

Industrial Hygiene Program

INTRODUCTION

Fermilab's Industrial Hygiene (IH) program has been developed to protect the health and well-being of working people and the public from chemical, microbiological and physical health hazards present at, or emanating from, the workplace.

This chapter describes the process, assessments, databases, reports, reference materials, lessons learned, and subcommittee efforts that are used to assure that the Industrial Hygiene systems established at Fermilab are operating effectively and efficiently.

This chapter is intended to be a summary chapter. Where applicable, more detailed information may be found described in other [Fermilab Industrial Hygiene related FESHM Chapters and websites](#). These chapters and websites will be referenced in the body of this chapter. Please note that many of the IH websites are password protected.

DEFINITIONS

None

RESPONSIBILITIES

The Laboratory Director is responsible for assuring that the Industrial Hygiene program is in place and effectively monitoring Industrial Hygiene systems.

Division/Section Heads are responsible for

- Fully participating in all of the elements that make up the Industrial Hygiene program.
- Assuring that personnel assigned to Industrial Hygiene activities possess the experience, knowledge, skills, and abilities to perform effectively.

Environment, Safety and Health Groups are responsible for

- Using the anticipation, recognition, evaluation, and control (AREC) Process described below to identify potential Industrial Hygiene issues for either new or existing activities/processes.
- Creating a dynamic IH Plan using the Industrial Hygiene Plans Database for either new or existing activities/processes.
- Documenting IH assessments using the Industrial Hygiene Assessment Database.
- Documenting IH sampling surveys using the Industrial Hygiene Sampling Database.

Industrial Hygiene Subcommittee is responsible for

- Tracking and trending the D/S/C IH Assessment and Sampling efforts.

PROGRAM DESCRIPTION

AREC Process

As mentioned above, Industrial Hygiene is primarily concerned with the control of occupational health hazards that arise as a result of or during work. Industrial Hygiene has been defined as “that science and art devoted to the anticipation, reognition, evaluation, and control of those environmental factors or stresses arising in or from the workplace, which may cause sickness, impaired health and well-being, or significant discomfort among workers or among citizens of the community.”¹ At Fermilab members of the Industrial Hygiene Subcommittee will utilize the AREC process to ensure that employees are not overexposed to physical, chemical or biological agents during the course of their work. The table below lists those items which Fermilab’s Industrial Hygienists use in meeting the objectives of the AREC process.

<i>Anticipation</i>	<i>Recognition</i>	<i>Evaluation</i>	<i>Control</i>
Job Meetings	<u>Injury/Illness Investigations</u>	Health and Safety Walkthroughs	Engineering
Purchase Requisition Reviews	<u>Industrial Hygiene Assessment Database</u>	<u>Industrial Hygiene Sampling Database</u>	Administrative
Project Reviews	Job Planning & Hazard Analyses	Negative Exposure Assessments	Personal Protective Equipment
Hazardous Materials Management Program	<u>Product Labels and MSDSs</u>	Professional Judgment	Product Substitution
<u>Education, Training & Reference Materials</u>	Written Procedures	<u>Exhaust System Survey Database</u>	<u>Respiratory Protection Report</u>
<u>Industrial Hygiene Subcommittee & Minutes</u>	<u>Medical Surveillance</u>	Environmental Potential to Emit Spreadsheet	<u>Hearing Conservation Report</u>
<u>Industrial Hygiene WAAF Exposure Assessment Tool</u>	<u>Fire Department Run Reports</u>	<u>Laser Database</u>	
Design Reviews & Experiment Reviews	<u>Audiometric Database</u>		
Tool Box Meetings	Employee Concerns		
Daily and/or Operational Meetings			
Chemical Hygiene Plans			
<u>Lessons Learned</u>			
<u>Confined Space Database</u>			
<u>Industrial Hygiene Plan Database</u>			

Those items in the table above that are high-lighted in yellow are explained in greater detail in the paragraphs below. Where appropriate, additional items are also linked.

¹ Fundamentals of Industrial Hygiene, Third Edition, National Safety Council, 1988.

Plans

The [IH Plans Database](#) shall be reviewed and updated no later than October 31st of each year. This database indicates the Divisions/Sections/Centers assessment/sampling expectations for both past and current years.

