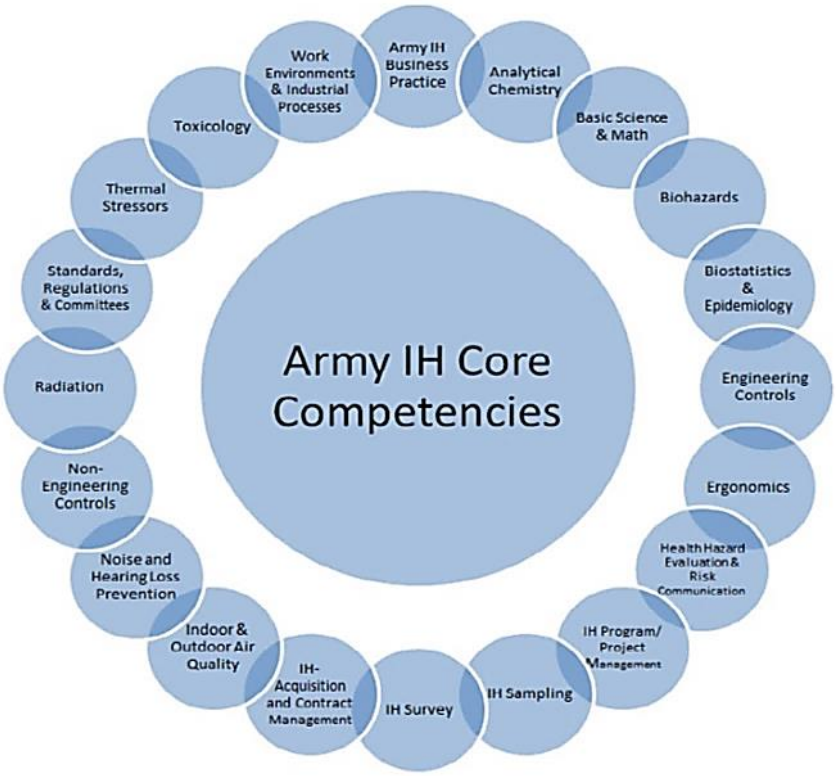
Army IH Core Competencies



Competencies represent requirements or skill-sets for the career program, series, and levels. The IH career program, as well as positions of leadership and management within the series, require specific levels of competency in job performance. Generally, competencies may be acquired through many sources, such as on-the-job training, Army Public Health Center courses, AMEDD Center and School courses, correspondence courses, collaborative distance learning, prior training or education, or self-development activities.

After careful review of IH core competencies set for other organizations including AIHA and ABIH, Army IH competencies were aligned with core competencies already established with the addition of Army-specific core competencies.

All APHC IH courses are aligned with an Army IH Core Competency and given within each IH course. In addition, the competencies align with related Knowledge, Skills and Abilities (KSA). For each KSA there is one or more terminal learning objectives (TLOs) along with sets of Enabling Learning Objectives (ELOs) to support the TLOs.

Aligning the Arm IH competencies with the AIHA/ABIH strategy ensures the Army IH community has well-trained professionals in the 0690 and 0640 series and paves the way for Army industrial hygienists to attain ABIH certification.

Army IH Core Competencies

Army IH Business Practice: Provide industrial hygiene support to the warfighter by anticipating, recognizing, evaluating, and controlling health hazards where military and civilian personnel work and serve. Encourage good industrial hygiene work practices to reduce exposures. Communicate health and safety information. Identify areas of non-compliance with applicable Health and Safety related Federal, state laws, and codified regulations. Record all data collected into the DOEHRS-IH database.

Analytical Chemistry: Describe principles and application of laboratory analytical procedures and methods of detection for sample analyses such as gas chromatography, infrared, visible and ultraviolet spectrophotometry, high performance liquid chromatography, mass spectroscopy, atomic absorption spectrophotometry and wet chemical analyses.

Basic Science & Math: Know and apply scientific concepts from the fields of general chemistry, organic chemistry, biochemistry, analytical chemistry, biology, anatomy, physiology, physics, mathematics, and statistics. Describe physical properties of substances such as reactivity, combustibility and flammability. Perform calculations related to gas laws, airborne concentrations, units of measures and conversions, and pressure and temperature adjustments.

Biohazards: Identify biological agents such as viruses, bacteria, fungi, molds, allergens, toxins, recombinant products, bloodborne pathogens, and infectious diseases that are potentially harmful to humans and other biological organisms.

Biostatistics & Epidemiology: Demonstrate knowledge of the principles and techniques used in epidemiology to study the distribution of occupationally induced diseases and physiological conditions and factors in workplaces that influence their frequency. Interpret and evaluate prospective and retrospective studies, morbidity and mortality and animal experimental studies using data and data distribution knowledge of statistical and non-statistical data.

Engineering Controls: Recommend and apply local exhaust ventilation, dilution ventilation, isolation, and process change engineering principles to control chemical, biological, and physical exposures. Application of these principles requires knowledge of airflow mechanics, ventilation measurements, design, in-plant air circulation and recirculation, air-cleaning technology and related calculations.

