

Accreditation and Credential Management Practices For Hazardous Materials/Dangerous Goods Professionals,

Paper #32071

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INTRODUCTION

The continuous evolution of regulations involving the safe management and handling of hazardous materials and dangerous goods worldwide brings with it a series of challenges. Professionals working in the field are faced daily with new technologies, new regulatory requirements, and uncertain economic times where “doing more with less” is the norm. Under these circumstances, maintaining a high threshold of safety in managing, shipping and transporting hazardous materials and dangerous goods can be a challenge, and finding qualified experienced professionals in the field can be difficult as well. The Institute of Hazardous Materials Management (IHMM) offers accredited credential to verify competencies and best practices of hazardous materials and dangerous goods professionals, providing a benchmark for industry ensuring levels of safety are maintained or exceeded. This paper presents best practices for accredited credentials, the processes of IHMM accreditation and the organization’s international recognition.

IHMM accreditations – Certified Hazardous Materials Manager (CHMM), Certified Dangerous Goods Professional (CDGP), and Certified Hazardous Materials Practitioner (CHMP) – meet ANSI/ISO/IEC 17024, the International Standard for Personnel Certification Programs. The Council of Engineering and Scientific Specialty Boards (CESB) also accredit CHMM and CHMP. CHMMs and CHMPs have knowledge of a whole umbrella of environmental management areas such as: risk assessment, proper storage and handling, transportation, pollution prevention, waste stream management, impacts on environment, waste minimization, sustainability, emergency response, and remediation just to name a few.

ACCREDITATION MANAGEMENT

Development of credentials to measure competency starts with a dedicated group of subject matter experts (SME) who volunteer their time and effort to develop the necessary competency measures. The time frame from the vision of having a competencies standard for professionals to delivering the organizations first examination can range from three to five years. These SMEs meet to develop an outline of what is expected a professional in the field should know. Usually, the SMEs filter their experiences through the statement “What would a minimally competent professional know about the processes and procedures of the profession.” This statement

pervades throughout the entire credential development process. Eventually, the group of SMEs establishes the need for professional competency and an outline of what professionals are required to know to be successful in the profession. This outline guides the credential development process.

Before continuing with developing a credential, it is important that the infrastructure to manage, coordinate and deliver a credential program be considered. These resources include, dedicated staff to manage all the duties: organize the SME committee, develop and maintain minutes, document policy and procedures, engage expert consultants on test development and analysis, and employ a test delivery company is the best case. Managing these activities with volunteers (professionals with daytime responsibilities) extends the development timeline and could miss critical details. Further, dedicated staff working for an independent organization ensures separation of duties to ensure the credential and its competency requirements and measures are independent, fair and equitable.

Finally, before any extended work begins on individual credentials, the profession, represented by the SME group, needs to decide the standard with which to follow for the body certifying persons against specific requirements, including the development and maintenance of a certification scheme for persons. The term “scheme” is used for all the activities described above to develop a credential with competency measures. There are three standards that are promulgated in the United States: 1) American National Standards Institute, ANSI/ISO/IEC 17024, Conformity assessment – General requirements for bodies operating certification of persons, 2) Council of Engineering and Scientific Specialty Boards, Accreditation Guidelines for Engineering and Related Specialty Certification Programs, and 3) The National Commission for Certifying Agencies, ICE 1100 2010(E) – Standard for Assessment-Based Certificate Programs.

Selected provisions from the ANSI 17024 demonstrate the benefits to professionals, their professions, and the public at large on the benefits of accredited personnel competency measures.

ANSI 17024 requires that the credential organization (such as IHMM) maintain an active scheme committee consisting of subject matter experts whose responsibility is to develop and maintain valid, legally defensible, and credible certification examinations in accordance with the latest approved policies and procedures; such policies and procedures shall be based upon professionally recognized psychometric principles and on the standards of the accreditation body(ies). ANSI performs yearly audits on scheme committee activities to verify the credential organization is following promulgated policies and procedures.

