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Hiring Recent EHS Generalist Graduates: Expectations from Hiring Managers, Recent Graduates and Academics

White Paper

[aiha.org](https://www.aiha.org)

A summary of research conducted by the following professional societies and credentialing organizations:



Introduction

EHS Generalists[§] are multi-disciplinary professionals who work within the broader environmental, health, and safety[§] (EHS) field. There are professional membership associations and credentialing organizations which serve the needs of professionals who are more focused on a single discipline within the EHS and occupational hygiene (OH) professions. Several of these professional associations and credentialing organizations – AIHA, ABIH, IPEP, and NAEM – collaborated to conduct qualitative research regarding the hiring requirements and expectations of stakeholders for recent EHS Generalist graduates, with a focus on the unique aspects of these professionals and the entry-level opportunities available to them.

In 2017, AIHA embarked on a research project to learn more about the preparedness of recent EHS graduates and early career EHS Generalists as they enter the workforce. As a leading provider of industrial hygiene[§] (IH) and related technical education, AIHA was interested to know whether the EHS Generalist might benefit from education and training about specific EHS topics. As a professional community for corporate EHS decision-makers, NAEM collaborated with AIHA on this research to aid environmental managers in hiring and developing EHS Generalists.

The participant categories in this research were:

- Hiring managers/managers of EHS generalists, both environmental and IH managers
- Professors of environmental and related science programs
- EHS graduates with less than 4 years' experience

In this study, the focus was on recent college graduates, defined as those with less than four years of relevant work experience. Participants represented a broad cross-section of industries, though hiring managers and recent graduates were concentrated in the manufacturing and consulting sectors. Most participants worked for organizations with greater than 500 employees. More than 60% of respondents indicated that they have hired recent EHS Generalist graduates annually for one or more positions.

Who is the EHS Generalist?

The EHS Generalist is a professional who, by formal education, work experience, or continuing education, has knowledge and skills in the EHS fundamentals. Most are graduates with a major in environmental science or a related EHS academic program.

Recent graduates may be hired as EHS Generalists, or as occupational health and safety specialists, environmental or safety technicians, environmental or safety engineers, product stewards, or similar EHS positions. Their work can be solely environmental in nature, or any combination of environmental, health, and safety.

[§] The Appendix to this document includes definitions of key terms.



What is the current and future demand for EHS Generalists?

“Industry is not hiring multiple persons to specialize; they are hiring just one or two people who must provide a more well-rounded generalist approach.”

— Professor, IH

Over 50% of the employer respondents stated that finding qualified EHS professionals is a concern. Similarly, an equal number of employer respondents expressed concern in developing future EHS managers and leaders. Both IH and environmental hiring managers voiced these concerns.

Hiring managers expressed the need for a larger and more qualified pool of EHS Generalist candidates. This research focused on how the recent EHS Generalist graduates already in the workforce could have been better prepared to meet the needs of their employers. Identification of these gaps in knowledge and skills is one of the first steps to developing that larger and more qualified candidate pool.

What are hiring managers looking for in EHS Generalist candidates?

Ideal candidates should have a strong background in mathematics and science and have education and skills relevant to the job requirements. This research showed that many EHS Generalists have enough strengths in one or two of the functional areas conveyed in the job requirements but lack sufficient formal education, knowledge, and skills in the others.

Most hiring managers view classroom education and training as insufficient. They are looking for new hires who have proven they can apply their knowledge in a practical way. The top candidates demonstrated their ability to apply their knowledge through work experience or internships. Hiring managers also sought EHS Generalist candidates with proven communication skills and project management skills. Top candidates were those who demonstrated they had knowledge of project management processes and experience applying that knowledge to successfully manage projects.

From the hiring managers’ viewpoint: Areas in which EHS Generalists are well-prepared to meet the needs of their role

The largest group of individuals interviewed or surveyed in this research was hiring managers who employ recently-graduated EHS generalists in environmental, EHS, or OH roles. These hiring managers were asked to identify the technical areas where these recent graduates were best prepared. The most frequently noted areas were:

- Hazard assessment[§] and data collection[§]
- Guidelines, standards and regulations[§]
- Identification of hazardous properties of materials or pollutants[§]

[§] The Appendix to this document includes definitions of key terms.



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“Health and safety impacts and solutions are already well-documented for most problems/issues... Today’s EHS Generalists are well-trained to know them. A good EHS student should already have fundamentals of control well under his/her belt.”