Ergonomics: Identify, evaluate and recommend controls to mitigate ergonomically stressful jobs using anthropometry principles, human factors engineering,

biomechanics, work physiology, human anatomy, occupational medicine and facilities engineering for the purpose of preventing injuries and illnesses.

Health Hazard Evaluation & Risk Communication: Demonstrate knowledge of the principles of health risk analysis: establish an exposure assessment strategy; collect basic characterization information (workplace, workforce and agents); assess exposures to the workforce; prioritize health risks; implement monitoring and control strategies for unacceptable exposures; schedule and perform periodic reassessments as necessary; document and communicate health risk exposures.

IH Program/Project Management: Describe methods to acquire, allocate, and control resources to accomplish anticipation, recognition, evaluation and control of workplace hazards in an effective and efficient manner. Apply principles of auditing, investigation methods, data management and integration, establishment of policies, planning, delegation of authority, accountability, business acumen, risk communication, organizational structure and culture, and decision making. Follow a Code of Ethics.

IH Sampling: Determine appropriate sampling strategy; select and describe the advantages and disadvantages of using the various types of air sampling instruments and the collection of full-shift, task-based, and grab samples. Describe principles and application of laboratory analytical procedures and appropriate methods of detection for sample analyses (i.e. gas chromatography, spectrophotometry, atomic absorption spectrophotometry, etc.). Demonstrate knowledge of instrument calibration and quality assurance practices.

IH Survey: Utilize the eight step exposure assessment model to conduct fieldwork. Define the scope of support and resources needed to perform the survey. Complete a basic characterization that includes personnel, processes, hazards, and controls associated with a shop. Establish similar exposure groups and develop a workplace monitoring plan for collecting samples. Characterize the exposures and perform an assessment to control hazards. Record data in DOEHRS-IH and submit a concise report to the client. Re-evaluate the shop every 3 years or sooner based on the priority level.

IH Acquisition and Contract Management: Knowledge of the process for negotiating and maintaining contracts, and performing market research to identify potential sources of supplies and equipment.

Indoor & Outdoor Air Quality: Describe general and technical topics related to ambient air quality, air cleaning technology, emission source sampling, atmospheric dispersion of pollutants, ambient air monitoring, health/environmental effects of air

pollution. Knowledge of peripheral disciplines such as emergency planning/response, water pollution, hazardous waste, and environmental fate and transport.

Noise/Hearing Loss Prevention: Demonstrate knowledge of and apply principles of the physics of noise and vibration to conduct appropriate measurements to evaluate worker exposure, to identify situations with the potential to cause noise-induced hearing loss or vibration-related injury, and to recommend methods to eliminate or control excessive exposure. Demonstrate knowledge of the anatomy and physiology of the ear with respect to the development of impaired hearing. Evaluate audiograms and audiometric testing programs.

Non-engineering Controls: Recommend and evaluate use of personal protective equipment to control exposures using the principles governing selection, use, care, and limitations of the equipment. Apply knowledge of respirator fit testing, breathing air specifications, material permeability, eye protection, training and the use of worker rotation as an administrative control.

Radiation: Apply knowledge of the physical characteristics and health and biological effects associated with exposure to alpha, beta, gamma, neutron and x-radiation to recommend controls based on measurement and evaluation of exposure. Apply knowledge of the physical characteristics, potential hazards, and health effects of exposure to electromagnetic fields, static electric and magnetic fields, lasers, radio frequencies, microwaves, ultraviolet, visible, infrared radiation and illumination to recommend controls based on measurement and evaluation of exposure.

Standards, Regulations, & Committees: Utilize American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit values (TLV) and military exposure guidelines to assess occupational hazards. Reference mandatory federal, DoD, and army regulations to ensure safe workplace practices.

Thermal Stressors: Describe heat-strain pathophysiology and hypo- and hyperthermic enviromarkers and biomarkers, recommend comprehensive heat strain prevention programs, and recognize special human risk factors for heat-related disorders and deaths. Demonstrate knowledge of medical/first aid care in case of emergency.

Toxicology: Demonstrate knowledge of the principles of toxicology including symptomatology, pharmacokinetics, mode of action, additive, synergistic and antagonistic effects, routes of entry, absorption, metabolism, excretion, target organs, toxicity testing protocols, aerosol deposition, clearance in the respiratory tract, carcinogenic, mutagenic, teratogenic and reproductive hazards. Apply the toxicological principles to evaluating and predicting health effects from exposures to single contaminants, mixtures of contaminants, and natural and synthetic agents.

Work Environments & Industrial Processes: Anticipate, recognize, evaluate and control exposures associated with specific industries and/or processes. Apply knowledge to topics such as confined space entry, spray-painting, welding, abrasive-blasting, vapor-degreasing, foundry operations, hazardous waste site remediation, and indoor environmental conditions.