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The Asian Conference on Safety and Education in Laboratory

PROCEEDING

**4th Indonesian SHE Forum for Higher Education & Research
and**

6th ACSEL

Asian Conference on Safety & Education in Laboratory (ACSEL)

October 31st - November 1st, 2019

Nusa Dua Beach Hotel & Spa Bali, Indonesia

**"Partnerships and Empowerment Strategies to Enhance Integrated
Health & Safety and Sustainability Activities
with Diversity in Research Sciences"**

PUBLISHER

OCCUPATIONAL SAFETY, HEALTH AND ENVIRONMENTAL UNIT (OSHE)

UNIVERSITAS INDONESIA

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2019

“Partnerships and Empowerment Strategies to Enhance Integrated Health & Safety and Sustainability Activities with Diversity in Research Sciences”

October 31st – November 1st, 2019

Bali, Indonesia

UNIT PELAKSANA TEKNIS KESELAMATAN, KESEHATAN KERJA DAN LINGKUNGAN

OCCUPATIONAL SAFETY, HEALTH AND ENVIRONMENTAL UNIT (OSHE)

UNIVERSITAS INDONESIA

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Occupational Safety, Health and Environmental Unit - Universitas Indonesia (OSHE UI)
Integrated Laboratory and Research Center (ILRC) Building
2nd Floor, Depok Campus, Universitas Indonesia
Depok, West Java, INDONESIA 16424
Phone: +62-21-29120942 Email: uptk3l@ui.ac.id
Website: <https://k3l.ui.ac.id/acsel/>

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PROCEEDING

4th Indonesian SHE forum for Higher Education & Research
6th Asian Conference on Safety and Education in Laboratory (ACSEL) 2019

Coordinator of Reviewers

Prof. Dra. Fatma Lestari M.Si., Ph.D

Editor

Abdul Kadir SKM., M.Sc
Wulan Kusuma Wardani SKM
Fauzan Rachmatullah S.KL

Design

Tubagus Dwika Yuantoko S.K.K.K

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WELCOME REMARKS



Dear participants,

As the head committee for 4th Indonesian Safety Health and Environmental (HSE) forum for higher education and research in conjunction with the 6th Asian Conference on Safety & Education in Laboratory (ACSEL) 2019, I would like to welcome you to Bali, Indonesia and thank you all for participating in this wonderful event. There will be various high-profile keynote lectures, exhibition, oral and poster presentations, and panel discussion addressing issues regarding safety and education in laboratory.

Issues regarding occupational health especially safety and education in laboratory could occur more often in this 4.0 industrial era where technologies are a big part of our life system. This could potentially cause a positive or negative effect depending on how it is utilized. A better understanding of the situation is necessary to address the issue. Addressing an issue from different perspectives will surely give a better understanding which lead to a better solution. For that reason, this event rises with the theme *“Partnership and Empowerment Strategies to Enhance Integrated Health & Safety and Sustainability Activities with Diversity in Research Sciences”*. We will continue to provide platform for scientist, engineers, researchers, as well as professionals to discuss and share knowledge regarding the best practices for safety and health and environmental aspects in the laboratories.

I am personally grateful for the hard work poured by the entire committee and volunteers to make this event possible, not to forget our sponsors and our honored participants. I hope you enjoy and learn a lot from the experience at the 6th ACSEL and 4th Indonesian SHE Forum in Bali, Indonesia.

October 31, 2019

Best regards,

Prof. Dra. Fatma Lestari., M.Si. PhD
Head committee of 6th ACSEL and 4th
Indonesian SHE Forum



Dear colleagues, students, international or domestic participants
Welcome to Bali Indonesia,

On behalf of Universitas Indonesia (UI), we cordially welcome all of you to 4th Indonesian Safety Health and Environmental (HSE) forum for higher education and research in conjunction with the 6th Asian Conference on Safety & Education in Laboratory (ACSEL) 2019. We are very glad to be a host for these productive programs, which is organized by Unit Pelaksana Teknis Keselamatan, Kesehatan Kerja dan Lingkungan UI (UPT K3L UI). This year theme is: “Partnerships and Empowerment Strategies to Enhance Integrated Health & Safety and Sustainability Activities with Diversity in Research Sciences”.

