

Major Hazard Competent Person Profession in Malaysia: A document analysis of trends and demands

Rashid RM^{1,2}, Radin Umar RZ²

¹Department of Occupational Safety and Health Malaysia, 62530, Putrajaya, Malaysia

²Fakulti Teknologi dan Kejuruteraan Industri dan Pembuatan, Universiti Teknikal Malaysia Melaka, 76100, Melaka, Malaysia,

Corresponding author:

Radin Zaid Radin Umar,
Dr, Fakulti Teknologi dan
Kejuruteraan Industri dan
Pembuatan, Universiti Teknikal
Malaysia Melaka,
Jalan Hang Tuah Jaya, 76100
Durian Tunggal, Melaka,
Malaysia

Tel.: +60 18-217 9496,

E-mail: radinzaid@utem.edu.my

ORCID ID: <https://orcid.org/0000-0002-7739-9326>

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ABSTRACT

Introduction: The Malaysian Control of Industrial Major Accident Hazard (CIMAHA) Regulations introduced in 1996 resulted in the creation 'Major Hazard Competent Person' (MHCP) profession. However, after two decades of its establishment, there has been limited study conducted on this specific profession. The objectives of this study are to analyze 1) the trend of application and passing rates of MHCP registrations; and 2) the trend of Major Hazard Installations (MHI) registrations, and its relationship with available supply of registered MHCP.

Methods: The study used a document review approach, involving the extraction, examination, and interpretation of data from both published and unpublished documents by the Department of Occupational Safety and Health (DOSHA), the regulatory body responsible for overseeing both MHCP and MHI registration status in Malaysia. The study looks into data from 1996 (beginning of 1996 CIMAHA Regulation) to 2023, though the available data found and analyzed were from 1998 to 2021.

Results: The study reveals a concerning lack of growth in the number of professionals being certified as MHCP, despite an increase in the number of MHIs over the past two decades. Potential causes of this shortage identified include a demanding certification process, limited availability of MHCP competency courses, and a lack of clear career paths and growth opportunities in the profession.

Conclusion: The inadequate supply of MHCPs could potentially undermine their ability to provide sufficient coverage for MHIs, indirectly jeopardizing the quality of risk management in major hazard facilities. Therefore, there is merit in periodically reviewing the regulations and reforming the MHCP profession in response to changing trends.

Keywords: CIMAHA Regulations, Competency, Major Hazard Competent Person, Major Hazard Installation, OSH Profession

Introduction

In Malaysia, facilities regularly handling substantial quantities of hazardous chemicals are categorized by the authorities as Major Hazard Installations (MHIs). These chemicals can cause fires, explosions, or the release of harmful substances, posing risks to people, structures, and the environment. Examples of MHIs include water treatment plants, chemical factories,

petrochemical plants, and refineries. In 1996, Malaysia's Parliament enacted the Control of Industrial Major Accidents Hazard (CIMAHA) Regulations under the Occupational Safety and Health Act, 1994.¹ This decision was influenced by several major hazard incidents in previous years, within Malaysia and abroad.²⁻⁵ The Regulations aim to oversee preventive measures of the

potential major hazard occurrences in MHIs.

Malaysia's CIMAHA Regulations were adopted from the UK's CIMAHA Regulations (1984) and the International Labor Organization (ILO) major hazard control manual.⁶ One notable distinction is Malaysia's mandate for a designated professional, known as the Major Hazard Competent Person (MHCP), to oversee MHI activities.^{4,7} The certification process for MHCP is managed by the Department of Occupational Safety and Health (DOSH), in which candidates must demonstrate relevant competencies before receiving MHCP status.⁸ The CIMAHA Regulations define the responsibilities of the MHCP, including tasks like creating industrial reports, ensuring compliance, and preparing emergency response plans.^{1,8} MHIs must consult with an MHCP before conducting any industrial activities, highlighting the significant role MHCPs play in ensuring Regulation compliance.¹

Despite the significant roles of MHCP in the establishment of CIMAHA Regulations for the last two decades, there have been very limited data-driven publications discussing the profession's career pathway and growth prospects. The article aims to analyze the: 1) trend of registration and passing rates of MHCP; and 2) trend of MHI registration, and its ratio with MHCP. This manuscript provides one of the first documented review analyses on the MHCP profession.

