
- Physical examinations.
- Diagnostic and performance testing targeting specific biomarkers and organs, respectively.

### 5.2.1. Asbestos

Medical surveillance requirements for employees exposed to asbestos are specified in the OSHA General Industry *Asbestos* standard (29 CFR 1910.1001) and in the OSHA Construction *Asbestos* standard (29 CFR 1926.1101).

#### 5.2.1.1. Asbestos in General Industry

Medical surveillance is required for employees who may be exposed to airborne concentrations of asbestos fibers exceeding the OSHA PEL of 0.1 fibers/cm<sup>3</sup> as an 8-hour TWA or the OSHA excursion limit, 1 fiber/cm<sup>3</sup> as a 30-minute TWA (other than those whose responsibilities include building construction, renovation, or repairs). Employees included in the medical surveillance program for asbestos are required to receive a medical evaluation by a PLHCP prior to initial exposure and annually thereafter including the following elements:

- Review of medical and occupational history.
- Review of a respiratory disease questionnaire similar in content to 29 CFR 1910.1001 Appendix D *Medical Questionnaire, Mandatory*.
- Physical exam with emphasis on the respiratory system, the cardiovascular system and digestive tract.
- Chest roentgenogram (posterior-anterior 14 x 17 inches).
- PFT, including test of forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1.0</sub>).
- Any other tests deemed necessary by the examining PLHCP.

The chest roentgenogram shall be repeated every 5 years for employees whose first exposure to asbestos was within the past 10 years. For employees whose first exposure to asbestos was more than 10 years ago, a roentgenogram shall be repeated every 2 years for employees under 45 years of age and annually for employees 45 or over.

### 5.2.1.2. Asbestos in Construction

The OSHA in Construction *Asbestos* standard (29 CFR 1926.1101) classifies construction work in which employees may be exposed to asbestos into the following four categories:

- ***Class I asbestos work*** involves the removal of thermal system insulation (TSI) and surfacing asbestos-containing materials (ACM) and presumed asbestos-containing materials (PACM).
- ***Class II asbestos work*** involves the removal of ACM which is not TSI or surfacing material, including, but not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
- ***Class III asbestos work*** is repair and maintenance operations where ACM, including TSI and surfacing ACM and PACM, is likely to be disturbed.
- ***Class IV asbestos work*** means maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.

George Mason University hires contractors to complete Class I, Class II, and Class III asbestos work. Some George Mason University employees may be required to complete Class IV asbestos work as part of their job duties. Medical surveillance is only required for employees engaged in Class II asbestos work at least 30 days per year and for employees who may be exposed to airborne concentrations of asbestos fibers exceeding the OSHA PEL.

### 5.2.2. Hyperbaric and Hypobaric Conditions

Hyperbaric or high-pressure conditions may occur at very low altitudes and are typically encountered by divers or personnel working in mines. Hypobaric or low-pressure conditions occur at high altitudes, typically greater than 18,000 feet. Individuals may experience decompression sickness when exposed to hypobaric conditions or when ascending from hyperbaric conditions.

EHS recommends but does not require medical surveillance for employees who may be exposed to hyperbaric or hypobaric conditions in the course of their work. The medical surveillance recommended includes a medical evaluation by a PLHCP prior to exposure and every three years thereafter, including the following elements per the PLHCP discretion:

- Medical history
- Review of the anticipated conditions of exposure
- Basic physical examination
- Pulmonary function test
- Chest X-ray
- Electrocardiogram (EKG)
- Serum analysis for CBC and hemoglobin.

- Urinalysis
- Additional tests per the healthcare provider's discretion

### **5.2.3. Lasers**

*Currently being developed*

### **5.2.4. Magnetic Resonance Imaging (MRI)**

*Currently being developed*

### **5.2.5. Noise**

Occupational exposure to noise is regulated by the OSHA standard *Occupational Noise Exposure* (29 CFR 1910.95). George Mason University's *Hearing Conservation Program*, available on the EHS website, has been developed to comply with the standard.

