



Introduction

The Workplace Safety and Health Council (WSHC) of Singapore formed the Working Group on Workplace Safety and Health (WSH) in Higher Education and Research Sector (WG HER) in 2013. The WG HER consists of six local universities, five polytechnics, three research clusters and two healthcare clusters. Close research collaborations between these institutions of higher learning (IHL) encourages the WG HER members to harmonise its safety training courses with the aim to improve WSH education and training in research premises of IHLs, among several other initiatives.

Aim

In 2016/2017, NUS, NTU and SingHealth harmonised the topics, key learning points and approach to assessments for biological safety awareness for laboratory personnel. This enables cross recognition of the biological safety awareness course for biosafety level 1 and level 2 in biomedical research facilities in IHLs.

Methodology

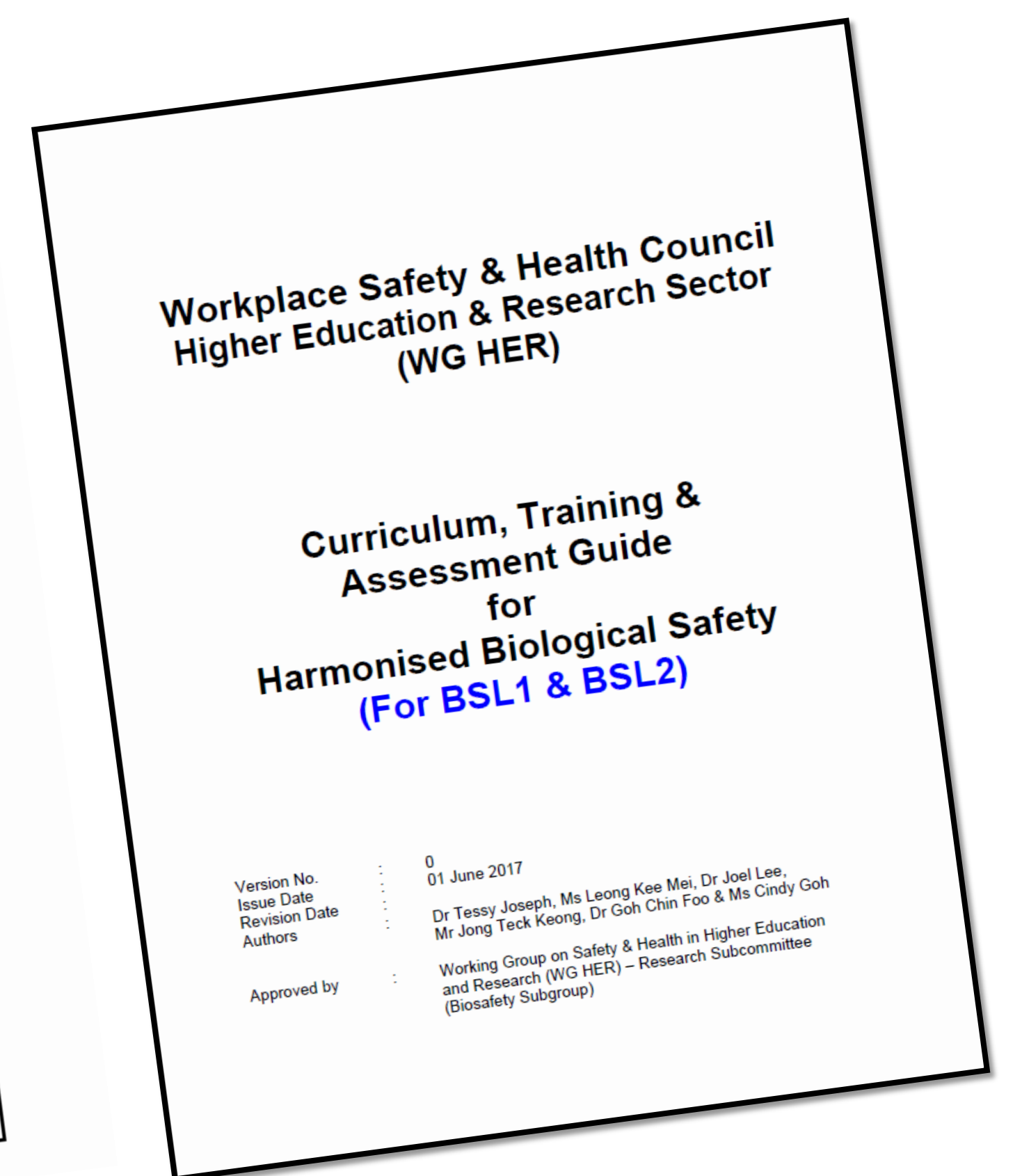
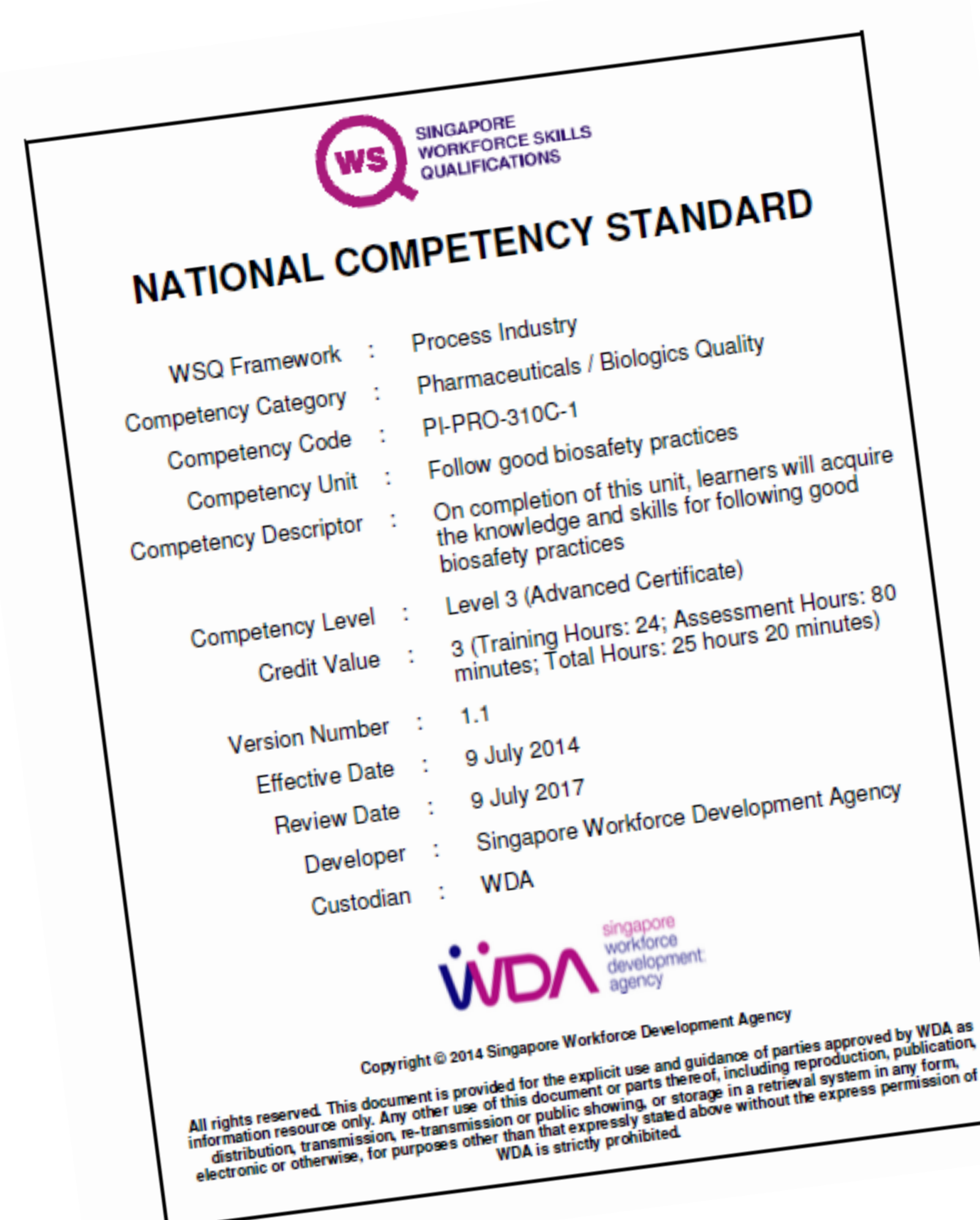
Current training materials and contents for biological safety awareness course, from key topics to subtopics, course duration and mode of assessment, were compared by the WG HER research subgroup. The subgroup evaluated and harmonised the syllabus, making close reference to the existing Skills Future Singapore (SSG)'s national competency standard on "Follow good biosafety practices" (refer to as the **Biosafety Passport**). Focus was made on key learning points and learning objectives under the same outlined key topics. Final course content is ultimately dependent on each institution's training emphasis which is tailored to respective needs.

