AIHA IH Professional Pathway™

Protect Workers. Evolve Your Career. Advance the Profession.
This eGuide is designed for individuals at any stage within the industrial hygiene/occupational hygiene (IH/OH) career path. Perhaps you are a college student pursuing a technical course of study but have not yet decided on a specific vocation. Or maybe you’re a more established professional contemplating a career change. Regardless of where you are on your journey, AIHA offers suggestions on how you can advance your career with practical advice aligned with three different “tracks”: Technical, Management and Leadership. In addition, we provide recommendations on educational resources appropriate by career stage and a summary of allied professionals with whom the IH/OH professional may work.
About AIHA

Founded in 1939, the American Industrial Hygiene Association is a nonprofit organization serving professionals dedicated to protecting the well-being of workers and the communities in which they work. Our members focus on the anticipation, recognition, evaluation, control, communication and confirmation of environmental stressors in or arising from the workplace that may result in injury, illness or impairment. We provide comprehensive education programs and other products and services that help our members maintain the highest professional standards. More than half of our nearly 8,500 members are Certified Industrial Hygienists, a credential awarded by the American Board of Industrial Hygiene, and many hold other professional designations. AIHA serves as a resource for those employed in environmental management and other consultancies, industry, academia and the government sector.

Our Mission — AIHA aims to empower those who apply scientific knowledge to protect all workers from occupational hazards.

Our Vision — AIHA envisions a world where all workers are healthy and safe.

What is an IH/OH professional?

IH/OH professionals are technical professionals whose work focuses on the prevention of and protection against workplace injuries and illness in the workplace and community. IH/OH professionals typically have earned a bachelor's degree in occupational health and safety, engineering, chemistry, physics or a closely related biological or physical science from an accredited college or university. Many hold advanced degrees in the broader realm of industrial/occupational hygiene, occupational and environmental health, public health or a related science. While IH/OH professionals need a scientific background, they also must have a passion for the mission of protecting worker health and a people-oriented communication style. These professionals may be employed in private and public companies of all sizes, consultancies, contract laboratories, academia, the federal or state public sector, labor unions or nonprofits.
What Type of Career Path Is Available to an IH/OH?

With the fundamental skills and educational background, you can transition into a related function as a manager or leader. Options might include environmental, health and safety, sustainability, loss prevention, operations or quality. Your ability to manage and reduce risk, identify potential hazards and identify less harmful replacements, and create a process approach that identifies multiple solutions and tracks projects to completion are all strengths for leading a different but related group or function. You can lead with the general knowledge of a new function and build a competent team of experts to rely on in this new role.

Within any chosen field, to successfully transition from a technical expert into a manager or leader, hone your softer skills by reading up on leading and influencing others, and seek out courses that focus on these areas. As a leader, technical knowledge is of little use without also having the ability to change behaviors and cultures.

Every IH/OH professional should regularly invest in professional development, for the purposes of career advancement and staying at the forefront of innovation in the industry.

Consider if you wish to become an expert in a particular specialist area, or whether you wish to stay broad-based in your skills and approach to professional development. For instance, if you wish to become a subject matter expert in a specialized field of IH/OH, you may consider pursuing a master's degree within that discipline; if you wish to climb the corporate ladder, you may consider a Master of Business Administration. No matter your career stage, you should always consider which qualifications you need — or do not need — to achieve your ambition.

Why Choose This Career?

A career in IH/OH is an excellent way to apply your education in the sciences and pursue your passion for reducing risks, improving worker health and ultimately saving lives. If you possess an altruistic calling, you should consider this profession. We spend a significant part of our adult lives working, so we should aim to build careers that both stimulate and satisfy us. By its very nature, IH/OH offers many people a satisfying career. To protect others against workplace injuries and illnesses, and ensure their health and welfare, is intrinsically rewarding — this is one of the reasons high-caliber individuals are drawn to the profession.