Within 60 days of initial exposure and annually thereafter, any employee exposed to noise in excess of the OSHA action level for noise, 85 decibels, A-weighting (dBA) based on an 8-hour TWA with an exchange rate of 5 dBA, must receive an audiometric exam from a PLHCP. Employees must avoid exposure to occupational and recreational noise for 14 hours prior to the audiometric exam.

## **5.3. Biological Hazards**

This *Medical Surveillance Program* complies with applicable OSHA regulations and establishes minimum medical surveillance requirements for George Mason University employees exposed to biological hazards over the course of their work. Medical surveillance for employees exposed to biological hazards may include the following elements:

- Review of medical and occupational history.
- Physical examinations.
- Chest X-ray
- Vaccinations.

For additional information on the Biological Safety program at George Mason University, please see the Biological Safety Manual.

### **5.3.1. Bloodborne Pathogens**

Bloodborne pathogens are pathogenic microorganisms present in human blood that can cause disease in humans. Minimum medical surveillance requirements for employees who may be exposed to human blood or Other Potentially Infectious Materials (OPIM) are specified in OSHA standard *Bloodborne Pathogens* (29 CFR 1910.1030). George Mason University's *Exposure Control Plan/ Bloodborne Pathogens Program* has been developed to comply with *Bloodborne Pathogens* (29 CFR 1910.1030).

According to the OSHA standard *Bloodborne Pathogens* (29 CFR 1910.1030), employees who may be exposed to bloodborne pathogens in the course of their work must be offered the opportunity to obtain the Hepatitis B vaccine series free of charge within 10 days of initial assignment.

Following completion of *Bloodborne Pathogens Training*, EHS will notify eligible attendees via email that due to potential exposure to bloodborne pathogens, the Hepatitis B or Twinrix vaccine may be obtained at Student Health Services, as a 3-shot series. The Twinrix vaccine is offered at no additional costs and provides protection against Hepatitis A and Hepatitis B. It is the responsibility of recipients to schedule and obtain the initial and follow-up vaccines. Personnel who decline the vaccine must provide EHS with a signed declination form.

A titer is recommended for any employee who contacts patients or blood and is at risk of percutaneous injuries. The titer for HBV antigens should be completed 1-2 months after the last dose of the vaccination series has been administered.

### **5.3.2. Laboratory Animals**

Medical surveillance for George Mason University employees working with laboratory animals includes:

- A questionnaire reviewed by a PLHCP prior to assignment to determine whether the employee has an increased susceptibility of developing allergies due to occupational exposure.
- Tetanus vaccine (which must be completed every 10 years).
- Any other vaccine deemed necessary on the SLSP or JSA.
- Medical surveillance for personnel enrolled in George Mason University's *Respiratory Protection Program*.

Some laboratory animals may be exposed to aerosols or inoculated for other biological agents. Employees working with animals exposed to other biological agents must also receive the required medical surveillance for the agent as well. For additional information on Animal Handling please refer to University Policy 4004, *Occupational Health and Safety Program for Animal Care and Use Personnel*.

### **5.3.3. Select Agents**

Select agents are biological agents or toxins that the Centers for Disease Control and Prevention (CDC) within U. S. Department of Health and Human Services (HHS) or U.S. Department of Agriculture (USDA) Animal, Plant Health Inspection Service (APHIS) has determined have the potential to pose a severe threat to public health and safety. A list of CDC and APHIS select agents is included in 42 CFR 73, *Select Agents and Toxins* and 7 CFR 331 and 9 CFR 121, *Agriculture and Bioterrorism Act of 2002*, respectively.

These regulations address the possession, use, and transfer of select agents and toxins and the registration of laboratories and other entities in the U.S. that possess, use, or transfer a select agent or toxin.

*George Mason University does not conduct any research with Select Agents at this time.*

#### **5.3.4. Tetanus**

Tetanus is a disease which typically enters body through a cut or wound. Employees working in visual or performing arts, facilities management, Hemlock Overlook, athletics, University Police, or employees conducting animal research are considered at-risk of exposure to tetanus due to the nature of their work. At-risk employees should be knowledgeable of the date of their tetanus immunization. A booster is recommended every 10 years to maintain protective antibodies against tetanus. A tetanus shot or booster is provided to employees in at-risk jobs at no cost.