— Engineer, Environmental

From the hiring managers’ viewpoint: Areas in which EHS Generalists could be better prepared

Hiring managers noted that the weakest skills in recent EHS graduates were communication, project management, and program assessment. The ability to translate issues and impacts for nontechnical persons or the public is of key importance.

“Communication skills training and how to interpret rules & regulation “grey areas” need much more emphasis. Many (EHS Generalists) early in their careers can’t seem to communicate in laymen’s terms.”

— Director, Plant EHS and Facilities

When asked to identify the technical skills that were weakest in recent EHS graduates, the most frequently selected were:

- Hazard control[§]
- Exposure assessment[§]
- Response and remediation[§]

What do the professors have to say?

Professors teaching in environmental and related EHS programs were interviewed for this study. Some of their remarks regarding graduating student placement include:

“Companies look for students who not only can recognize issues, know rules and compliance but can offer multiple solutions/variety of options to remediate problems.”

— Program Head, IH

“EHS graduates are only prepared on needed knowledge and practice of EHS and, in particular, rules and regulations.”

— Professor, Mechanical Engineering and Chemistry

[§] The Appendix to this document includes definitions of key terms.



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What do the recent EHS Generalist graduates have to say?

A small group of newly-hired graduates was identified by the professors. Those individuals were surveyed or interviewed. They most frequently identified these areas as the ones they felt they were best prepared:

- Communication/presentations/report-writing skills
- Sampling/instrumentation
- Sampling measurement/methodologies

The graduates most frequently noted these areas as the ones they felt they were least prepared:

- Management of projects
- Air pollution control
- Risk assessment/analysis

The recent EHS Generalist graduates identified many of the same areas of best and least preparedness as the hiring managers and professors – with one major difference: communication skills. While hiring managers and EHS Generalists agree that a key area for better preparation is project management, they disagreed about the graduates' level of communication skills.

Several newly-hired graduates commented on what knowledge, skills, and abilities were most important toward getting hired:

“The degree I had obtained, my internships, and the program from which I had obtained my masters.”

— Master’s Degree in Public Health

“Internship experience, multi-disciplinary knowledge, regulation understanding.”

— Master’s Degree in Environmental Sciences

“Experience working on and leading environmental projects, ability to work as a team, technical skills (writing and ability to use instrumentation and follow methodologies), experience gained outside of academics.”

— Master’s Degree in Environmental Sciences



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“I believe that strong written and oral communication skills, a strong research background, and an attitude of adaptability were the major selection criteria used by potential employers at places I interviewed.”

— Bachelor’s Degree in Geosciences

“Applicable coursework and previous experience in a related field; more interested in coursework that was hands-on: field and laboratory-based.”

— Bachelor’s Degree in Environmental Sciences

Conclusions

As an EHS Generalist may be practicing across all three disciplines – environmental, health and safety – relevant education and credentials are key to, first, getting hired and, second, being able to quickly become effective in their position.

The most desired communication skills noted were:

- **Influencing others.** As the EHS Generalist is generally in a support role, outside the direct reporting line of workers and managers, the ability to write and speak persuasively to influence others’ behavior in the organization is critical to the EHS Generalists’ success.
- **Training workers and presenting information to nontechnical staff.** The delivery of required EHS training to workers is often one of the first responsibilities given to EHS Generalists. Additionally, EHS Generalists may need to make presentations of technical EHS information to other stakeholders within the organization, such as procurement or maintenance managers.
- **Technical writing for different audiences.** Hiring managers expect EHS Generalists to be able to write a technical document, that presents data, regulations and other information in a format that is understandable by nontechnical staff, supports recommendations with facts and data, and which clearly presents the rationale for expending resources in support of a specific business need (i.e., the business case).
- **Project management skills include** the ability to estimate expenses and other financial impacts of EHS projects and programs, developing a project timeline, and team management.

Communication, project management, and program assessment skills affect the way that EHS Generalists apply their education in practice and their success. Such skills may not be well-developed by academic programs.

The technical skills identified by hiring managers as the weakest are among those that could be improved through internships and other on-the-job, practical experience.

Professors recognize that their programs impart the necessary knowledge and technical skills but are not able to provide practical application experiences, resulting in a gap between academic preparation and hiring manager expectations.



