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# **Defense Occupational and Environmental Health Readiness System – Industrial Hygiene (DOEHRS - (IH)**

## **Command, Control, Communications, Computers, and Intelligence (C4I) Support Plan (C4ISP)**

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# 1. INTRODUCTION

This section provides a high-level system description and discussion of the Defense Occupational and Environmental Health Readiness System – Industrial Hygiene (DOEHRS-IH) Command, Control, Communication, Computers, and Intelligence (C4I) Support Plan (C4ISP). It identifies the program, acquisition category, status within the acquisition cycle and states the purpose and scope of the C4ISP.

## 1.1 Purpose

The purpose of the DOEHRS-IH *C4ISP* is to identify C4I information, infrastructure, and interface support requirements for the DOEHRS-IH Automated Information System (AIS). The objectives of this C4ISP are to surface any known or potential C4I support shortfalls and to propose solutions and/or mitigation strategies to resolve interoperability, supportability, and sufficiency concerns related to the acquisition of DOEHRS-IH.

The DOEHRS-IH will provide information needed by occupational health staff and command surgeons to provide commanders with options for reducing health threats.

- The DOEHRS-IH will integrate occupational health information by providing automated support for the MHS Industrial Hygiene (IH) and providing electronic information to Occupational Medicine (OM) programs at deployed and fixed facility health care treatment facilities worldwide.
- The DOEHRS-IH will provide electronic information for individual longitudinal exposure records. Predeployment exposure records will allow use of individuals' own histories as baseline against new exposures on deployment and will facilitate postdeployment follow-up.
- The DOEHRS-IH program will also support health care demand management by enabling exposure based OM and IH interventions. Elimination of unnecessary patient loading at physical exam, clinical labs, and radiology will improve beneficiary access. This improvement fits well with the MHS Information Management/Information Technology (IM/IT) Program mission of sharing timely, accurate, and appropriate data or information between Medical Treatment Facility (MTF) Commanders, Industrial Site Commanders, Lead Agents, Installation Agencies, and other users of comprehensive OH information.

Eleven mission element needs have been identified by the policies, regulations, and requirements governing the DOEHRS-IH:

1. Identify prevention and intervention measures;
2. Contain occupation-related health hazard and risk information;

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3. Maintain longitudinal occupational exposures records of Department of Defense (DoD) personnel;
  4. Support health and safety training and education for DoD personnel;
  5. Contain occupational illness surveillance data;
  6. Contain results of trend analyses and epidemiological studies;
  7. Identify compensation and disability costs;
  8. Access worker demographic, operation, and location records;
  9. Monitor Occupational Safety and Health Administration (OSHA) compliance;
  10. Contain administrative planning and record keeping information; and
  11. Track credentials and qualifications of IH and OM professional staff.

## **1.2 DOEHRS-IH Program**

The DOEHRS Program is sponsored by the Office of the Assistant of DoD Health Affairs (OASD[HA]) to support the DoD Force Health Protection (FHP) Program. Within OASD(HA), DOEHRS-IH is an AIS within the Clinical Information Technology Program Office (CITPO). The DOEHRS Program Manager has the overall responsibility for DOEHRS-IH. Requirements Management is handled through the Occupational Health IPT (OH-IPT) using DOD working groups to generate requirements. The mandates for DOEHRS-IH include:

1. **Public Law 105-85** – Requires a Medical Tracking System for Members Deployed Overseas.
2. **Presidential Statement** – “Every Soldier, Sailor, Airman and Marine will have a comprehensive life long record of their exposures to different hazards”
3. **Presidential Review Directive (PRD-5)** – Implement an Automated System for Medical Surveillance
4. **DoDD 6490.2 and DODI 6490.3** – Field Medical System that will capture Environmental and Occupational Exposure Data
5. **Medical Programming Guidance** – Document Exposures, Ergonomic Initiatives, Develop Systems to monitor and report environmental exposures
6. **Medical Readiness Strategic Plan** – Ensure Standardized Medical Surveillance Data Collection

## **1.3 System Description**

The DOEHRS-IH is a system being developed to accommodate the needs of the Army, Navy, and Air Force to support their Industrial Hygiene Programs. The system provides

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the needed information to support the capture environmental health exposure data to enable targeted medical surveillance and treatment by health care providers. The system includes reference data sources and feeds, an automated data collection capability to electronically collect exposure data during field surveys and the means to effectively utilize the information to manage the Industrial Hygiene programs.