IH/OH careers are perfect for those with strong intellectual curiosity and an interest in investigation. IH/OH professionals find out who, where and why, and find solutions to problems that affect people’s lives.
IH/OH offers job security, attractive compensation potential, career advancement and leadership opportunities. Based on AIHA’s 2013 Compensation Survey of 4,000 professionals, annual total compensation of younger professionals (under age 35) averaged $74,000 compared with $145,000 for those 65 or older. Not surprisingly, salaries varied by industry sector (e.g., manufacturing, independent consulting, academia), as well as by credentials obtained (e.g., CIH). To learn more about the CIH credential, refer to the “Certification” section.

Steps to Successfully Begin a Career in IH:

1. **Education** — Pursue a degree from an Accreditation Board of Engineering and Technology-accredited program in IH or apply your knowledge from a bachelor’s- or master’s-level science degree. Study [AIHA’s Core Competencies document](#), which defines the knowledge and skills needed in all areas of IH practice.

2. **Professional association membership** — Join AIHA as a student member and participate in a Student Local Section to learn more about the profession and seek out a mentor (a more experienced professional matched to your interests). Tap into AIHA’s vast network of peers and potential employers. As a student, consider submitting a poster for the annual poster session at AIHce (our annual conference). Step up and volunteer to serve on a committee (or two). The time you invest in AIHA will pay you back dividends for years to come. Attend AIHce, where you can take professional development courses, attended educational sessions and, more important, network with your peers and leaders in the profession.
3. **Internships** — Seek out an internship. View the online AIHA job board ([CareerAdvantage](#)) to access internship opportunities.

4. **Job search** — Prepare for the job search and entry into employment with AIHA’s Career & Employment Services Committee to perfect your resume and interviewing skills.

5. **Mentoring** — Seek a mentor from university faculty or AIHA’s Mentoring & Professional Development Committee or the Student and Early Career Professionals Committee to help you navigate decisions regarding education, internships and career development.

6. **Continue to advance your career** — Once you land your first job, continue your professional development and aspire to become a CIH. Become a member of AIHA or maintain membership to access numerous education opportunities.

7. **Develop commercial awareness** — We work in a market economy and, consequently, those who best understand the workings of commercial enterprises and markets tend to be the most successful and influential. By that rationale, IH/OH professionals need to be commercially aware if they truly hope to exert influence and advance their career. Start thinking holistically about how your function enables and aligns with the wider business agenda and its commercial ambitions.

8. **Grow your network** — To paraphrase a slogan: Organizations don’t hire people. People hire people. The more people you know, the more people will think of you when a position opens. Spend time getting to know people within and outside your own company. Not only will you create bonds that will serve you well in the future, but you will gain new insights, ideas, knowledge and skills. Getting involved in industry bodies, whether by attending events or volunteering as a committee officer at your local section, will help you develop new skills and raise your profile. Undertaking roles such as treasurer, secretary and chair as part of groups or committees will only enhance your prospects.

▼ **Fundamental Job Duties that IH/OH Professionals Perform**

The focus is on identifying and addressing risks that may endanger employees or the public. Typical roles of industrial hygienists include the following:

- Anticipate, identify and recognize workplace hazards (or health hazard identification).
- Analyze the risks stemming from identified workplace hazards.
- Make recommendations on improving the health and safety of workers and the surrounding community.
- Monitor and review proposed control measures to improve productivity.
• Align industrial hygiene programs with operational, financial and strategic objectives of the organization.
• Develop a business case for industrial hygiene interventions and improvements.
• Communicate the value of industrial hygiene risk assessment and risk treatment in terms of financial and nonfinancial benefits.
• Work together with upper level managers to fully integrate industrial hygiene programs into an enterprise risk management system.