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The disconnect between what skills the EHS Generalists believe that they have versus what the hiring managers are looking for could be resolved by more practical experience such as internships, as well as informational interviews between hiring managers and EHS Generalist candidates.

Recommendations

Internships — A lack of hands-on and opportunities for recent EHS generalist graduates, related to their major was noted in this research. One way to address this deficit is for EHS Generalists to gain hands-on experience through internships. Internships would help hiring managers and EHS Generalists. Hiring managers would benefit from creating a pool of proven talent for future positions. EHS Generalists would benefit by developing and demonstrating their skills in the real world.

“There’s a distinct knowledge gap with understanding how to practically apply principals [sic] to “real-world” concerns. I refer to this as the ‘Practical Application Skill set.’”

— Professor, EHS

“All basic skills (have been) learned. But, the application is still best-obtained OTJ [on the job]. Skills deepen only with experience.”

— Professor, Chemical Engineering

“More employers have expectations that students will have had real world experiences that are related to their majors.”

— Professor, Sustainability

Association membership and engagement — Associations representing the environmental, worker health, and safety professions can provide professional network communities to EHS Generalists during their student, intern, and early-career phases. In these associations, the EHS Generalist can find professionals who can provide mentoring and other career development guidance. Coaching and mentoring from a more-experienced professional could help the EHS Generalists bridge some of the gaps in their training and experience, making them more employable.

“Students who network through associations, internships tend to excel.”

— Professor, Environmental

External Training/Credentialing — Insufficient preparation in specific technical areas was identified by both hiring managers and recent graduates. There is a need to provide training to recent EHS graduates in hazard control and exposure assessment. Additionally, the recent graduates noted a need for better skills in interpretation and implementation of standards and regulations.



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Although external professional development training would seem to be an effective way of narrowing the gap between needs and experience, this research did not show hiring manager support for external training of newly-hired recent graduates. These gaps may be filled prior to hire by professional development education offered by associations to their student members.

Hiring managers were about evenly split regarding their view of entry-level certifications as a differentiator when hiring recent graduates. In the consulting industry, nearly 100% of IH-focused managers stated that credentials would be or perhaps would be a differentiator among candidates, whereas EHS-focused managers were less convinced. Again, in the manufacturing sector, 86% of IH-focused managers responded that credentials would be a differentiator, as compared to 69% of EHS-focused managers. The responses from IH-focused and EHS-focused managers in large organizations about credentials were consistent with those from the manufacturing and consulting sectors.