The system design is to utilize existing and planned DOD, DISA and MHS standardized architectures. No additional IT resources at the local are planned or envisioned to be necessary. DISA will be providing operational support for the system. The system is designed to be fully compliant with DISA operation and security standards. The system requires DITSCAP certification by MHS and DISA. The Services will be responsible for Service specific DITSCAP security certification if required.

The system design includes support for component based "Open System" architecture to allow for DISA and the Services to manage their components as defined in the Global Information Grid. To satisfy this requirement the DOEHRS-IH software will be utilizing DISA interface standards (Security Technical Information Guides (STIGS)) between the operating system, databases, network and hardware.

Centralized hardware, end user devices and supporting COTS software, insuring network connectivity are part of the system design.

## **1.4 Acquisition Strategy**

The DOEHRS-IH is an Acquisition Category (ACAT) III program. The acquisition strategy consists of a combination of commercial-off-the-shelf (COTS) and government-off-the-shelf (GOTS) software products. DOEHRS-IH will be developed under the DoD Information Technology System Certification and Accreditation Process (DITSCAP), which will ensure that a secure and manageable infrastructure is in place. In addition, DOEHRS-IH will be accessible via a standard MHS infrastructure, including workstations, LAN, and WAN connectivity from the Military Treatment Facility (MTF), or satellite sites.

### **1.4.1 Release Strategy**

To be determined.

### **1.4.2 DOEHRS-IH Plan**

To be determined.

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## 1.5 Document Overview

To be determined.

## 1.6 Document Organization

This document is organized into major chapters and appendices that identify C4I requirements based on analysis. The document is organized as follows:

- Section 1 identifies DOEHRS-IH, its background, the document, and the organization of the document.
- Section 2 provides a high-level overview of the specific systems being acquired. It describes the system's function, its mission criticality/essentiality, and interfaces with other IT systems.
- Section 3 defines the employment concept for the DOEHRS-IH system from which support requirements are derived.
- Section 4 conducts analysis and provides results (identifies C4I support requirements).
- Section 5 identifies shortfalls in available or projected C4I support and proposed solutions.
- Appendices, identifies all related documents used to prepare and develop the C4ISP, including the References, Information Exchange Requirements (IER), Technical Standards, Interface Control Agreements, and the Acronym List.

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## 2. SYSTEM DESCRIPTION

The DOEHRS-IH system will be implemented in an open systems environment. It will provide the capability for IH users to access the network from anywhere and anytime. It will provide access to exposure records, population data for querying purposes, and accessibility to external systems supported by other exposure groups. In addition, it will offer the ability to store and track exposure information within a controlled and centralized environment.

IHs support operational risk management decisions by identifying the impact of health risks and recommending countermeasures to minimize the threat. By collecting information for potential hazard sources, exposure pathways, magnitude, and duration of exposures, hygienists can assess and mitigate any potential risks.

### 2.1 System Functionality

DOEHRS-IH will provide the capability to standardize, automate, and facilitate information sharing more readily in the workplace. It will identify hazards and exposures that can potentially result in injury, or illness for Tri-Service care. Through the use of common methods and tools, the system will allow the different Services to conduct OH evaluations, share resources, reduce costs, and become more proactive within the healthcare community.

#### 2.1.1 Local Industrial Hygienists (IH)

The DOEHRS-IH application will provide timely and efficient<sup>1</sup> access of IH and EH data to users throughout the DoD, including MTF commanders, industrial site commanders, lead agents, installation agencies, and other users of comprehensive occupational and environmental health information. The Local IH will utilize the infrastructure for storing data, updating and retrieving survey information, evaluating threats, monitoring potential exposures, and developing recommended treatments. In addition, the DOEHRS-IH repository will share and distribute information to a wide-array of users and Services within the DoD environment.

#### 2.1.2 Mid-Level Management

The data provided by DOEHRS-IH will enable managers to perform trending analysis and predict the future impact of potential exposures. Depending upon the results, the data may be used to establish additional standards, guidelines, and/or policies within the DoD.

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<sup>1</sup> Timely and efficient will be further defined and quantified in the DOEHRS-IH Test and Evaluation Master Plan (TEMP), relevant test plans, and engineering support documentation.