Course curriculum for biological safety

| Course Module | Topics |
|---------------------------------------|--|
| 1 Introduction | •Importance of biosafety & LAI •Case study / Sharing of incidents |
| 2 Regulatory Requirements | •BATA, WSHA, GMAC, ABA •Institutional Policy |
| 3 Principles & Practices in Biosafety | •Definition of biosafety & biosecurity •Risk group classification & biosafety levels •Standard microbiological practices |
| 4 Microbiological Risk Assessment | •Biological hazard & risk •Factors in microbiological risk assessment •Agent-based mode of transmission, infectious dose •Lab activities (job hazard analysis) & Host factors, treatment / vaccines |
| 5 Control Measures & Safe Practices | •Engineering controls (BSC, safety equip, facility, Centrifuge safety, safety cups / covers) •Admin controls (good microbiological practices, aerosol minimisation, safe use of sharps) •PPE (shoes, lab coat, gloves, splash protection) •Transportation & storage; Waste management |
| 6 Incident & Emergency Response | •Spills & exposure Management •Managing accident & incident reporting |

Results

A curriculum, training and assessment (CTAG) for biological safety awareness was established as a reference point for curriculum developments, trainers and assessors of participating WG HER member institutions. A process is in place for participating IHLs to submit their training materials and assessments to the research subgroup for peer review and authentication.



Conclusion

Harmonisation of training materials for biological safety awareness course will minimise repetitive safety training and assessment and this benefits research entities of IHLs where researchers tend to work at more than one institution due to the nature of cross-institutional collaborative research projects. The recognition of biological safety training conducted by NUS, NTU and SingHealth took effect from September 2017 onwards.



Future Works

The Research Subgroup of WG HER have now harmonised two safety awareness course modules; ie. chemical safety & biological safety. The success of this collaboration has encouraged the implementation of mandatory basic laboratory safety training for all wet bench research facilities in SingHealth. I look forward to full compliance to make safety training a part of our daily culture.

Acknowledgement

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