

The Department of the Interior has many settings, within many bureaus and offices, in which laboratory analyses of various kinds are carried out. While each laboratory has unique aspects, there are sufficient similarities to allow generalizations in the approach to services that should be considered for the protection of the involved employees.

Before any DOI organizational unit establishes a medical program for its laboratory workers, careful consideration should be given to the types of work that are carried out by employees, and the types of exposures that are possible. Managers also should be familiar with the provisions of applicable federal regulations regarding laboratory workers, and pertinent guidance that has been promulgated by other federal agencies for worker protection. This Attachment will assist in providing the manager with this important information.

While the possibility of exposure of laboratory employees to agents harmful to human health is real, in most DOI laboratory settings there are no industrial procedures or occupational exposures that are sufficiently repetitive or of an intensity, frequency, and duration to warrant a conventional medical surveillance program. In those settings where exposures may warrant medical surveillance services, please refer to Attachment D 2 of this *Handbook*. Significant, high-risk exposures in DOI laboratories are more likely to be related to sudden or unexpected incidents for which an urgent, medically-appropriate response may be necessary. Chronic, low-level exposures to known agents (e.g., solvents or noise), or exposures to agents that have not yet been identified by the lab, also may result in health effects for which an appropriate medical response may be necessary.

The work done in most laboratories does not fall within the scope of “arduous or hazardous,” as defined by 5 CFR 339.202 (Medical Standards), which might call for a program of periodic clearance examinations. Also, the inherent screening process through which scientists and technicians demonstrate their ability to perform the requirements of their jobs, and the established quality assurance program involving regular performance appraisals and proficiency testing, may make a requirement for medical standards and a program of periodic medical clearances to perform laboratory jobs unnecessary.

While medical surveillance services, and a medical clearance program, may not be necessary for most DOI laboratory workers, the highly variable nature of potential exposure to a wide variety of potentially harmful agents makes it prudent to provide certain preventive measures for employees, and to have current medical information available to assist care-givers in the event an identifiable high risk exposure or an unexplained illness occurs. For these reasons, and to protect both the employees and the agency, it is recommended that safety and basic medical programs be implemented for all laboratory employees, and that the medical program should be considered mandatory for full-time employees. As part of this program, it is particularly important that employees be appropriately informed of the potential hazards of the laboratory, and the information,

emergency resources, and medical services available to them, as required by regulation (29 CFR 1910.1450 (f)).

What follows is an outline of a recommended program, including Safety Training, Hazardous Materials Documentation, Clinical Services, Community Emergency Medical Services Linkages, Medical Records Management, and Data Analysis. A list of applicable references is provided at the end of this Attachment.

## **RECOMMENDATIONS**

### **1. SAFETY TRAINING:**

A comprehensive safety training program should be in place, addressing such issues as fire safety, security, control of access to non-public areas, hazardous materials handling, food handling, personal hygiene, emergency notification and response within the facility, CPR and first aid training, and notification of local emergency services personnel (fire, police, medical, hazardous materials) and their access to the facility.

Excellent references for specific guidance in the area of laboratory safety may be found in section 7 of this Attachment.

### **2. HAZARDOUS MATERIALS DOCUMENTATION:**

A complete set of Material Safety Data Sheets (MSDSs) for agents stored or in use at the laboratory must be readily available in the facility. It is recommended that summary lists of these MSDSs be prepared: a primary list with a summary of all chemicals used anywhere in the laboratory, plus secondary lists for each distinct area or section of the laboratory. These secondary lists should include all chemicals used in those specific areas or sections. These lists would facilitate the rapid identification of possible chemicals involved in exposure incidents so the appropriate MSDS forms can be identified and pertinent information can be provided to emergency response personnel and treating physicians. All employees must be made aware of the availability and location of the MSDSs and the summary lists.

Similarly, it is recommended that summary lists be prepared of any infectious agents known to have been encountered (or that have a reasonable risk of being encountered) in the laboratory, so that emergency response personnel and treating physicians are aware of potential agents, both to allow appropriate personal protective equipment to be used and to provide assistance when diagnoses are uncertain.