Methods

In this study, a qualitative method design of a document review approach was employed to analyze relevant data trends on MHCP over the past twenty years (1996-2023). The data sources in the qualitative analysis consisted of both hardcopy and online documents. As with other empirical research methods, this qualitative approach involved the identification, extraction, examination, and interpretation of textual data to gain understanding, elicit meaning, and develop empirical knowledge.⁹ Similar qualitative method designs of document analysis approaches have been used in previous studies.¹⁰⁻¹²

The majority of the information used in this study

was obtained from documents held by DOSH, the regulatory body responsible for overseeing MHCP registration status in Malaysia. The documents were divided into two categories: (1) published documents, such as annual reports, website and online portal information, and departmental statistical data, which are available to the public through DOSH publications; and (2) unpublished documents, such as older annual reports, internal circulars and internal lists of registered MHIs, which are only accessible for internal department reference. Special consent was obtained from the Head of the CIMAHA Section to use the second category of documents in the study. As one of the research team members is an employee of the department, permission to access, analyze, and publish the data was granted by DOSH.

The collected data was carefully examined for the relevance of contents, with a particular focus on MHCP and MHI information. The relevant data was extracted and analyzed based on two main categories: (1) Trends of Major Hazard Competent Person Registration; and (2) Trends of Major Hazard Installations Registration, along with the MHCP: MHI Ratio. Although the search for relevant publications was conducted on documents available since 1993, the majority of the publications analyzed were published after 2000. This can be attributed to the fact that the CIMAHA Regulation was established in 1996, and relevant data became available only after a few years of its inception.

In addition, personal communication was also established with W. Khafizah W. Abdullah, an officer from DOSH's assessment and competency unit of the CIMAHA section. The engagement with the officer was made to clarify extracted data, as well as get some qualitative insight from an experienced DOSH assessor with direct knowledge of the MHCP certification process.

Results

Trends of Major Hazard Competent Person Registration

Overall, the data analyzed from this study

revealed a concerning lack of significant growth in the number of professionals being certified as MHCP in the past two decades. Although the CIMA Regulation has been enacted since 1996, the first available information on the registered number of MHCP was not found until 1998, when DOSH reported a total of 8 registered MHCP in its annual report.¹³ The following year saw a slight drop, with only 5 MHCP officially registered with DOSH in 1999.¹⁴ The subsequent three years showed a promising increase in demand for the profession, with significant registration increases of 68, 74, and 79 MHCP in 2000, 2001, and 2002,

respectively.¹⁵⁻¹⁷ However, the following 15 years showed a consistent downward trend in the annual number of registered MHCP. By 2017, only 18 MHCP were registered, representing a 77% reduction from the peak of 79 MHCP recorded in 2002.¹⁸ There was a slightly promising recovery in registered from 1998 to 2021. MHCP registration in the following years, with 28, 34, 38, and 32 registered MHCP found in DOSH's active database from 2018-2021.¹⁹⁻²² Figure 1 illustrates the number of OYK Major Hazards from 1998 to 2021.