ANSI 17024 requires that the certification body not offer or provide training, or aid others in the preparation of such services, unless it demonstrates how training is independent of the evaluation and certification of persons to ensure that confidentiality and impartiality of the examination and other procedures are not compromised. In effect, this ensures that credentialed professionals are all treated fairly in demonstrating competency and that any credential award is fair and based on objective criteria.

ANSI 17024 requires that the certification body maintain a management system that is available to the public. The management system is usually documented in an organization’s management systems manual (MSM) and usually available for public download. IHMM’s MSM has information on credential eligibility, examination, record keeping, security, and proper usage requirements. The MSM also documents the extent of the measures that are used to examine competency, which in most cases become the pass/fail criteria for a competency examination.

ANSI 17024 requires that the certification body maintain a pro-active surveillance process to monitor the credentialed professional, or certificant, compliance with relevant provisions of the certification scheme. This requirement is implemented through each certificant attesting to a code of ethics (COE). Signatory to the COE is required for a credential award and the certificant is bound by the COE for the duration of the credential award. IHMM demands the highest moral integrity from those responsible for handling hazardous materials and transporting dangerous goods. Certificant COE require anyone certified by IHMM to perform within the requirements of the law and in the interest of environmental protection and public safety.

Furthermore, IHMM certificants are bound by the COE to observe the profession for COE violations and duly report potential violations to IHMM. Potential violation reporting procedures meet ANSI requirements and provide the profession a means to voluntarily improve best practice. This procedure is to investigate all reports by a Professional Standards Committee with procedures found in the MSM using the principal of judgment by one's peers. When a report of a potential COE violation is sent to the IHMM Executive Office, the executive director must acknowledge receipt of the COE violation and then report and confer with the Chair of IHMM's Professional Standards Committee for further investigation and decisions.

ANSI 17024 requires that the certification body define recertification requirements according to the competency standard and other relevant documents, to ensure that the certificant continues to comply with the current certification requirements. This usually means maintaining employment in the profession and professional development activities. Certificants must meet a certain threshold of employment and professional development activities to maintain the credential. Professional development activities include continuing education and well as service on committees and service to the community. This ANSI 17024 requirement ensures that professionals holding an accredited credential are current in their particular field.

CREDENTIAL MANAGEMENT

The basis for any credential is an understanding of what the profession wants perspective certificants to know and do. An analysis of knowledge domains, duties and tasks are conducted using methods of the so-called "Job Task Analysis." The Job Task Analysis (JTA) is a process for analyzing the tasks performed by individuals in an occupation, as well as the knowledge, skills, and abilities required to perform those tasks. The JTA is used to identify the core knowledge areas, critical work functions, and/or skills that are common across a representative sampling of current practitioners or job incumbent workers. Results from the JTA establish the blueprint that reflects the skills, knowledge, and abilities required for competent job performance. The JTA process uses subject matter experts where SMEs: 1) describe and define their jobs accurately, 2) describe the tasks that workers perform, 3) describe the means for the tasks that workers perform, and 4) describe tasks that demand certain knowledge, skills, tools, and worker behaviors.

The JTA collects quantitative data by surveying the profession on the importance, criticality, and frequency of knowledge, duties, and tasks. The survey asks respondents to rate each area for each knowledge area, duty, and task. For example, respondents are asked if a duty is not critical, slightly critical, moderately critical, or very critical. One recent JTA conducted by IHMM to develop a dangerous goods professional credential surveyed over 20 knowledge, duties, and task

areas. This quantitative information allows the certification body to apportion the knowledge, tasks, and duties areas for a competent credentialed professional. The JTA for the dangerous goods professional provide the following percentages over particular knowledge areas:

- National and International Regulatory Standards – 13 percent
- Interrelationships between the Regulatory Standards – 9 percent
- Management of Transportation – 27 percent
- Handling of Cargo – 10 percent
- Management of Documentation – 18 percent
- Emergency Management – 14 percent
- Security – 9 percent

The JTA and the subsequent blueprint defining the knowledge, duties, and task areas provide the basis for the certification body to start the next phase of credential development, developing, publishing, and delivering the competency examination. The examination questions are based on the credential blueprint. Consequently, SMEs are now asked to develop, review, revise, and document questions, or items, that “test” potential certificants on the areas of the blueprint.