### **3. CLINICAL SERVICES:**

Services to be provided to employees should consist of focused medical examinations, clinical procedures, and specified laboratory tests (see below). These services should be conducted for the primary purpose of assuring that current medical status information is readily available to both treating physicians and medical investigative personnel in the

event of exposure incidents or the development of unexplained medical conditions. This clinical program would provide periodically-updated “baseline” information for such comparison purposes. In order for health and laboratory information to be sufficiently current and of value for the purposes specified, the clinical services should be provided on a periodic basis of every three to five years. These periodic assessments could be done more frequently, depending on recommendations of the agency’s reviewing physician and interim findings or significant laboratory events.

An additional purpose of these periodic clinical services is to provide clinical data for trend analysis and health effects pattern recognition, facilitating both therapeutic intervention for individual employees and modifications in laboratory operations, in case unanticipated health effects are experienced by laboratory personnel.

Clinical services may be provided by local, qualified medical and health care personnel under local or national agency contracts. Guidance for arranging for these services may be found in Tab 5 (Medical Service Providers) of this *Handbook*.

***Baseline Clinical Services*** should be provided to all full time employees at the time of employment. The following services are recommended:

*Histories*

Medical History, using the ***DOI Standard Medical History and Examination Form***

*Examination Items*

General Physical Examination

General Appearance and Vital Signs

Special Attention To:

- Eyes, Ears, Nose, Mouth, and Throat
- Thyroid
- Central Nervous System (including cranial nerves II-XII and cerebellar function)
- Peripheral Nervous System (including reflexes, sensation, and position sense)
- Mental Status Evaluation
- Back & Musculoskeletal System
- Extremities (including strength and range of motion)
- Cardiovascular System
- Genitourinary System
- Gastrointestinal System
- Respiratory System
- Skin
- Lymphatics
- Endocrine and Metabolic System

*Diagnostic Tests/Procedures*

Audiogram – recorded for 500, 1000, 2000, 3000, 4000, 6000, and 8000 Hertz, both ears

Vision - Far and Near Vision Acuity, (uncorrected and corrected, each eye separately, plus together)

Peripheral Vision (nasal and temporal, each eye separately measured)

Color Vision

Chest X-Ray, PA & Lateral

Pulmonary Function Test (Spirometry: FVC, FEV<sub>1</sub>, FEV<sub>1</sub>/FVC)

Electrocardiogram-Resting

*Immunizations and screens which may be offered to employees, depending on the type of analyses done and the actual exposure potential in the particular laboratory, and if not currently immune or contraindicated*

- **Anthrax** Vaccine: primary series given at 0, 2, and 4 weeks, and 6, 12, and 18 months, with annual booster
- **Tetanus** and Diphtheria Toxoid: booster doses every 10 years
- **Influenza** Vaccine: given annually
- **Botulinum** Toxoid (pentavalent): primary series given at 0, 2, and 12 weeks, and first booster at week 52, with boosters at 2 year intervals depending upon titers
- **Hepatitis A** Vaccine: series given at 0 and 6 or 12 months
- **Hepatitis B** Vaccine: series given at 0, 1, and 6 months
- **Lyme Disease** Vaccine: series given at 0, 1, and 12 months.
- **Rabies** Vaccine: primary series given at 0, 7, and 21 or 28 days, with booster schedule depending on level of risk
- **Plague** Vaccine: [not currently available]
- **Q Fever** vaccine: [not currently available]
- **TB** Testing (PPD)

*Laboratory*

Complete Blood Count, with differential WBC

Chemistry Panel (to include at least glucose, SGOT/AST, SGPT/ALT, GGT, bilirubin, creatinine, BUN)

Serum, 5cc, labeled, frozen, and stored

Urinalysis

*Optional Laboratory (depending on exposure potential)*

Blood Lead (for employees using or testing firearms)

Zinc Protoporphyrin (for employees using or testing firearms)

Cholinesterase, RBC and Plasma (baseline tests for pesticide exposure, i.e., averages of two sets of results, drawn approximately one week apart, during period of known non-exposure)