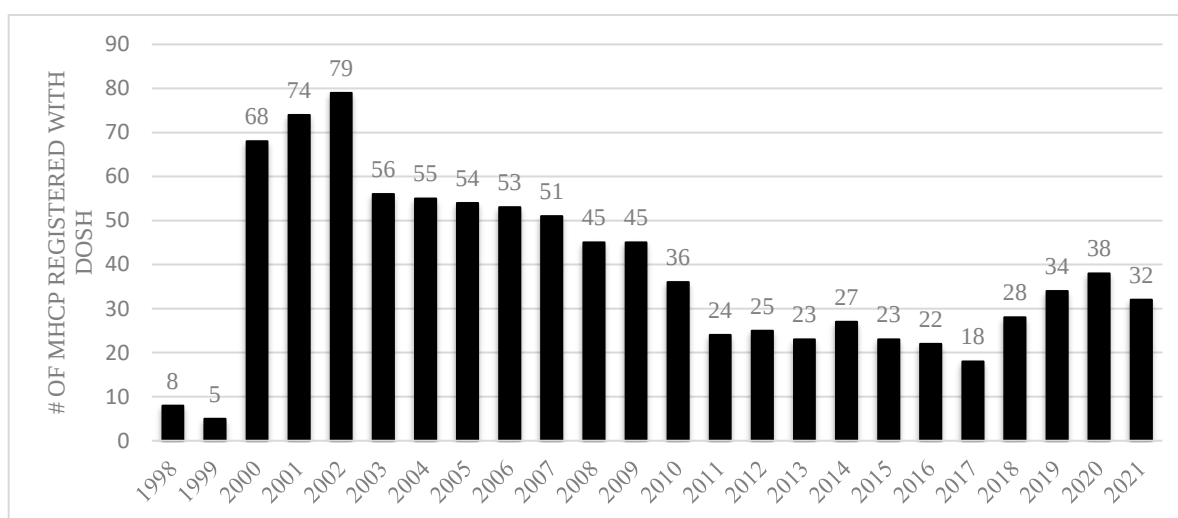


Figure 1: Number of MHCP registrations with DOSH from 1998 to 2021.

In terms of data associated with the application process, overall there is a general downward trend of successful application of professionals to become MHCP from 2005 to 2014. The DOSH's 2005 annual report provides the first official record of the department's efforts to report MHCP application statistics. In 2005, only one MHCP candidate did not pass the final interview which translated to a success rate of 94%.²³ The subsequent years' success rates were 92% in 2006, 86% in 2007, 88% in 2008, 42% in 2009, 44% in 2010 and 29% in 2011.²⁴ Following a slight increase in success rates in the subsequent years, with 56% in 2012 and 53% in 2013, success rates significantly decreased to 13% in 2014.²⁴ The following year marks the last spike, as 69% of the MHCP passes the interview in 2015. From thereon, there was another downturn trend, in which the success rates were 60% in 2016, 36% in 2017, 34% in 2018,

32% in 2019, 21% in 2020 and 10% in 2021. The findings provide insight into the historical success rates of MHCP applicants in Malaysia, highlighting a concerning trend of decreasing success rates in recent years. These results have important implications for the field of occupational safety and health and warrant further investigation into the underlying causes of this trend. Figure 2 summarizes the overall trend of MHCP success rates between 2005 to 2021.

Trends of Major Hazard Installations Registration, and MHCP: MHI Ratio.

Although the registration data for MHCP showed a noticeable downward trend, the opposite is true for the number of registered MHIs, which has steadily increased since its first inception. The number of registered MHIs increased almost six-fold from 1996 to 2021.¹² The scenario creates a

concern as there is an imbalance supply of MHCP to provide professional services to growing numbers of MHIs. In 1998 and 1999, the first few years of CIMA Regulations were in effect, there was a substantial gap between supply and demand, as one MHCP was required to provide professional services to an average of 10 and 19 MHIs, respectively.

However, there was a significant increase in the number of registered MHCPs providing professional services to MHIs between 2000 and 2010. This is evidenced by the smaller gap ratio of only 1:2 between MHCP and MHIs from 2000-2002, 1:3 from 2003-2006, 1:4 from 2007-2008, 1:5 in

2009, and 1:6 in 2010.²⁴ The ratio continues to grow further apart, with gap consistently in the double digits over the next decade, from 2011-2021. The ratio ranges from 1:11 – 1:14 in those 10 years, with a peak in 2016 as 1 MHCP is expected to provide services to 14 MHIs.²⁵ The data trend demonstrates the increasing exclusivity and service value of MHCP status, as the number of registered MHCPs could not keep up with the increasing number of designated MHIs over the years. Figure 3 summarizes the dataset showing the trends of MHCPs to MHIs registration from 1998 to 2021