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### **2.1.3 High-Level Management**

The high-level management operation will support access and provide for analysis of the consolidated Industrial Hygiene Data. The DOEHRS-IH will provide the flexibility for accessing the information quickly and efficiently. Standard reports, Ad Hoc data mining capability and technical data analysis capability will be provided.

### **2.1.4 Policy**

Policy makers will be provided access for analysis of the consolidated data. The DOEHRS-IH will provide the information quickly and efficiently. Standard reports, Ad Hoc data mining capability and technical data analysis capability will be provided.

## **2.2 Interfaces with Other Information Technology (IT)**

DOEHRS-IH is being developed to facilitate information sharing with external communication systems and subsystems. It is anticipated that there will be interface with multiple systems that are currently under development or planned. The multiple interfaces require that DOEHRS\_IH include a standard central interface with the capability to map to external systems according to the other system interface requirements as part of the DOEHRS-IH design.

## **2.3 C4 Support Overview**

To be determined.

## **2.4 Mission Criticality**

The need for a reliable, scalable and flexible environment is crucial for supporting the evolving requirements of IHs in the field. An AIS system is needed that provides the most up-to-date information, identifies potential exposures, and allow IHs to make informed decisions based on the available data. This will provide an automated approach for analyzing the impact of health risks, identifying hazardous sources, determining exposure pathways, and recognizing the frequency and duration of potential exposures.

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### 3. OPERATIONAL EMPLOYMENT

The operational employment consists of several areas in order to support the DOEHRS-IH project, including: the operational employment concept – focuses on the functional aspects of the system, the operational architecture views, and the information exchange requirements for identifying any critical data elements exchanged between the systems.

#### **3.1 Operational Employment Concept**

When fully deployed, DOEHRS-IH will provide an integrated solution for supporting the current and future requirements of the MHS environment. The system will provide timely and efficient access of IH and EH data to users throughout the DoD, including MTF commanders, industrial site commanders, lead agents, installation agencies, and other users of comprehensive occupational and environmental health information.

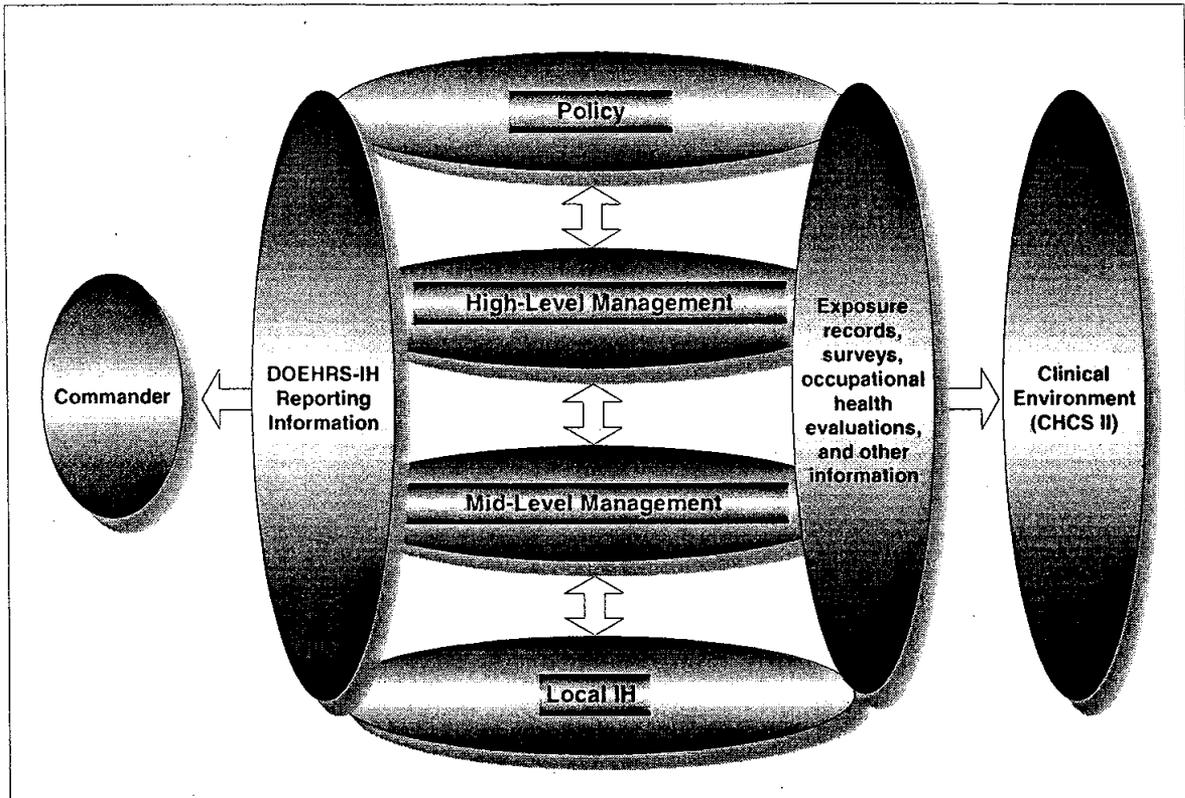
Whenever possible, DOEHRS-IH will leverage (reuse) existing standards being developed, implemented, and supported by DISA. The goal is to ensure all products operate within the engineering guidelines established within the DoD, which will reduce the probability of having to reinvent standards and/or capabilities. DISA will be responsible for working with the developer and MHS in developing any documentation required to support the development and operational environments. DISA will also be responsible for maintaining and supporting the network from the Megacenter to the end-user. However, this activity will be coordinated with TIMPO.