***Periodic Clinical Services*** should be provided to all full time employees every three to five years during the period of their employment, and upon retirement or separation from the laboratory, if the preceding examination was more than 6 months before retirement. The following services are recommended:

*Histories*

Medical History, using the ***DOI Standard Medical History and Examination Form***

*Examination Items*

General Physical Examination

General Appearance and Vital Signs

Special Attention To:

- Eyes, Ears, Nose, Mouth, and Throat
- Thyroid
- Central Nervous System (including cranial nerves II-XII and cerebellar function)
- Peripheral Nervous System (including reflexes, sensation, and position sense)
- Mental Status Evaluation
- Back & Musculoskeletal System
- Extremities (including strength and range of motion)
- Cardiovascular System
- Genitourinary System
- Gastrointestinal System
- Respiratory System
- Skin
- Lymphatics
- Endocrine and Metabolic System

*Diagnostic Tests/Procedures*

Audiogram – recorded for 500, 1000, 2000, 3000, 4000, 6000, and 8000 Hertz, both ears

Vision - Far and Near Vision Acuity, (uncorrected and corrected, each eye separately, plus together)

Peripheral Vision (nasal and temporal, each eye separately measured)

Pulmonary Function Test (Spirometry: FVC, FEV<sub>1</sub>, FEV<sub>1</sub>/FVC)

*Immunizations and screens which may be offered to employees, depending on the type of analyses done and the actual exposure potential in the particular laboratory, and if not currently immune or contraindicated)*

- **Anthrax** Vaccine: annual booster
- **Tetanus** and Diphtheria Toxoid: booster doses every 10 years
- **Influenza** Vaccine: given annually
- **Botulinum** Toxoid (pentavalent): boosters at 2 year intervals depending upon titers
- **Rabies** Vaccine: booster schedule depending on level of risk

- **Plague** Vaccine: [not currently available]
- **Q Fever** vaccine: [not currently available]
- **Other** vaccine from the “baseline” list, if not given previously and the need is subsequently determined to be appropriate
- **TB** Testing (PPD)

Laboratory

Complete Blood Count, with differential WBC

Chemistry Panel (to include at least glucose, SGOT/AST, SGPT/ALT, GGT, bilirubin, creatinine, BUN)

Serum, 5cc, labeled, frozen, and stored

Urinalysis

Optional Laboratory (depending on exposure potential)

Blood Lead (for employees using or testing firearms)

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Cholinesterase, RBC and Plasma (baseline tests for pesticide exposure, i.e., averages of two sets of results, drawn approximately one week apart, during period of known non-exposure)

***Incident- and Symptom-related Clinical Services*** should be available to any employee whenever that employee develops signs or symptoms that may be due to exposures, or when monitoring indicates that exposures exceed OSHA-established action levels or permissible exposure limits, or when there is a work place event in which a hazardous exposure is likely to have occurred. The specific clinical services to be provided will depend on the nature of the exposure and any symptoms or signs experienced by the employee(s), and should be determined by the responding physician(s), based on exposure information provided by the agency. OSHA regulations (29 CFR 1910.1450(g)(iii)(3)) require that the physician be provided “the identity of the hazardous chemical,” “a description of the conditions under which the exposure occurred,” and “a description of the signs and symptoms” experienced by the exposed employee(s). The agency is required to obtain from the physician “any recommendation for further medical follow-up,” “the results of the medical examination and any associated tests,” “any medical condition which may be revealed in the course of the examination which may place the employee at increased risk as a result of exposure to a hazardous chemical,” and “a statement that the employee has been informed by the physician of the results of the consultation or medical examination and any medical condition that may require further examination or treatment.”

**4. COMMUNITY EMERGENCY MEDICAL SERVICES LINKAGES:**

Because of the potential for both large scale and obscure medical emergencies involving laboratory employees, it is recommended that a relationship with the local hospital and emergency medical system (EMS) be established and/or maintained. This relationship should seek to assure that these second-line emergency services entities are prepared to

respond, with the assistance of agency information resources, to individual cases of unusual medical conditions, outbreaks of unusual symptoms among staff, and potentially-hazardous incidents that could involve exposure of emergency services personnel to biological agents. These service linkages should be documented and included in training provided to pertinent staff.