#### **5.3.5. Tuberculosis (TB)**

Tuberculosis (TB) is an infectious disease which is typically is acquired by inhaling infectious droplets which aerosolize when an infected individual with active pulmonary tuberculosis coughs or sneezes. Employees working in the Freedom Center, Aquatics Center, Child Development Center, Student Health Services, University Police, and employees who have face-to-face contact with patients in clinical and non-clinical settings in “at-risk” facilities such as homeless shelters, prisons, and drug rehabilitation and elder care facilities are considered at-risk of exposure to TB and are eligible to receive the TB test at no cost.

Employees considered at-risk of exposure to TB must receive a pre-employment Purified Protein Derivative (PPD) test within one month of the employee’s start date. If the PPD test results are positive, the employee must provide proof of treatment.

#### **5.4. Respiratory Protection**

The use of respiratory protection for the control of respiratory hazards in the occupational environment is regulated by OSHA in *Respiratory Protection* (29 CFR 1910.134). George Mason University’s *Respiratory Protection Program*, available on the EHS website, has been developed to comply with 29 CFR 1910.134 and to establish procedures related to the use of respiratory protection at George Mason University. Employees required to wear respiratory protection in the occupational environment must be enrolled in the *Respiratory Protection Program* and medically evaluated prior to being issued respiratory protection.

Prior to fit testing or being issued respiratory protection, employees must complete a questionnaire similar in content to 29 CFR 1910.134 Appendix C *OSHA Respirator Medical Evaluation Questionnaire (Mandatory)* and the questionnaire must be evaluated by the healthcare provider. Depending on the responses to the questionnaire, a follow-up medical exam may be required per the healthcare provider’s discretion.

Additional medical evaluations are required if:

- An employee reports medical signs or symptoms that are related to ability to use a respirator.
- The healthcare provider, supervisor, or EHS determines that an employee needs to be reevaluated.
- Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation.
- A change occurs in workplace conditions (e.g., physical work effort, protective clothing, or temperature) that may result in a substantial increase in the physiological burden placed on an employee.

## **5.5. Medical Surveillance for Susceptible Individuals**

Susceptible individuals may experience adverse effects of exposure to occupational hazards even at concentrations below the regulatory limits. Susceptible individuals may include allergic or sensitized individuals and pregnant Workers.

### **5.5.1. Allergic or Sensitized Individuals**

Sensitization or allergic reactions to chemical or biological agents may occur in some employees at doses considered acceptable for the working population. Individuals are encouraged to discuss any concerns related to their occupational exposure and allergies or sensitivities with EHS. EHS may be able to help identify additional engineering or administrative controls or PPE to further reduce the employee's occupational exposure to the agent.

George Mason University employees may be exposed to harmful plants and animals when working outdoors or conducting field research. Some employees may be allergic or sensitized to some plants or animals. Employees who are at risk of anaphylactic shock should speak with their physician and consider carrying an EpiPen.

### **5.5.2. Pregnant Workers**

Occupational exposure to hazardous substances for all employees should always be maintained as low as possible. However, some occupational hazards pose additional risks to reproductive health or the developmental health of developing fetuses. EHS has developed a *Reproductive and Developmental Health Program*, available on the EHS website, to provide declared pregnant Workers the ability to request a Reproductive and Developmental Hazard Assessment may identify engineering and administrative controls and PPE available to further reduce the risk of occupational exposure to reproductive or developmental hazards. Additional medical surveillance may also be recommended for declared pregnant Workers.

Employees must contact EHS to declare a pregnancy or to request a Reproductive and Developmental Hazard Assessment.

### **5.6. PLHCP Written Opinion**

EHS must obtain a copy of the PLHCP written opinion within 15 business days of providing medical surveillance or follow-up treatment containing the following information:

- Occupationally pertinent results which do not reveal specific findings or diagnoses unrelated to the employee's ability to work.
- Any conditions identified which place the employee at an increased risk of impairment from occupational exposure.
- Recommendations related to the use of PPE or limitations on the employee's job duties.