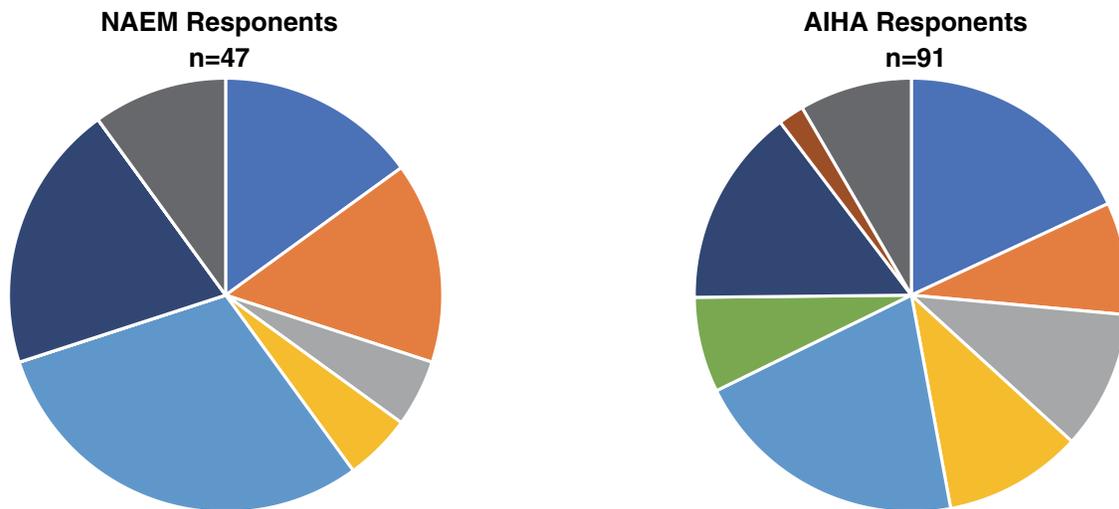


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APPENDIX

Selected Data

Overall Concerns of IH and Environmental (ENVL) Respondents

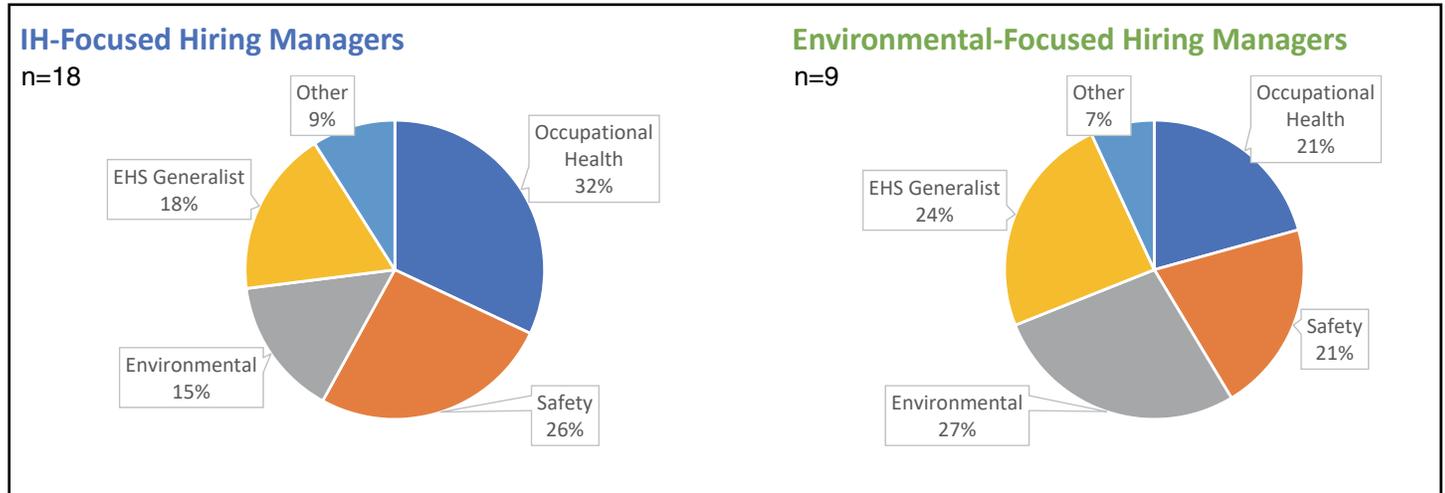


Professional Challenges: What will have the greatest impact on your IH/EHS organization in the next 3-5 years?	NAEM Respondents	AIHA Respondents
■ Developing management/leadership skills within your IH/EHS department	15%	18%
■ Regulatory or consensus standard compliance (i.e. ISO)	15%	8%
■ Keeping up-to-date with latest IH/EHS trends	5%	10%
■ Helping your IH/EHS employees maintain continuing education requirements	5%	10%
■ Finding capable IH/EHS professionals to fill open positions	30%	21%
■ Expanding a community network (to exchange ideas, best practices, etc.) for your IH/EHS employees	0%	7%
■ Expanding IH/EHS knowledge across your organization	20%	15%
■ Other	0%	2%
■ No response	10%	8%