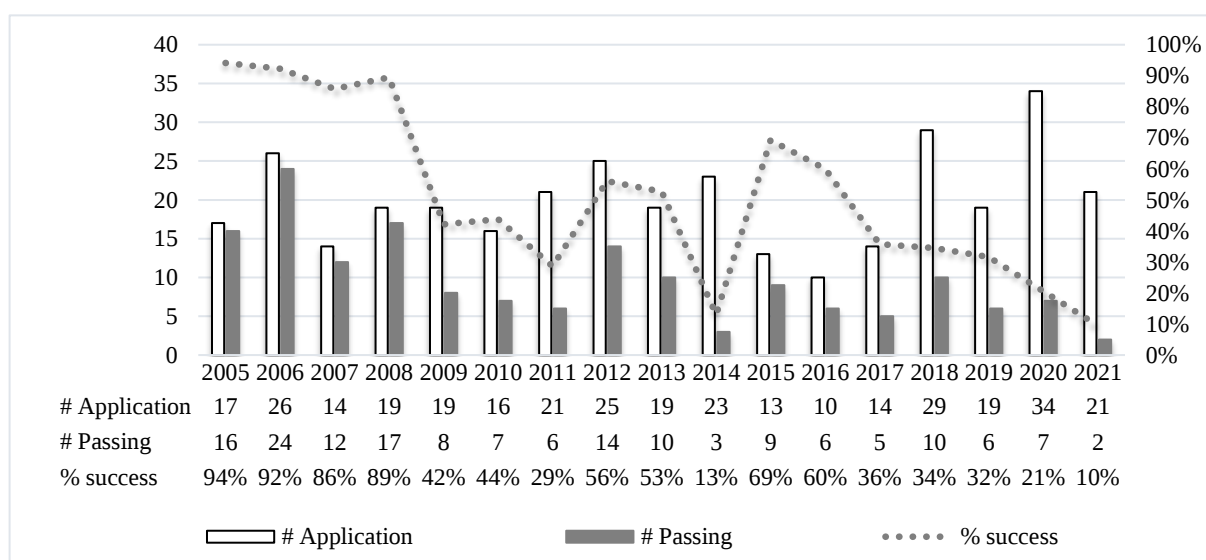


Figure 2: Number of new applications of MHCP, Number of passes, and success rates from 2005-2021.

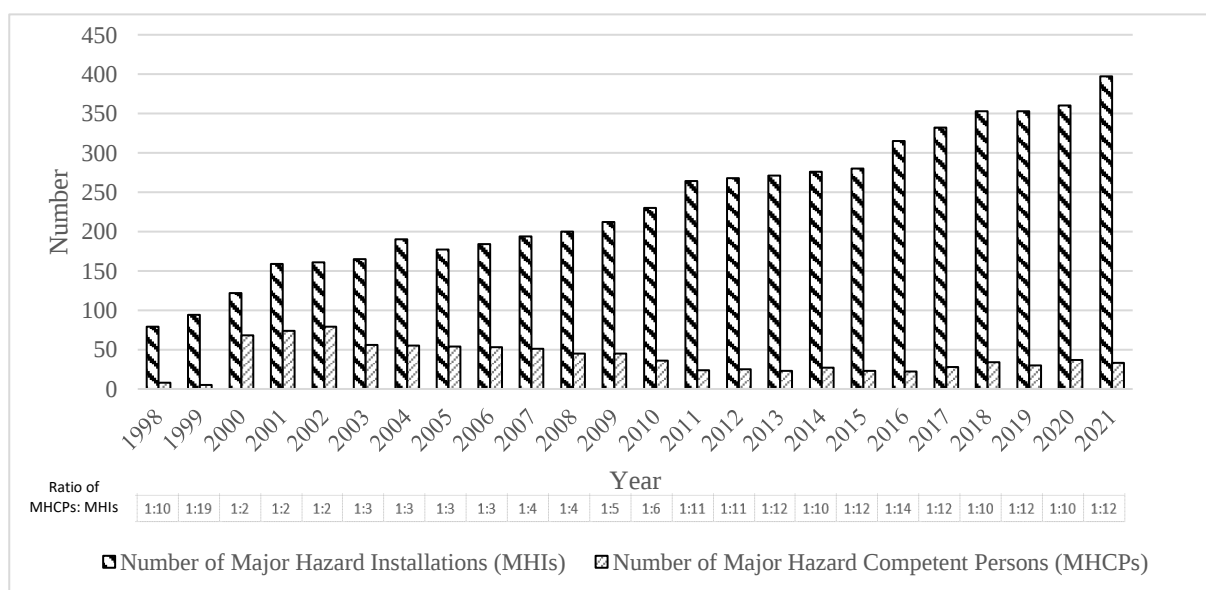


Figure 3: Number of registered MHCPs vs. MHIs from 1998-2021.