### **6.0 Medical Removal**

George Mason University will abide by specific OSHA standards which outline when an employee should be medically removed due to occupational exposure or other medical conditions identified during periodic medical surveillance. In the event a medical removal is required, EHS will work with the PLHCP and Workers' Compensation Department to coordinate an employee's medical removal and reassignment to a comparable job for which the employee is qualified (or can be trained in a short amount of time). The employee may not suffer a reduction in wage rate, seniority, or other benefits as a result of the reassignment.

### **7.0 Recordkeeping and Reporting**

The maintenance of medical records related to medical surveillance and Workers' compensation claims are maintained through a cooperative effort between EHS, Workers' Compensation Department, PLHCP, and Workers' Compensation medical providers. All records must be maintained confidentially according to 29 CFR 1910.1020 *Access to Employee Exposure and Medical Records* for 30 years after termination of employment. The records may not be disclosed without written permission per applicable regulatory standards. These records include the following:

- Records of all medical surveillance provided to employees in accordance with applicable regulations, including vaccination records, consent or declination forms, and medical evaluations.
- Materials provided to the PLHCP used to conduct a medical evaluation.
- Written opinions provided by the PLHCP.
- Descriptions of treatment or prescriptions.
- Employee medical complaints.
- Copies of all exposure monitoring data collected during personal or area monitoring descriptive of an employee's exposure to hazardous substances.

Upon receipt of written permission from an employee or former employee, the employee or representative must be provided the requested records within 15 working days.

### **7.1. Workers' Compensation Records**

The Workers' Compensation Department maintains records of all Workers' Compensation claims per DHRM standards.

### **8.0 Program Evaluation**

EHS will evaluate this Medical Surveillance Program at least annually and update as needed to ensure continued program effectiveness and compliance with applicable regulations and industry standards.

## **Appendix A: Definitions**

**Action level:** When this concentration of a hazardous substance or sound pressure level is exceeded in the environment, actions such as medical surveillance, the use of PPE, or routine air/noise monitoring are required. This value is determined by OSHA and is typically half of the published PEL.

**Administrative controls:** Work procedures, such as written safety policies, rules, supervision, and training, with the goal of reducing the duration, frequency, and severity of exposure to hazardous materials or situations.

**Bloodborne pathogens:** As defined by OSHA in 29 CFR 1910.1030) Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

**Centers for Disease Control and Prevention (CDC):** Within the US Department of Health and Human Services (HHS), which strives to protect people's health and safety, provide reliable health information, and improve health through health promotion, prevention and preparedness.

**Employee:** Faculty (professional, administrative, and research), staff (classified, wage, and student wage), and graduate students receiving compensation.

**Engineering controls:** Controls that eliminate or reduce exposure to laboratory hazards through the use or substitution of engineered machinery or equipment. Examples include self-capping syringe needles, ventilations systems such as a fume hood, sound-dampening materials to reduce noise levels, safety interlocks, and radiation shielding.

**Exchange rate:** The exchange rate is equal to the increase in sound pressure level due to the addition of a second sound of equal pressure. OSHA uses an exchange rate of 5 dBA; ACGIH uses an exchange rate of 3 dBA.

**Hyperbaric:** High-pressure conditions may occur at very low altitudes and are typically encountered by divers or personnel working in mines.

**Hypobaric:** Low-pressure conditions occur at high altitudes, typically greater than 18,000 feet.

**Job Safety Analysis (JSA):** A procedure that focuses on individual job tasks as a way to identify and prevent hazards on the job before they occur. Hazards which can lead to injuries and illnesses can be prevented by evaluating workplace operations and establishing appropriate engineering, administrative, and physical controls for a specific job task.

**Material Safety Data Sheet (MSDS):** A standard formatted information sheet prepared by a material manufacturer, describing the potential hazards, physical properties, and procedures for safe use of a material.

**Medical removal:** Process by which an employee is removed from a job due to occupational exposure or other medical conditions identified during periodic medical surveillance and reassigned to a comparable job for which the employee is qualified (or can be trained in a short amount of time). The employee may not suffer a reduction in wage rate, seniority, or other benefits as a result of the reassignment.