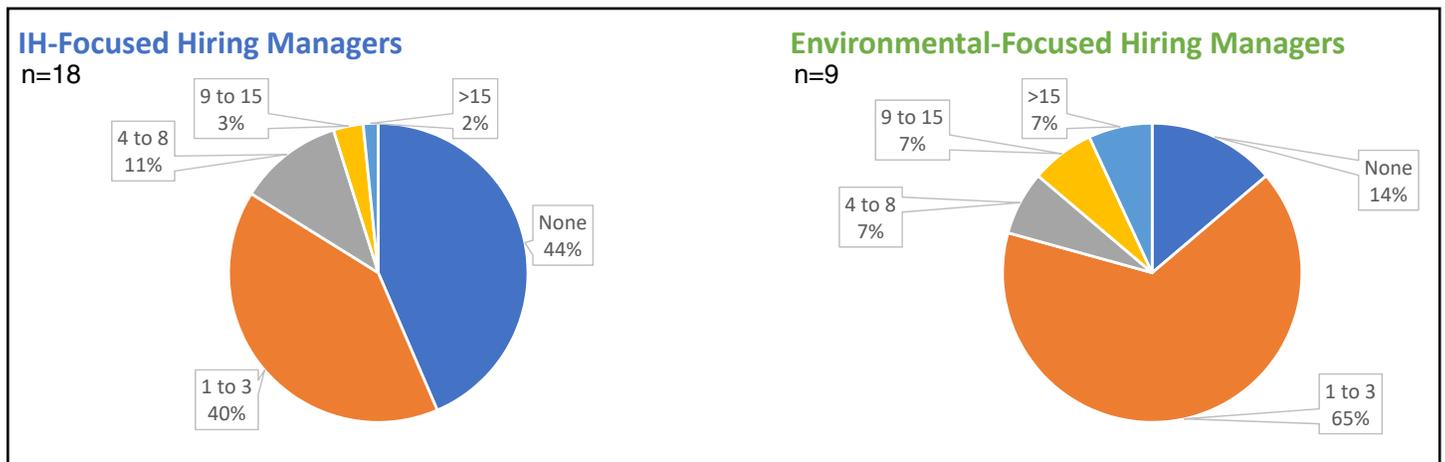


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Consulting: Placement of recent EHS graduates



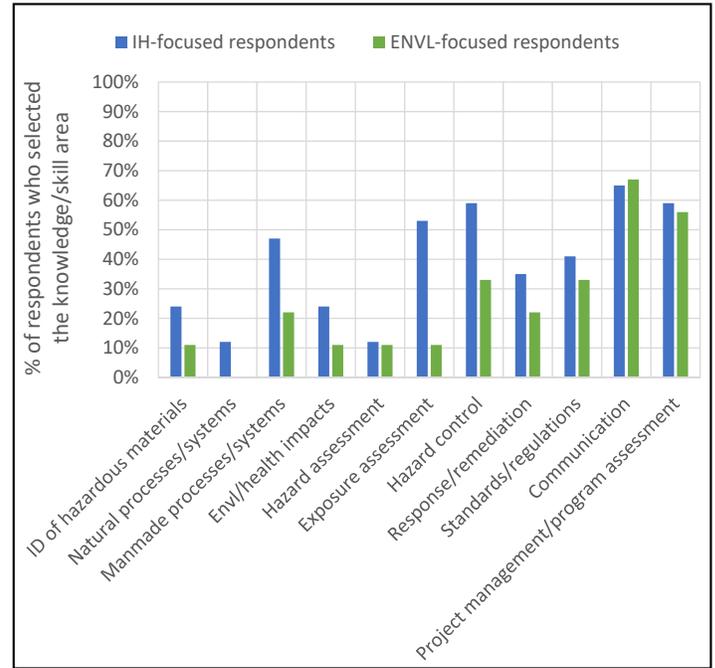
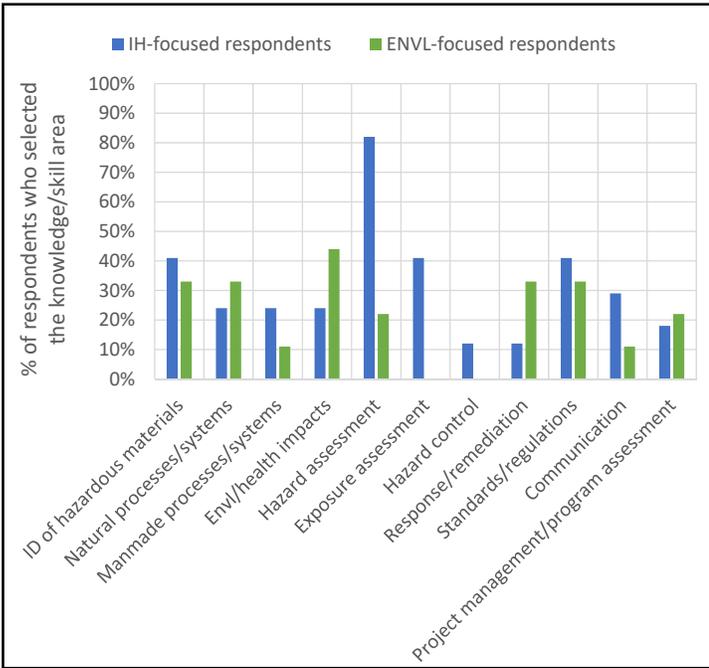
Consulting: Number of recent EHS graduates hired annually