Some Common Workplace Issues

Industrial hygienists address and manage health and safety challenges facing people everywhere, including the following:
• Indoor air quality issues (e.g., sick building syndrome, secondhand tobacco smoke)
• Emergency response planning and community right-to-know
• Occupational diseases (e.g., occupational asthma, asbestosis, silicosis)
• Lead, chrome, asbestos, pesticides, radon gas exposure
• Cumulative trauma disorders (e.g., repetitive stress injuries, carpal tunnel syndrome)
• Electromagnetic and microwave exposure (e.g., ionizing and nonionizing radiation)
• Reproductive health hazards
• Setting limits on exposure to chemical and physical agents
• Detecting and controlling potential occupational hazards (e.g., noise, radiation, illumination)
• Hazardous waste management
• Laboratory safety
• Ventilation system design
• Water quality

For more information on competencies required for the practice of IH/OH, refer to AIHA’s AIHA’s Core Competencies for the Practice of Industrial/Occupational Hygiene.
Skills for IH/OH Careers

The following section offers recommendations on how one can navigate one’s career — from student through early to senior career professional to emeritus. Individuals may elect to work as a generalist in understanding the broader realm of workplace hazards. Or, instead, they may specialize and become a subject matter expert in one or more core competencies (e.g., noise). In the latter case, they would likely pursue advanced education and training in these areas, and depending on their role, conduct research and publish papers to further advance the field.

In general, careers require skills development across three broad areas: technical, leadership and management:

- **Technical skills** are developed through education and experience. A basic level of technical skill obtained from a field of study is required for an entry-level job. Technical skills continue to develop throughout the career along a path influenced by job choices and professional development goals.

- **Leadership skills** encompass the skills necessary to motivate and influence groups of people working toward common goals. A chain of command or a specific title is not required for leadership, and thus it differs from supervision. Leadership skills are gained through training, mentoring and experience.

- **Management skills** encompass not only supervisory skills, but also communication, organization and project management skills. Like leadership skills, management skills are attained through education, training, mentoring and experience.
▼ Student/Intern (EXPLORE)

1. Technical skills
   • Build an understanding of the fundamentals of IH, including toxicology, industrial processes, exposure assessment and control strategies.
   • Gain basic, practical experience using IH monitoring devices and applying scientific methods.
   • Investigate the scope of the profession and identify specific areas of interest.
   • Learn the basic regulatory framework of applicable agencies (i.e., OSHA, EPA) and understand how they impact the business.

2. Leadership skills
   • Observe and develop leadership skills as an active member of an AIHA Student Local Section and/or AIHA Local Section.
   • Consider joining one or more of our technical committees.
   • Seek mentoring by more experienced faculty and IH/OH professionals.

3. Management skills
   • Hone communication (oral and written), time management (emphasizing work prioritization), project management and other professional skills.
   • Apply skills to lead and collaborate in projects, and to develop and present information.

Relevant AIHA Education (2019):
   • AIHce EXP 2019 Conference: Academic Track  *(NEW!)*
   • Road Courses
     – Fundamentals of Industrial Hygiene
   • eLearning
     – EIH I: Elemental Industrial Hygiene
Early Career Professional (EVOLVE)

1. Technical skills
   - Master IH/OH competencies by applying skills in the workplace under the direction of a more experienced professional.
   - Apply core competencies in detail-oriented and routine work. Learn why the work is being done and learn how to determine if data are reliable.
   - Understand applicable regulatory requirements and available options to achieve compliance.
   - Enhance risk and data analysis abilities.
   - Work toward technical credentials and aspire to professional certification as a CIH.

2. Leadership skills
   - Become an active, contributing member of a volunteer committee or local section.
   - Build a network of contacts and leverage those contacts as problem-solving and career-building resources.
   - Seek mentoring by a more senior IH, safety or other related professional.
   - Deliver fundamental safety or health training modules to a workforce.
   - Apply for AIHA’s Future Leaders Institute, an exclusive event focused on strengthening leadership skills of young professionals with three to 15 years of applied work experience.