Discussion

The present analysis reveals an apparent gap in the overall shortage of MHCP professionals in Malaysia. This trend is concerning given the obvious development of a steadily growing number of MHI facilities over the past two decades, while the supply of MHCPs to serve MHIs has not kept pace over the same period. Inadequate supply of MHCPs could undermine the ability to provide sufficient coverage of major hazard risk management services for MHIs. This issue was verified by an officer from DOSH's assessment and competency unit of CIMA section in a follow-up personal communication, in which the officer expressed a concern that this shortfall of MHCPs supply poses significant risks to the overall quality of risk management within major Malaysian major hazard facilities. The potential root causes of this MHCP supply gap issue may be attributed to 1) a rigorous MHCP certification process; 2) a limited availability of MHCP competency preparatory courses offered by higher learning institutes or professional training providers; and 3) a lack of a clear career path and growth opportunities in the Major Hazard sector.

Professional certification has always been associated with recognized credentials on core competencies, evidence of adequate qualification to perform specific professional practices, and an indication of good quality standards among industry practitioners.²⁶ Generally, rigorous certifications that demand higher standards tend to hold greater value and grant increased authority to the certified professional. Multiple studies have shown that one of the key variables to successful certification among applicants is experience and performance in relevant field projects.²⁶⁻²⁹ In the context of this study on MHCP certification passing rate, one of the MHCP assessors from DOSH revealed that the two main factors leading to the high rate of failure among past MHCP applicants were due to 1) applicants providing inadequate evidence of relevant professional experience related to major hazards, and 2) their poor performances to demonstrate

competency during the formal interview session with DOSH assessors. A rigorous MHCP certification process is essential as practitioners' competency can affect the management of risks involving life and death in the field of Major Hazards. Thus, inadequate evidence of professional experiences and competency to satisfy rigorous certification requirements can then be attributed to the MHCP shortage.

On a related note, the study also found a lack of a publicly accessible assessment rubric detailing specific criteria or requirements during formal MHCP certification interviews. Whether this unavailability of a rubric is attributed to the rigorosity of the MHCP certification process is not clear. However, it is likely that inaccessibility to the rubric can contribute to the low success rate of MHCP certification as it constrains candidates' ability to adequately prepare for formal DOSH interview sessions. Exploring new methods or approaches on how to assist MHCP applicants to demonstrate professional competency while still maintaining the rigorosity level of the certification process may be beneficial to address the current MHCP shortage situation.

Another identified factor potentially contributing to the MHCPs shortage is the scarcity of MHCP competency preparatory courses available to MHCP applicants. The lack of structured and formal training may lead to steeper learning curves and inefficient learning processes, ultimately impeding the development of applicants' knowledge and skills necessary to obtain the minimum competency level status. This is consistent with findings in several studies, which have shown that the curriculum, quality of training, and completion of preparatory courses are among the factors that can affect success rate in professional exams or certification programs.³⁰⁻³² Currently, only a handful of public and private Malaysian higher learning institutions offer occupational safety and health-related courses, none of which specifically focus on MHCP competency curricula. Although established training centers, such as the Malaysian National Institute of Occupational Safety and Health

(NIOSH), offer other competency programs and courses recognized by the DOSH, MHCP competency courses have yet to be offered, as per information on their own website. As a result, MHCP candidates have no option other than to adopt a self-paced learning approach. In a study among candidates taking various professional certification programs in Texas, USA, a research team found that the majority of the applicants preferred instructor-led training in their preparation for certification, while the least preferred method was self-paced learning.³³ Exploration of this issue revealed a clear need for higher learning institutes or professional training providers to offer structured MHCP competency preparatory courses to prepare MHCP applicants in order to address the MHCPs scarcity issue.