Items are “pre-questions” that are in the development stage. Further, the blueprint percentages are used to define the number of questions for the competency examination, for example on a 100 question examination, there needs to be approximately 13 questions related to the knowledge area of “National and International Regulatory Standards.” Experts on examination development are usually used to guide a group of SMEs in item development and, these experts ask for more items than the minimum required. Examination experts also guide the SME group with proper items writing techniques. For an examination with 100 questions, usually 300 items need to be developed. Item development leads to the credential examination and the final tasks of credential development: beta or field testing of the examination, passing score analysis, initial item analysis, and over the life of the examination, usually five years, yearly cut score and item analyses.

Finally, after five years, a new JTA is conducted to determine if the professionals see any changes in the blueprint. This ensures that the credential reflects the current practice of the profession. Any changes to the blueprint would be implemented into the credential examination and the examination activity described above commences again.

During the survey of professionals on knowledge areas, duties and tasks, survey respondents are asked a series of demographic questions ensure the representativeness of survey respondents and evaluate validity of survey responses. Example questions usually include: location of current practice, current employment status, current job title, years experience in the field of hazardous materials management or dangerous goods transport, area(s) of work, as related to hazardous materials management and dangerous goods transport, work sector, and if any other credentials/certifications are held. Selected demographic data from two JTAs that IHMM conducted for the CDGP and CHMM are shown below in Figures 1 through 4.

Figure 1. Percentage of time spent in specific work roles for dangerous goods professionals

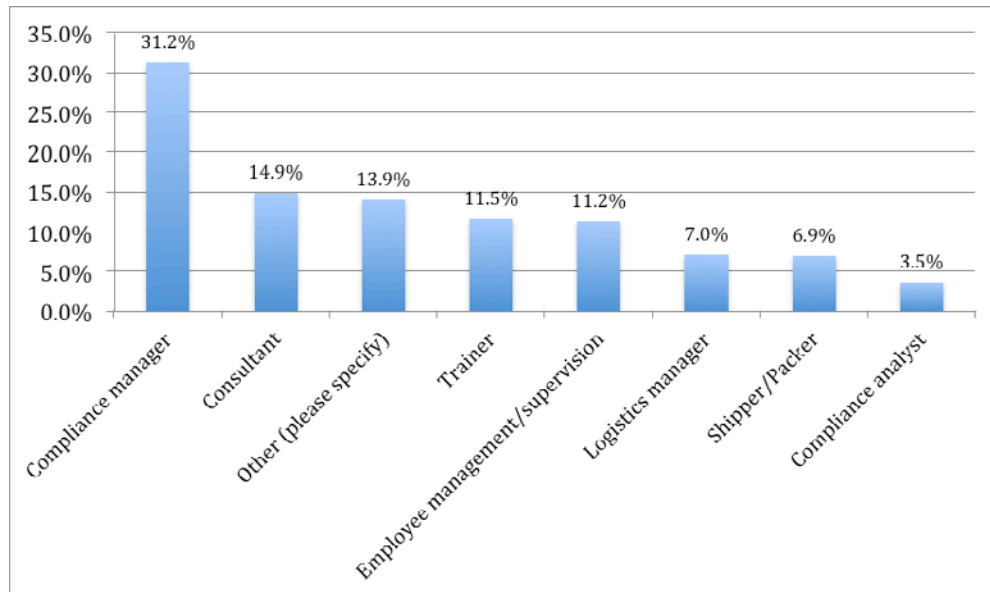


Figure 2. Area(s) worked, as related to hazardous materials management and related fields