##### **3.1.1 Operational Architecture Views**

This section provides a High-Level Operational Concept (OV-1) view for DOEHRS-IH, including the local IH, mid-level management, high-level management, and policy functional areas. These areas will drive the underlining framework for how information will be stored, processed, and distributed throughout the user community.

###### **3.1.1.1 High Level Operational Architecture (OV-1)**

The DOEHRS-IH is a transaction-based system that will gather, store, process, and provide up-to-date exposure information. When deployed, DOEHRS-IH will improve the quality of occupational health and environmental healthcare, and help to establish programs to minimize the impact of worksite hazards. The common element between the various functional areas is information, which means the accuracy and reliability of the data is vital to the program's mission. Figure 1 presents the high-level functional view of the DOEHRS-IH environment. In addition, the functional operational views are provided in Figures 2 thru 8.



**Figure 1. DOEHRS-IH High-Level Operational Concept (OV-1)**

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### 3.1.2 Information Exchange Requirements

DOEHRS-IH will interface with military theater medical information systems, other medical AISs, and non-medical systems as well. The system cannot be an effective means of communications unless a secure mechanism is provided to enable information exchanges between multiple data sources. Therefore, the primary interfaces identified for DOEHRS-IH will be comprised of:

- DOEHRS-IH to the DOEHRS Data Repository (DOEHRS-DR),
- DOEHRS-IH to the DMDC, and
- DOEHRS-DR to the CHCS II System.

### 3.2 Operational Employment Requirements

DOEHRS-IH will enhance system readiness by providing information to enable exposure-based medical data, while improving IH risk reduction. The system will improve the quality of OH and EH care for DoD by promoting the effective delivery of services and prevention programs to minimize the impact of worksite hazards. It is intended to replace existing Service-specific applications and provide automated support, where no automated support currently exists. In addition, it will reduce redundant data entry and promote timely and efficient sharing of information between disparate environments.

Implementing DOEHRS-IH will allow Industrial Hygienists to:

- Prevent occupationally-related illnesses and injuries by anticipating, recognizing, and evaluating hazards; and by recommending controls to commanders, supervisors, exposed personnel and Occupational Safety and Health (OSH) managers for implementation.
- Characterize occupational exposures to enable targeted medical surveillance and treatment by health care providers.
- Investigate abnormal medical findings and trends referred to IH from health care providers to prevent illness or injury.
- Establish and document an historical record of exposure levels for personnel, and communicate exposure-monitoring results.
- Provide tools for IH decision support.
- Streamline IH operations by supporting personnel and workplace monitoring (WPM), medical surveillance, and decision-making.

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- Streamline data entry through downloads of demographic and clinically relevant data from other DoD systems.

### **3.2.1 Roles, Mission, and Mission Type**

DOEHRS-IH will support the needs of IHs in many different communities, including very small to very large hospital facilities. The objective of the program is to support the MHS health care delivery mission by providing timely information and services to minimize potential threats. The DOEHRS-IH AIS will support a wide-array of functions within the IH community, including the storing of mission critical exposure data, which will enable IHs to develop effective strategies for mitigating potential hazards; access to a standardized and centralized repository, where information can be analyzed and distributed to the user community; and the ability to evaluate some of the historical trends and predict the future impact.