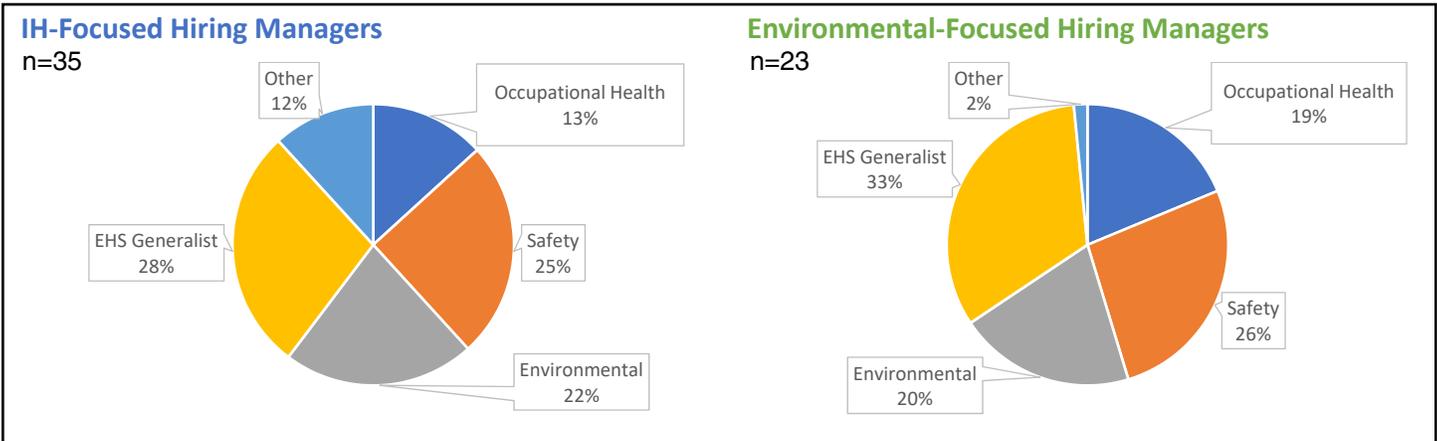
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Consulting: Areas where recent EHS graduates are “best prepared” (this was a “select all that apply” question).

Consulting: Areas where recent EHS graduates are “least prepared” (this was a “select all that apply” question).



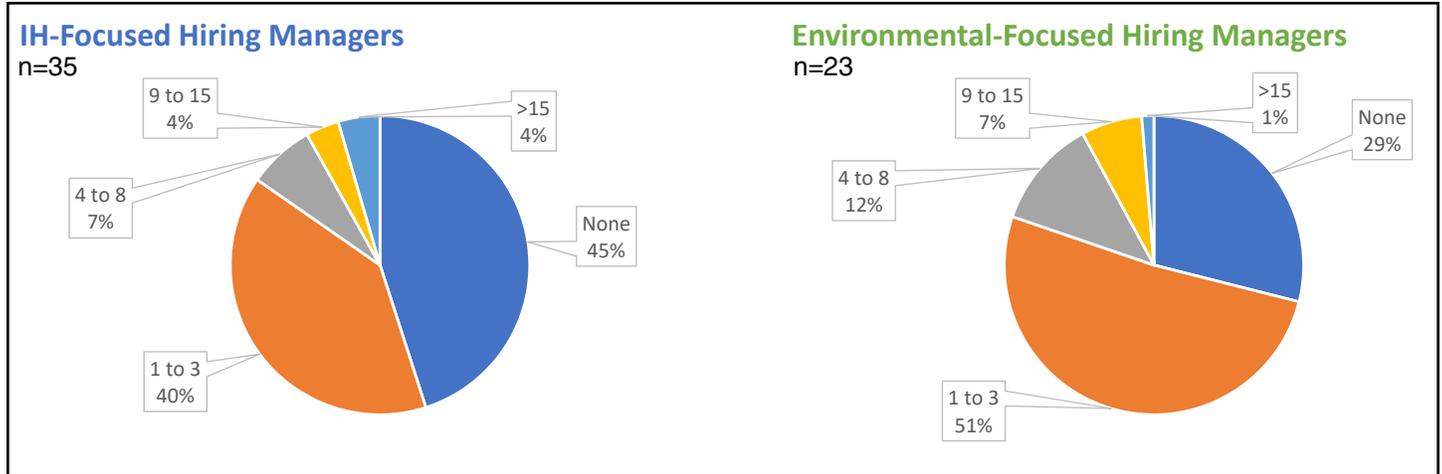
Manufacturing: Placement of recent EHS graduates