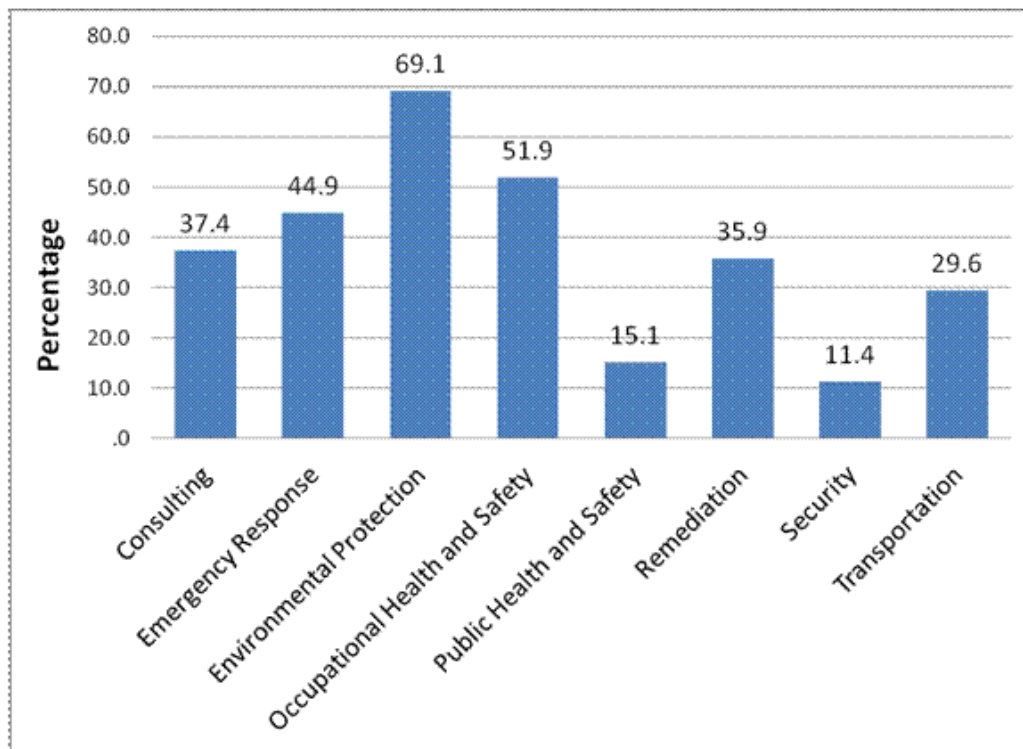


Figure 3. Industry sectors for dangerous goods transport professionals

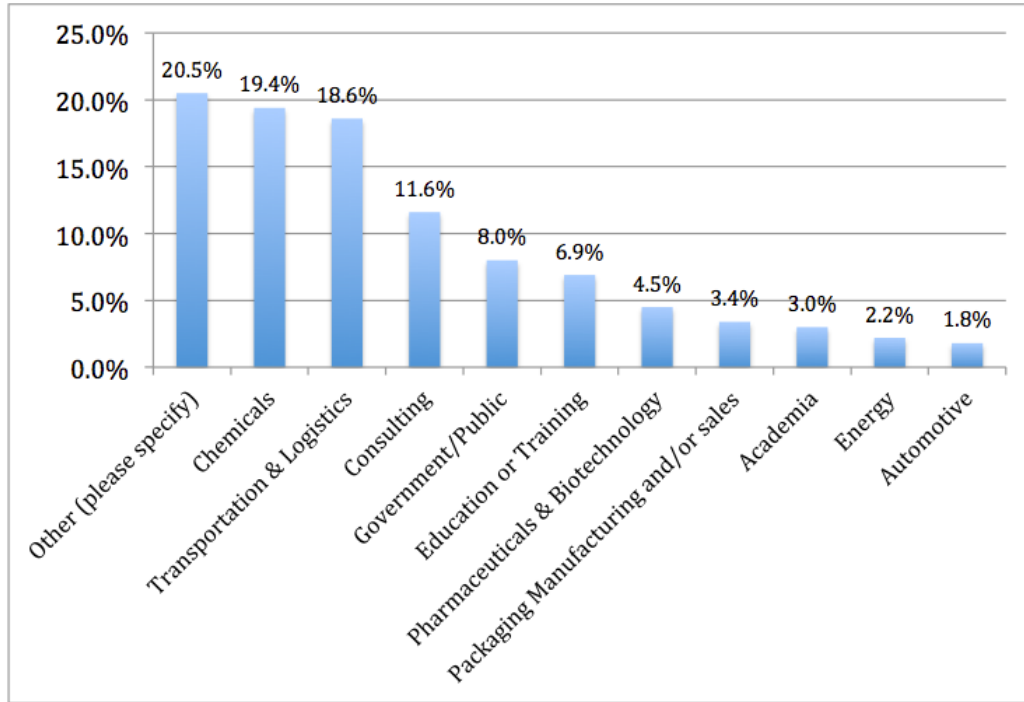
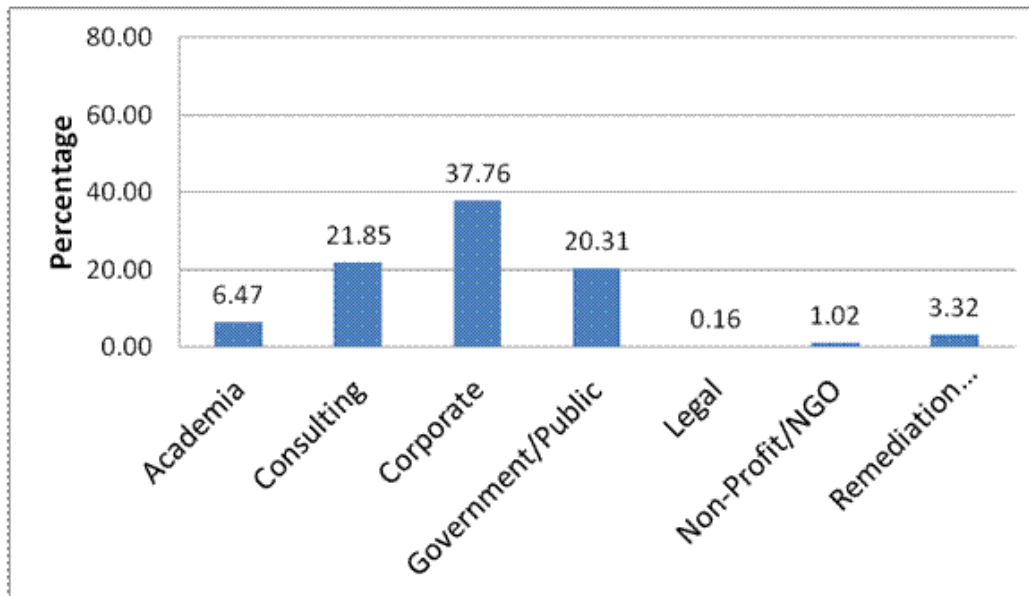


Figure 4. Industry sectors for dangerous goods transport professionals



CONCLUSION

The handling and management of hazardous materials and the transport of dangerous goods are governed by model regulations published by the US Environmental Protection Agency, US Department of Transportation, committees of the United Nations as well as a network of state, national and international organizations. Professionals need the competency to use, interpret, and implement the regulations to properly handle, transport, and store the materials to ensure the safety of the public. Each individual professional at times in their careers are assessed on their knowledge of regulations through study, experience and training. Credentials validate assessments of knowledge, skills, and abilities and provide the acknowledgment that an individual has the competency to perform the functions of the profession.

REFERENCES

1. ANSI/ISO/IEC 17024, Conformity assessment – General requirements for bodies operating certification of persons, American National Standards Institute, Washington, DC, 2002.
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3. ICE 1100 2010(E) – Standard for Assessment-Based Certificate Programs, The National Commission for Certifying Agencies, Washington, DC, 2005.