

*NASA Lewis Research Center  
Occupational Medicine Services*

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**Background**

The NASA Lewis Research Center (LeRC) is a laboratory where hazardous chemicals are frequently used. There exists a potential for employees to be exposed to these hazardous substances in performing their assigned work duties. With employee health and safety the primary objective, the handling of occupational exposures to hazardous substances at LeRC must meet the criteria as outlined in the CFR 1910.1450 (Occupational Exposure to Hazardous Chemicals in Laboratories), and NHS/IH-1845.5 (NASA Health Standard on Occupational Exposure to Hazardous Chemicals in Laboratories).

Communication and cooperation between the Occupational Medicine Services, the Industrial Hygiene Office, and the Safety Office is essential in order to ensure an organized approach in dealing with either a real or potential employee exposure to a hazardous substance which maximizes employee health and safety and appropriately utilizes state-of-the-art medical surveillance techniques. This document will provide suggested guidelines for this interdepartmental communication and cooperation.

In general, a hazardous chemical is any substance or material which is known or suspected to adversely affect a person's health. Most hazardous chemicals are so identified by the Occupational Health and Safety Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), and by the American Conference of Governmental Industrial Hygienists (ACGIH). Specific threshold limit values (TLVs), as defined by the ACGIH, or permissible exposure limits (PELs), as defined by OSHA, have been identified for these hazardous chemicals. Medical surveillance is generally recommended if an individual is exposed to a hazardous chemical at or above the action level (AL) for that substance. The AL is generally defined as half of the PEL, although there are some exceptions to this rule.

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The route of exposure to a hazardous chemical is dependent on that substance's physical properties, but generally ranges from inhalation, ingestion, absorption through the integument, or absorption through mucous membranes.

### **Purpose**

The purpose of the General Medical Surveillance Program at the NASA Lewis Research Center shall be to:

1. Identify any Lewis employee who is exposed to a hazardous chemical above the AL or at the physician's or industrial hygienist's discretion.
2. Educate that employee about the nature of the hazardous substance to which he/she has been exposed, the proper handling practices when working with that substance, proper ventilation procedures, respiratory protection and/or protective clothing to be worn when handling the substance, and about related personal health practices which may compound an adverse impact due to the hazardous chemical.
3. Monitor that employee for potential adverse effects from the exposure to a hazardous substance, utilizing appropriate medical surveillance procedures and protocols that have been determined for that particular hazardous substance.

### **Medical Surveillance**

The specifics of a Medical Surveillance Program initiated because of an exposure to any hazardous chemical at the NASA Lewis Research Center will fulfill all criteria established for this hazardous substance by OSHA. If OSHA criteria have not been established for a particular substance, then other reputable sources, including NIOSH, ACGIH, and AIHA (American Industrial Hygienist Association) will be referenced.

There are three types of circumstances in which an employee may be included in a medical surveillance program because of an exposure to a hazardous chemical:

1. Emergency Situation: When an employee presents to Medical Services following an acute exposure to a hazardous substance (usually due to a spill), the appropriate emergency medical care will be rendered to stabilize the patient. The primary resources will be the TOMES-Plus Database which is accessible in Medical Services, and the Material Safety Data Sheet (MSDS) for the substance to which the patient was exposed. In some circumstances, the Poison Control Center for Cuyahoga County or local toxicology experts may be consulted. After the employee has been stabilized medically, the Office of Industrial Hygiene will be notified of the acute exposure and the results of their investigation and recommendations will determine if continued medical surveillance is indicated.
2. Chronic Exposure: If an employee presents to Occupational Medicine Services with the concern of having possibly been exposed to a hazardous substance and is currently without specific symptoms, the employee will be referred to the Office of Industrial Hygiene. If the Office of Industrial Hygiene concludes that the employee is at risk for having been exposed to a hazardous substance at or above the designated action level for that substance, then appropriate medical surveillance will be instituted.
3. Abnormal Physical Findings: If, during the course of a routine health screening physical examination, laboratory abnormalities, symptoms, or physical findings are discovered which are suggestive of an employee having possibly been exposed to a hazardous chemical, then the Office of Industrial Hygiene will be notified. Further medical surveillance exams will be offered if the Office of Industrial Hygiene determines that there exists a significant possibility that the employee was exposed to a hazardous chemical at or above the action level.

At NASA Lewis Research Center, the Safety Office investigates all work-related injuries and reported accidents. If, during the course of their investigation, the Safety Officer feels that an employee may have been exposed to a hazardous substance, then the Safety Office will consult the Office of Industrial Hygiene. Ultimately it is the Industrial Hygiene Office that determines if medical surveillance is appropriate following either a real or presumed exposure to a hazardous chemical.

Once an employee has entered a Medical Surveillance Program because of an exposure to hazardous chemicals at the work site, the laboratory results, abnormal physical findings, and subsequent determination for fitness-for-duty will be shared with the Office of Industrial Hygiene. Medical surveillance examinations, like office visits for work-related accidents or injuries, fall outside of the typical doctor-patient relationship and, therefore, are not privy to the usual laws that protect patient confidentiality. However, any confidential medical information which may be pertinent to the successful treatment of an employee undergoing regular medical surveillance and which is not directly job-related will be maintained in the strictest of confidence.