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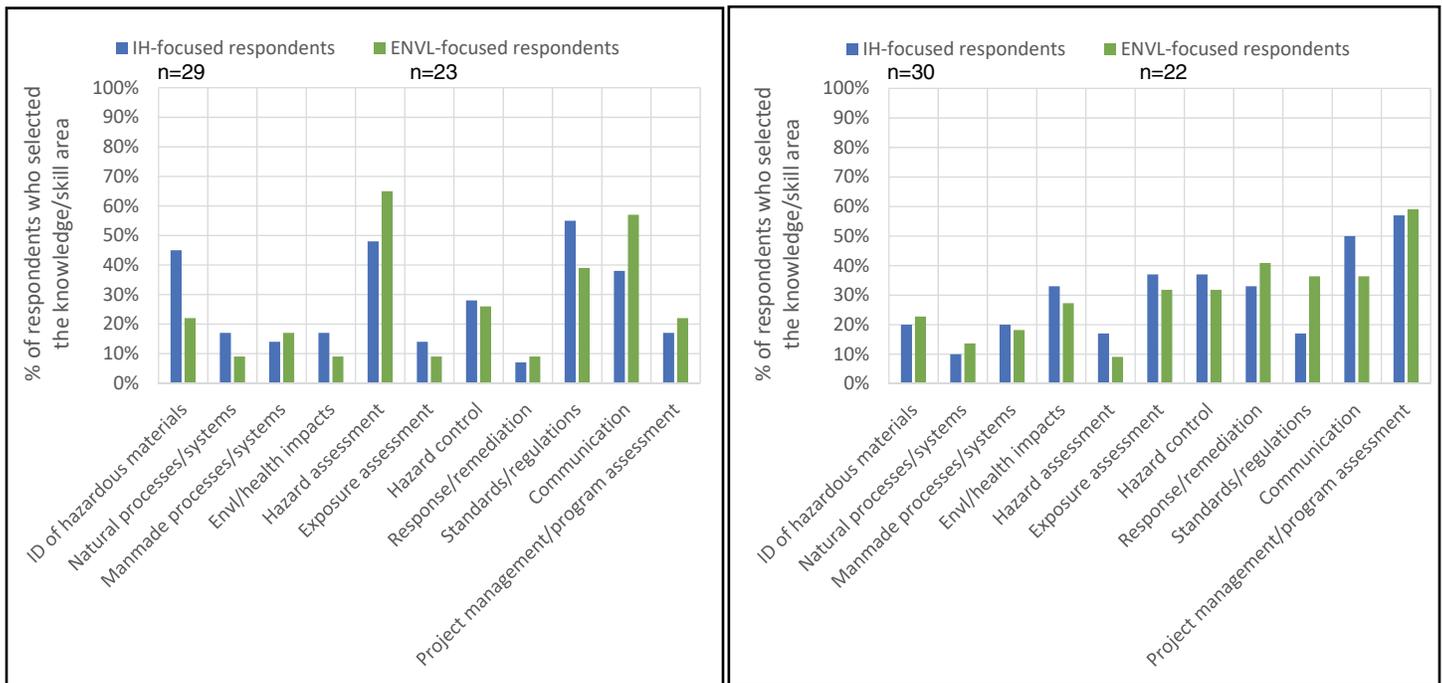
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Manufacturing: Number of recent EHS graduates hired annually



Manufacturing: Areas where recent EHS graduates are “best prepared” (this was a “select all that apply” question).

Manufacturing: Areas where recent EHS graduates are “least prepared” (this was a “select all that apply” question).