**Medical surveillance:** A battery of medical services by a PLHCP for the primary prevention of occupational injuries and illnesses, including a review of occupational and medical history, physical exams, diagnostic and performance testing, vaccinations.

**National Institute for Occupational Safety and Health (NIOSH):** A research division of the Centers for Disease Control and Prevention created by the Occupational Safety and Health Act of 1970. NIOSH conducts research, makes recommendations for the prevention of work-related illness, and publishes sources of chemical toxicity information.

**Occupational medicine:** Branch of medicine that deals with injuries and illnesses resulting from exposure to hazard and hazardous substances in the occupational environment.

**Occupational Safety and Health Administration (OSHA):** Develops and enforces regulations based on federal statutes. OSHA regulates health and safety in the workplace, establishes enforceable chemical exposure limits, and sets minimum standards for work place health and safety.

**Organophosphates:** Cholinesterase inhibiting compounds that may be used in laboratory research or as a component of some restricted use pesticides.

**Other Potentially Infectious Materials (OPIM):** 1) The following fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, amniotic fluid, and any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; 2) Any unfixed tissue or organ (other than in-tact skin) from a human (living or dead); and 3) HIV- containing cell or tissue cultures, organ cultures, and HIV- or HBV – containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

**OSHA Permissible exposure limits (PEL):** Enforceable regulatory limits set by OSHA. The PEL is the maximum allowable eight-hour time-weighted average (TWA) air concentration. The PEL may also contain a skin designation.

***OSHA Short-Term Exposure Limits (STEL):*** Enforceable regulatory limits set by OSHA. The STEL is the maximum allowable 15-minute time-weighted average (TWA) air concentration.

***Personal Protective Equipment (PPE):*** Clothing and other work accessories designed to create a barrier against workplace hazards. Examples include safety goggles, blast shields, hard hats, hearing protectors, gloves, respirators, aprons, and work boots.

***Physician or Other Licensed Healthcare Professional (PLHCP):*** A physician or other licensed healthcare professional (PLHCP) is an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the medical surveillance listed in this *Medical Surveillance Program*.

***Post-Exposure Prophylaxis:*** Medication administered following a potential exposure to a hazardous agent in order to prevent the development or spread of a disease.

***Post-exposure Treatment:*** Medical treatment provided by a Workers' Compensation medical provider to personnel in response to an incident in which the employee was exposed or potentially exposed to an occupational hazard or hazardous agent.

***Primary prevention:*** Preventing occupational illnesses and injuries by improving the health status of exposed employees and reducing the environmental risk of exposure, including programs aimed to reduce employee exposure and those designed to reduce the likelihood of experiencing illness or injury should an employee be exposed to a hazardous substance.

***Project Review Form (PRF):*** Form which must be completed for all research and instructional projects involving the use of biological materials and/or sources of ionizing radiation at George Mason University. The form requests general project information and includes a checklist of materials that will be used in the project. Depending on the nature of the project, Principle Investigators or Course Coordinators (PI/CC) may need to submit one or several addenda. In some cases, PI/CC may be asked to provide supplemental information to facilitate the review process.

***Reproductive hazard:*** A material (chemical, agent, or toxin) that has the potential to affect reproductive capabilities or to cause damage to the unborn embryo/fetus.

***Respiratory protection:*** Personal protective equipment (PPE) designed to protect the user from inhaling hazardous substances; respiratory protection should be used as a last resort, only after attempting to mitigate the hazard by implementing engineering and administrative controls.

***Secondary prevention:*** Preventing occupational illness and injury by early disease detection and prompt intervention to prevent progression.

**Select agents:** Biological agents or toxins that HHS has determined have the potential to pose a severe threat to public health and safety. A list of select agents is included in 42 CFR 73, *Select Agents and Toxins*.

**Supplemental Laboratory Safety Plan (SLSP):**

**Time-weighted average (TWA):** The average concentration detected in an environment over a measured amount of time.

**Workers' Compensation medical providers:** Medical providers with expertise in occupational medicine approved by DHRM to provide post-exposure medical treatment to employees in response to an occupational exposure to a hazardous agent or following an occupational injury. The Workers' Compensation Office maintains a list of approved providers.