3. Management skills
   - Develop risk management skills. Take available courses to understand and complete risk matrices.
   - Supervise interns, paraprofessionals or practitioners/technicians.
   - Develop task and project prioritization skills for yourself and others.
   - Utilize oral and written communication skills to gain credibility with workers, staff, management, community members and other stakeholders.
Relevant AIHA Education (2019):

- **AIHce EXP 2019 Conference**
- **Road Courses**
  - Fundamentals of Industrial Hygiene
  - Exposure and Chemical Monitoring — Beyond IH Fundamentals
- **eLearning**
  - EIH I: Elemental Industrial Hygiene
  - EIH II: Practical Applications of OEHS Math
  - EIH III: Case Studies in the Application of Industrial Hygiene Control Methods
  - SDS and Label Authoring Registry Preparation Course
  - Biological Monitoring: A Practical Self-Study Guide
  - Developing and Maintaining a Laboratory-Quality Management System
  - Exposure Assessment Strategies and Statistics
  - Introduction to IH Analytical Chemistry
  - How to Assess and Manage Nanomaterial Risks
  - Toxicology Training Online
  - Welding: An Exercise in Applied Industrial Hygiene
  - Exposure Decision Analysis Registry
    - EDA Registry Competency Assessment/Body of Knowledge
    - Occupational Exposure Assessment Certificate
Professional (COMMIT)

1. Technical skills

• Assess risk and develop, implement and evaluate comprehensive IH programs. Use innovative methods that bring efficiency to operations, independently apply IH skills and knowledge to solve problems, and interpret local regulations and standards for sites or facilities.

• Attain the CIH or an equivalent internationally recognized board certification in occupational hygiene.

• Improve and expand technical knowledge through continuing education.

2. Leadership skills

• Pursue personal and organizational leadership development within AIHA and hold a leadership role in an AIHA national committee, task force, working group or nontechnical committee, or in the AIHA Board of Directors. Volunteer leaders are invited to attend AIHA’s annual Leadership Workshop.

• Volunteer locally (e.g., in an AIHA Local Section).

• Seek appropriate mentorship for yourself and assume a mentor role for professionals at the national or local level.

• Aid in recruiting workers to the profession (e.g., grassroots outreach to local secondary schools and colleges).

• Identify and complete internal leadership courses to further your career and expose yourself to topics outside of your functional group.

• Become an influential C-suite leader.

3. Management skills

• Demonstrate the application of risk management and business concepts.

• Manage other professionals, contractors and junior staff.

• Participate in hiring activities, including writing job descriptions, participating on selection committees and hiring new professionals.

• Manage response to emergency situations.

• Develop proposals, budgets and project plans for IH programs and initiatives. Communicate program performance data. Analyze costs and benefits.

• Understand the fundamentals of tracking, interpreting, managing and reporting occupational health and safety metrics.
• Understand the fundamentals of occupational health and safety management systems and the role IH fulfills in carrying out the H&S goals of the organization.

• Share ideas and expertise with non-IH professionals within your organization regarding potential impacts on program areas, facilities or business functions. Educate and influence others in the workplace in IH technical and EHS-related policies.

• Manage programs and multidisciplinary, complex tasks and projects. Set goals and objectives, assign tasks and allocate resources.

• Expertly interpret research data. Conduct independent research or lead research teams.

• Advise supervisors and managers on how best to prevent and reduce risk and protect their employees.

• If assignment includes global responsibilities, understand cultural issues relative to managing international personnel and implementing global IH programs.

• Establish cross-site councils within your company to address concerns, share effective practices and drive common processes.

**Relevant AIHA Education (2019):**

- AIHce EXP 2019 Conference
- eLearning
  - EIH I: Elemental Industrial Hygiene
  - EIH II: Practical Applications of OEHS Math
  - EIH III: Case Studies in the Application of Industrial Hygiene Control Methods
  - SDS and Label Authoring Registry Preparation Course
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  - How to Assess and Manage Nanomaterial Risks
  - Toxicology Training Online
  - Welding: An Exercise in Applied Industrial Hygiene
1. Technical skills
   - Participate in and influence development of national or global regulations, standards and guidelines.
   - Participate in acquisition and sales activities of business sites.
   - Assess large-scale impact and drive organizational, national or global strategy.
   - Achieve significant experience in organizational leadership, business management and adjacent fields.