The operation of the system must be consistent throughout the MHS. Under certain circumstances, not every functional capability will be used at every location. A process must be available to allow the DOEHRS-IH Service project officer, in concert with the site's administrator/commander, to determine which functionalities are required.

The DOEHRS-IH program will be responsible for defining and implementing an effective and efficient health care operation. The system will be capable of operating within the following environments:

- A client server, or web-enabled architecture that will facilitate information sharing throughout the DoD.
- A standalone, non-dedicated environment without network connectivity in which the computer is a portable laptop, a notebook, or a personal computer.
- An environment with PCs networked to various DoD agencies.
- Access through appropriate communication networks (for example, NIPRNET).

#### **3.2.1.1 Sustaining Base**

To be determined.

#### **3.2.1.2 In-Theater**

To be determined.

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### **3.2.2 Threat**

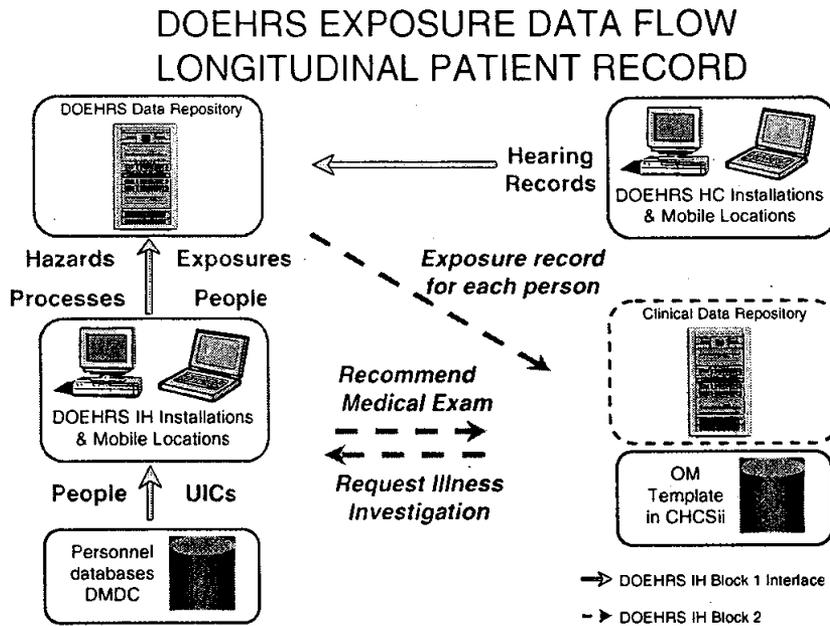
With the rapid development and deployment of new systems, increased dependency of data storage, and security, a more flexible and secure environment is needed that will allow for recoverability in the event that data is lost, damaged, or compromised. The appropriate safe guards need to be in place to guard against unauthorized viewing or tampering of information. These risks can be mitigated by incorporating the appropriate safe guards in the environment, such as operational procedures and a secure communications network. DOEHRS-IH will follow the process outlined in the DoD Directive 5200.28, "Security Requirements for Automated Information Systems." In addition to establishing tighter procedural controls, other guidelines will be employed specific to the confidential nature of the information.

#### ***3.2.2.1 Projected Threat Environment***

To be determined.

### **3.3 Systems Architecture View**

The systems architecture view provides the characteristics of the system and describes the interface requirements needed to enable the exchange of information. The following Systems Architecture Views (SV-1) illustrates the systems and supporting functions for DOEHRS-IH (SV-1 thru SV-1d). The SV-1 interfaces correspond to the High-Level Operational Concept Views (OV-1) identified in Section 3.



**Figure 9. System Interface Description (SV-1)**

As illustrated in Figure 9, there are three primary interfaces for DOEHRS-IH:

- DOEHRS-IH to the DOEHRS Data Repository (DOEHRS-DR),
- DOEHRS-IH to the DMDC, and
- DOEHRS-DR to the Clinical Data Repository (CDR).

Data from the DOEHRS-IH database will be transmitted to the DR and forwarded to the CDR in Montgomery, AL. DMDC provides manpower and resource information and delivers four files to the DOEHRS-IH system, including:

- Active duty,
- Civilian,
- Foreign National Personnel, and
- Unit Identification Code (UIC).