The exposure type associated with the plan is provided by the D/S/C ESH Group at the conclusion of the IH Assessment or IH Sampling campaign to prioritize control efforts or to identify the need to collect more information based on level of exposure, severity of health effects, and the uncertainty associated with the exposure profile documented. Exposures may be grouped into one of three areas: unacceptable, uncertain, or acceptable.

- “UAE” – Unacceptable exposures, as defined in Fermilab’s institutional IH goals and program expectations are subject to control with monitoring/testing as appropriate.
- “UCE” – Uncertain exposures are those that aren’t well understood, or those where professional judgment cannot rule out the potential for unacceptable exposure. These exposures require further characterization, typically involving exposure monitoring or modeling.
- “ACE” – Acceptable exposures may not need further action, although confirmatory exposure monitoring is sometimes warranted to validate the acceptability of the assessment and to ensure the operation is under control.²

In the event of an Unacceptable exposure “UAE”, or possibly an Uncertain exposure “UCE”, enter into iTrack and provide the iTrack Finding ID# as means to follow-up with additional investigations or corrective actions.

This is a dynamic plan that may be modified or updated at any point during the calendar year based on the introduction of new activities/processes or as a result of an IH Assessment or IH Sampling campaign.

Assessments

Industrial Hygiene assessments and other structured operational awareness activities are all part of Fermilab’s Industrial Hygiene Program. The Industrial Hygiene assessment database is described by the [Industrial Hygiene Assessment Form](#). Results of the assessments are located in the [Industrial Hygiene Assessment Database](#).

Databases

There are a number of databases with corresponding [data entry forms](#) that assist the lab in maintaining a well-organized Industrial Hygiene program. They include:

[Audiometric Database](#)

[IH WAAF Exposure Assessment Tool](#)

[Exhaust System Survey Database](#)

[Confined Space Database](#)

² A Strategy for Assessing and Managing Occupational Exposures, Third Edition, AIHA, 2006.

Reports

Other IH computer databases are utilized to track progress in the areas of [Respiratory Protection](#) and [Hearing Conservation](#).

Education, Training and Reference Materials

In addition to the [IH training class in TRAIN](#), there are a number of FESHM Chapters which describe in greater detail the specific IH related programs at Fermilab. These chapters provide the foundation for the IH program at Fermilab. These chapters include:

- [FESHM 4180](#), “Asbestos Management Program,”
- [FESHM 4190](#), “Special Toxic Hazards-Beryllium & Beryllium Alloys,”
- [FESHM 4220](#), “Bloodborne Pathogens,”
- [FESHM 4230](#), “Confined Spaces,”
- [FESHM 4120](#), “Ergonomics Program,”
- [FESHM 4110](#), “Hazard Communication,”
- [FESHM 4140](#), “Hearing Conservation,”
- [FESHM 4260](#), “Lasers,”
- [FESHM 4200](#), “Special Toxic Hazards-Lead Containing Materials,”
- [FESHM 4290](#), “Preventative and Occupational Medicine”
- [FESHM 4240](#), “Oxygen Deficiency Hazards (ODH),”
- [FESHM 4130](#), “Personal Protective Equipment (PPE),”
- [FESHM 4150](#), “Respiratory Protection,”
- [FESHM 4270](#), “Static Magnetic Fields,”
- [FESHM 4250](#), “Temperature Extremes – Heat Stress and Cold Stress,”
- [FESHM 4170](#), “Hazard Control Ventilation.”

Imbedded in many of these chapters are procedures and in some instances [IH FESHM Forms](#) which help to control and manage the appropriate flow of information needed for proper program implementation and development. Other forms, called [IH Field Forms](#) also assist in this endeavor.

Lessons Learned

[Fermilab’s Lessons Learned](#) program is described in [FESHM 3020](#), “Incident Investigation.” Other references are found in [FESHM 3010](#), “Significant and Reportable Occurrences.”

Subcommittee Efforts

The [Industrial Hygiene Subcommittee](#) is responsible for assisting line management in the implementation of Fermilab’s Industrial Hygiene policies, the Industrial Hygiene portions of the Fermilab ES&H Manual, and the Work Smart standards relevant to Industrial Hygiene. It is charged with meeting on a regular basis to discuss and [document](#) Industrial Hygiene issues, lessons learned and to develop and recommend solutions that will not only ensure compliance but also establish sound and standardized Industrial Hygiene practices throughout the Lab to support continuous improvement efforts.