**5. MEDICAL RECORDS MANAGEMENT:**

Medical records created as a result of the clinical services provided (see section 3., above) should be reviewed by a competent medical authority, acting as an agent of the agency. The purpose of such a non-clearance, non-medical surveillance review is to assure that the quality of information gathered meets agency program needs, significant findings are managed appropriately, and trend and pattern analysis can be performed when appropriate.

All medical records obtained through this process are part of the DOI employee medical file system, which is governed by such laws and regulations as:

- Privacy Act of 1974 (5 USC 552a)
- 5 CFR Part 293 (Employee Medical File System)
- 5 CFR Part 297 (Privacy Provisions for Personnel Records)
- OPM/GOVT-10 (Office of Personnel Management EMFS Notice)
- 29 CFR 1910.1020, Access To Employee Exposure and Medical Records (previously codified at 29 CFR 1910.20)
- Freedom of Information Act (5 USC 552)
- 45 CFR Part 5 (Freedom of Information Regulations)

The records belong to the Office of Personnel Management, and are managed by the employing agency, but may be under the custodianship of a health care provider or organization on behalf of the agency when clinical services are provided by that health care entity. Records must be maintained in a manner that ensures their confidentiality, their safety and integrity, and their use only for official purposes. When records are stored by a non-agency custodian (e.g., a local medical clinic or hospital), the contract for services between the agency and that health care entity must specify that such records storage is custodial in nature only, and that the original records will be transferred to the custody of the agency upon termination of the service arrangements provided for by the contract.

Information contained in these medical records is to be considered highly confidential, and is to be used by the agency for official purposes only. Questions regarding the appropriate use or handling of these records may be directed to the DOI employee medical file system manager, Robert Garbe, MPH, CIH, Occupational Health Programs Manager, Office of Managing Risk and Public Safety, 303-236-7112.

**6. DATA ANALYSIS:**

In order to facilitate the recognition of significant changes or trends in individual employee health findings, or the findings for groups of employees carrying out similar tasks or working in similar areas of the lab, it is recommended that medical history, examination, and laboratory test data be entered into a longitudinal data base. Data analysis should be conducted by individuals knowledgeable in occupational health, and familiar with the nature of the work carried out at the laboratory. Summary reports of this analysis should be made available to agency management, along with recommendations for any action that may be indicated.

**7. REFERENCES:**

Most of the following references are easily accessible through the Internet, and are representative of the variety of documents pertinent to laboratories that are readily available.

- 29 CFR 1910.1450 (Occupational exposure to hazardous chemicals in laboratories)
- 32 CFR 627.7 (Department of the Army, Biological Defense Safety Program “Goal of a laboratory safety program”)
- Control of Communicable Diseases Manual, 16<sup>th</sup> ed. Benenson AS (ed.). American Public Health Association, Washington, D.C. 1995
- Medical Surveillance and the Biosafety Program - References - *ABSA Medical Surveillance Course – 10/25/98* (an excellent reference listing)  
**<http://www.cdc.gov/od/ohs/biosfty/bioref.htm>**
- Biosafety Documents (a Centers for Disease Control and Prevention (CDC) site, serving as a “home page” for biosafety, with multiple listings and hot links)  
**<http://www.cdc.gov/od/ohs/biosfty/biosfty.htm>**
- Biosafety Manual, September 1994 (from the CDC National Center for Infectious Diseases, Division of Vector-borne Infectious Diseases; provides general safety information and specific guidelines on handling materials)  
**[http://www.cdc.gov/ncidod/dvbid/Biosafety\\_manual\\_rev\\_1994.pdf](http://www.cdc.gov/ncidod/dvbid/Biosafety_manual_rev_1994.pdf)**
- Biosafety in Microbiological and Biomedical Laboratories, Fourth Edition, April 1999 (from the CDC and the National Institutes of Health; a comprehensive guide)  
**<http://www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm>**