2. Leadership skills
   - Achieve recognition as a leader with significant influence throughout an industry.
   - Hold significant volunteer leadership roles. Represent AIHA to and within other organizations.
   - Identify key emerging issues in IH and initiate actions to address them.
   - Mentor others.
   - Effectively conduct presentations to clearly convey desired goals and steps to get there.
   - Become an influential C-suite leader.

3. Management skills
   - Manage several varied professionals and prioritize resources on a national or global scale.
   - Evaluate existing knowledge-sharing best practices for the organization.
   - Advise multiple facilities, management teams and cross-functional teams on creative, innovative and resourceful problem-solving strategies.
   - Advise others on leadership, innovative thinking and influence within and outside the organization for broad impact.
   - Understand the importance, management and reporting of occupational health and safety metrics to advise leadership on organizational health risks. Identify leading metrics to influence change.
   - Manage the role of industrial hygiene in an overall occupational health and safety management system, carrying out the H&S goals of the organization.
• Consider a management or leadership role outside of traditional IH, such as in environmental, health and safety, loss prevention, sustainability, operations or quality.

• Advise organizational leadership on the risks and benefits of proposed actions.

• Apply business concepts to demonstrate the value of the IH program or department.

• Make and/or influence business decisions necessary to reduce risks and protect employees and the public. Prepare return on investment business cases to obtain management support.

• If assignment includes global responsibilities, understand cultural issues relative to managing international personnel and implementing global IH programs.

**Relevant AIHA Education (2019):**

- [AIHce EXP 2019 Conference](#)
- eLearning
  - EIH I: Elemental Industrial Hygiene
  - EIH II: Practical Applications of OEHS Math
  - EIH III: Case Studies in the Application of Industrial Hygiene Control Methods
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  - How to Assess and Manage Nanomaterial Risks
  - Toxicology Training Online
  - Welding: An Exercise in Applied Industrial Hygiene
1. Technical skills
   • Influence the development of broad areas of professional IH knowledge, skills and abilities. Educate and guide management and policy decision makers to set goals and objectives.
   • Assess large-scale global impact and drive national or global strategy.
   • Apply depth of experience in strategic planning, organizational leadership, business management and adjacent fields.
   • Solve problems creatively to lead and aid large teams of diverse personnel.

2. Leadership skills
   • Become an influential C-suite leader.
   • Mentor others on advances in technology in general and within the profession.
   • Participate actively in and help guide AIHA national and local section activities. Hold significant volunteer leadership roles that focus on giving back to the profession, expanding the pipeline of new professionals, and preserving and promoting the values of the IH profession.
   • Assume a volunteer role in expanding health and safety protections to workers in developing economies.
   • Identify key emerging issues and help drive actions to address them.
   • Serve as a recognized leader in the IH profession.

3. Management skills
   • Demonstrate global-scale risk management skills.
   • Advise on employee and mentee professional development. Develop high-level content to train peers in organizational and professional groups.
   • Share expertise with professionals at other levels.
   • Make career decisions based on work-life balance criteria and model work-life balance for professionals at earlier career levels.

Relevant AIHA Education (2019):
   • AIHce EXP 2019 Conference
Certification

Pursuing and attaining certification is a great way for an industrial hygienist to demonstrate mastery of the body of IH knowledge. Employers often seek certified candidates, especially for positions in management.

Although the specific qualifications have evolved, the “3 E’s” of education, experience and examination have always served as the foundation to become ABIH-certified. Currently, meeting the education qualification requires a bachelor's degree in biology, chemistry, engineering, physics or an ABET-accredited program in IH/OH or safety, from a regionally accredited college or university. ABIH will consider other colleges or degrees, provided the emphasis is on science, mathematics, engineering or a science-related technology. In addition, academic or continuing education coursework specifically addressing ethics, toxicology, fundamentals, measurements and controls is necessary.