Lastly, the emerging trend of shortage of MHCP professionals may also stem from a lack of clear professional development pathways for practitioners in major hazard industries. The profession of MHCP has been established primarily due to a specific provision in the CIMAH Regulations, which explicitly defines and mandates the creation of MCHP profession for MHIs to legally operate on Malaysian soil. Given that this profession was created from a legal requirement, it is highly specialized and may exhibit limited flexibility concerning its demand in sectors beyond those associated with major hazard activities. The professional certification process requires significant commitment and investments of time, money and effort, and there is an understandable expectation that the return on investment will be in the form of career advancement. Marketability of the certification has been found by other researchers to be one of the most important drivers to attract applicants to pursue certification status.^{26,34} There has been some recognition coming from DOSH, in which MHCPs' contact information, geographical location, experience and competency license validation period was made available to the public in DOSH's online portal since 2007. The effort to recognize MHCPs continued with the formal inclusion of their digital information in the

Malaysian national identity card in 2008, which allowed DOSH officers to verify the MHCP status on site. Nonetheless, to date, no documentation or publication has been made regarding the effectiveness of the MHCP information provided through the online portal and MyKad system to enhance the marketability and career prospects of MHCPs.

In addition, there is also a clear absence of a recognized Malaysian Major Hazard competency framework available for young practitioners to guide their career growth and advancement. In general, a recognized competency framework is crucial in standardizing expectations and requirements, providing a clear career development roadmap, helping employers identify and promote competent employees, designing effective training programs, and ensuring quality assurance within the profession.³⁵⁻³⁷ In a descriptive study that spans over 6 years, involving more than 1000 professionals in various fields, the researchers found that one of the main motivators for professionals to pursue certification is 'career growth'.³⁸ The lack of an available framework may contribute to the uncertainty of career growth prospects and advancement, especially for the younger generation of practitioners in the field. Studies by several researchers showed that a clear professional competency or framework can contribute by providing an evident career development pathway to practitioners.³⁹⁻⁴⁰

Future research could investigate common reasons for high MHCP certification failure rates, from the perspectives of both DOSH assessors and MHCP applicants. In addition, future studies could also include a need and gap analysis of formal and structured competency preparatory training or education process, as well as a clearer career path for professionals in the Major Hazard sector. Familiarity with a recognized Major Hazard competency framework, supported by competency preparatory training or formal education systems, and accessibility to MHCP criteria and requirements rubric could potentially empower aspiring Major Hazard professionals in

developing the necessary knowledge and skills to become competent practitioners.

Conclusions

To conclude, while the number of registered MHIs has steadily increased over the years since the first inception of CIMAHA Regulations in 1996, the growth of registered MHCPs has been limited, indicating the stagnant progression of MHCP as a specialized profession. The success rate of applicants to become registered MHCPs has also been declining since 2015, which further contributed to the low supply of MHCPs. This resulted in an imbalanced supply and demand situation as there is an emerging trend of increase in the gap ratio between registered MHCPs and MHIs. The insufficient number of MHCPs may compromise the capacity to offer adequate coverage for MHIs, thereby affecting the overall quality of compliance with the CIMAHA Regulations. This issue must be addressed to ensure a consistent and adequate supply of MHCPs providing critical services to MHIs.

CIMAHA Regulation 1996 was promulgated more than two decades ago, and since then, there have been emerging calls and recommendations by practitioners and researchers to revisit the contents and execution process to make sure they

are still relevant to current industrial contexts and demands. Malaysia's adoption of CIMAHA 1996 was modeled on the UK's CIMAHA 1984, which has undergone several revisions to update its contents, with the latest revision in 2015. However, Malaysia's CIMAHA Regulations have not been reviewed or revised since their introduction in 1996. The study's findings reveal changes and new trends in MHI and MHCP registrations over the past two decades since CIMAHA's implementation. Consequently, the calls to have the Regulations periodically reviewed, as well as reformation on the MHCP profession itself may have its merits, especially in light of the changing trends.

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