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Definitions

- **Data Collection** — the process of the development of a sampling strategy – determining how many measurements to collect, from whom, when, where, and how often – and its execution.
- **Environmental, Health, and Safety (EHS)** — a multi-disciplinary field that includes environmental protection, safety at work, and occupational health. It involves a systematic approach to regulatory compliance, development of and adherences to organizational or company policies and procedures. EHS management focuses on preventing harm to workers and the environment caused by emergencies, incidents and accidents, and processes or materials in the workplace.
- **EHS Generalist** — a professional who, by formal education, work experience, or continuing education has knowledge and skills in the environmental, health, and safety fundamentals. These fundamental areas of knowledge and skills include:
 - Physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors with the human body
 - Anticipation, identification, and evaluation of potentially hazardous agents, conditions, and practices
 - Fundamental exposure assessment techniques (both qualitative and quantitative)
 - Environmental, health, and safety data interpretation including statistical and epidemiological principles
 - Development of hazard control designs, methods, procedures, and programs
 - Accident/incident investigation and analysis
 - Industrial and construction safety
 - Legal aspects of environmental, health, and safety practices
 - Environmental, health and safety program management
 - Hazardous materials/waste recognition, control, and remediation
 - Air pollution fundamentals and control technologies
 - Water pollution fundamentals and control technologies
 - Environmental regulations and permitting processes
 - Environmental sampling and measurement methodologies
- **Exposure Assessment** — the process of estimating or measuring the magnitude, frequency, and duration of exposure to an environmental agent, along with the number and characteristics of the population exposed. Ideally, it describes the sources, pathways, routes, and the uncertainties in the assessment.
- **Guidelines, Standards and Regulations** — metrics against which occupational and environmental exposures are evaluated, varying from recommendations to government mandates. For the purposes of this document, these terms are defined as follows:
 - **Guidelines:** Documents, values or statements used to determine a course of action based on sound professional practice. Guidelines are not mandatory or binding and are not enforced by law.



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- **Standards:** Voluntary standards established by nongovernmental bodies such as ANSI and ISO. They are available for use by any person or organization, private or government.
- **Regulations:** A rule having the force of law. Various government departments and agencies issue regulations.
- **Hazard Assessment** — an evaluation of a workplace, environment, or environmental or work condition, for the potential hazards that may impact people or the environment.
- **Hazard Control** — steps taken to protect people and the environment from overexposure to hazardous materials or conditions. A hierarchy of control is applied as follows, with the measures listed in order of effectiveness: (1) elimination/substitution; (2) engineering controls; (3) administrative or work practice controls; and (4) personal protective equipment (PPE).
- **Identification of Hazardous Materials** — applying methods to identify materials as to what type of hazard that they present.
- **Industrial Hygiene** — the art and science of anticipating, recognizing, evaluating, controlling, and confirming health hazards in the workplace. This professional practice area is known as *industrial hygiene* in North America and *occupational hygiene* throughout most of the rest of the world. For this document, the terms are equivalent and interchangeable.
- **Response and Remediation** — response defines the first actions taken when an incident occurs or is initially discovered (e.g., emergency response to an environmental spill, first aid for worker injury). *Remediation* defines the actions taken to stop or control a hazard threatening the health of people or the environment.

About AIHA

AIHA is one of the largest international associations serving occupational and environmental health and safety (OEHS) professionals practicing industrial hygiene and is a resource for those in large corporations, small businesses and who work independently as consultants. AIHA administers comprehensive education programs that keep OEHS professionals current in the field of industrial hygiene.

About NAEM

NAEM is a professional association that empowers corporate leaders to advance environmental stewardship, create safe and healthy workplaces, and promote global sustainability. NAEM provides peer-led educational conferences, benchmarking research and an active community for sharing solutions to today's corporate EHS and sustainability management challenges.

About ABIH and IPEP

IPEP and ABIH have merged to bring their credentials — the Certified Industrial Hygienist (CIH), the Environmental Professional In-Training (EPI), and the Qualified Environmental Professional (QEP) — together under a shared mission and single operational entity, ABIH. ABIH is the premier credentialing organization for professions based on the science of protecting and enhancing the health, safety, and environment of people



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at work and in their communities. It serves its credentialed practitioners by establishing and administering a valid, reliable, and rigorous credentialing process to protect the public and meet the needs of employers.

IPEP

IPEP offers multi-disciplinary credentials for professionals with a broad level of knowledge of environmental issues and practices.

Contributors to this project included:

- From AIHA — Lawrence D. Sloan, CAE (Chief Executive Officer) and Mary Ellen Brennan, SPHR, SHRM-SCP (Managing Director, Talent and Strategy)
- From NAEM — Taylor Gelsinger (Manager of Research and Analytics)
- From ABIH — Mary Ann Latko, CIH, CSP, QEP, CAE, FAIHA (Diplomate Director, ABIH Board of Directors)
- From IPEP — Diana Kobus (Executive Director)



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