However, academic knowledge alone does not qualify an individual to be a competent industrial hygienist; rather, experience provides the synergistic ingredient. There is an “art” to applying the technical principles in a manner that provides a reasonable solution for a workplace health issue. Often, this ability is best obtained through a relationship with a practicing CIH or mentors who can teach the nuances of applying knowledge in the real world. Further, because the CIH examination covers many broad IH rubrics, experience allows time for exposure to a wide variety of real-world conditions. Therefore, several years of broad experience are necessary before a person may sit for the CIH exam.

The CIH program, as administered by ABIH, has been accredited by the American National Standards Institute and recognized as a certification scheme by the International Occupational Hygiene Association. Thus, the CIH is recognized as the mark of professionals, giving the professional instant name-brand recognition, professional credibility throughout the world and a professional edge over noncertified colleagues.

For more information, visit the ABIH website.
Allied Professionals

IH/OH professionals may interface with a variety of allied professionals. *Note that the terms used below may not be universally accepted, and roles may vary by country.*

**IH technicians** work with and support senior-level professionals in conducting field assessments and measuring hazards to help prevent harm to workers, property, the environment and the public. The minimum educational requirement is generally an associate degree. Others may enter the profession with a high school diploma and obtain supplemental training through a vocational technical program or professional certificate program (e.g., BCSP’s OHST certification). They generally collect data on the health and safety conditions of the workplace.

**Chemists** work in a laboratory environment and use their academic background to focus on analyzing worker chemical exposure risks. They are competent in sampling and analysis (e.g., principles, techniques, calculations) relevant to personal monitoring and exposure assessment.

**Health physicists** control the beneficial use of radiation while protecting workers and the public from potential hazards. Many industries, medical facilities, defense plants and research laboratories demand professionals who understand radiation hazards and their prevention and control. (Source: HPS)

**Biosafety Professionals** develop and participate in programs to promote safe microbiological practices and procedures and proper use of containment equipment and facilities. They help designate responsibilities among workers and provide advice on laboratory design. Biological safety (or biosafety) has paralleled the development of the science of microbiology and its extension into new and related areas, including tissue culture, recombinant DNA, animal studies, molecular biology, synthetic biology and biotechnology. (Source: ABSA)

**Safety Professionals** focus their efforts on prevention of workplace injuries. They assess worksites to determine risks, inspect potential hazards and controls, evaluate risks and hazard control measures, investigate incidents, maintain and evaluate incident and loss records, and prepare emergency response plans. Other duties could include hazard recognition, fire protection, regulatory compliance, health hazard control, ergonomics, hazardous materials management, environmental protection, training, filing accident and incident reports, advising management, record keeping, emergency response, managing safety programs, product safety or security. (Sources: ASSP and BCSP)
EHS Professionals function as generalists who focus on the practical aspects of environmental protection and safety at work. EHS managers must identify and understand relevant EHS regulations, the implications of which must be communicated throughout an organization so the company can implement suitable measures. (Source: Wikipedia)

Occupational & environmental physicians work in a board-certified specialty within the profession of preventative medicine. They focus on the health of workers and their environments through clinical care, disability management, prevention, research and education. (Source: ACOEM)

Occupational and environmental health nurses are state-licensed, like physicians, and deliver health and safety programs to individual workers and community groups. They focus on the promotion and restoration of health, prevention of illness and injury, and protection from work-related and environmental hazards. (Source: AAOHN)

First responders are people (e.g., police officers, firefighters, emergency medical technicians) responsible for arriving first on the scene of an accident or emergency.

Hazardous waste technicians oversee waste collection and disposal activities to ensure compliance with applicable environmental regulations from the beginning of the production process through to customer delivery. (Source: AHMP)

The above individuals should have at least a basic understanding of IH/OH principles and the hierarchy of controls to help them perform their role. They should be able to identify when the expertise of an IH/OH professional is needed. In certain situations, they should understand how to evaluate IH/OH proposals, and understand risk assessment and risk management and how they impact a positive return on investment. If they are managing a contracted IH/OH consultant and do not have internal IH/OH support, they should have superior communication skills necessary to provide business case explanations to management and communicate in a framework the workforce can understand.

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