Universitas Indonesia has started sustainability initiatives, which is called UI GreenMetric World University Rankings since 2010. There were 719 universities from 81 countries were ranked in 2018. UI GreenMetric is the first and only ranking that has established a Voluntary Standard for improving university infrastructure and action towards sustainable campuses worldwide.

The ACSEL program provides a platform for key issues to be explored and discussed. Importantly, with strong history of the ACSEL we believe this program will bring various sectors from science to community industry, business, policy and governance to share useful information through partnerships and empowerments strategy to enhance the laboratory safety in all countries. Moreover, we expect that the program provides a platform to facilitate sharing and lesson learned best practices Safety, Health, and Environmental (SHE) Implementation, research and publishing collaboration, based upon principles of mutual equality and the reciprocity of benefits.

We wish you to have a wonderful moment during the program. Thank you for your time and participation at 4th Indonesian SHE Forum and 6th ACSEL 2019. Hopefully, we could enhance the implementation of OSHE aspects in our institutions with robust collaboration.

October 31, 2019
Sincerely,

Prof. Sidharta Utama, Ph.D, CFA.
Vice Rector of Finance and General
Administration

**UNIT PELAKSANA TEKNIS KESELAMATAN, KESEHATAN KERJA DAN LINGKUNGAN (UPT K3L)
OCCUPATIONAL SAFETY, HEALTH AND ENVIRONMENTAL UNIT (OSHE)
UNIVERSITAS INDONESIA**



Campus Activities can pose to various hazards and risks to Occupational Safety, health, and Environment. UPT K3L UI or OSHE UI that was established in 2015 has been implementing safety health management system across UI with the support and commitment from university management. UPT K3L has a crucial role and responsibility in providing environmental health and safety management system in campus. Moreover, UPT K3L UI focuses in three managements.

1. Occupational Safety and Health Management consists of CSHEMS for contractor; OSHE for building; events, health work, canteen, and road safety.
2. Environmental Management consists of OSHE for water, land and air conservation, animal conservation, plant conservation, and OSHEMS for laboratories
3. Emergency Responses Management consists of emergency response in campus; disaster management and preparedness training; emergency drills; emergency response management's open class for students, lectures, and employees such as: basic first aid, basic life support, fixation and immobilization, emergency lifting and moving; training for emergency response team such as fire extinguishers training, earthquakes preparedness training, water rescue training, vertical rescue training and chemicals spill response training.

UPT K3L UI is supported by competent staff, advance technology and infrastructure with fourth industrial revolution based such as a virtual reality and drone for inspections, emergency management and audits. The usage of advance technology and skilful human resources provided by UPT K3L UI guarantees accidents can be handled properly, where we aims to become a role model to all campuses in Indonesia, particularly to ensure the best practice of OSHE in campus is implemented correctly.



WORKSHOP
BIO SAFETY AND BIOSECURITY COMMITTEE FORMATION
 (SANDIA NATIONAL LABORATORY (SNL), BIO SAFETY ENGAGEMENT PROGRAM (BEP), AND U.S EMBASSY)



SIMULASI KEADAAN DARURAT
GEDUNG PUSAT ADMINISTRASI UNIVERSITAS INDONESIA
UPT KESELAMATAN KESEHATAN KERJA DAN LINGKUNGAN UI

Further Information:

Occupational Safety, Health and Environmental Unit - Universitas Indonesia (OSHE UI)
 Integrated Laboratory and Research Center (ILRC) Building
 2nd Floor, Depok Campus, Universitas Indonesia
 Depok, West Java, INDONESIA 16424
 Phone: +62-21-29120942 Email: uptk3l@ui.ac.id website: <https://k3l.ui.ac.id/>

VENUE

The event is conducted in Bali, Indonesia. Bali is already well known as the most popular destination both for domestics and international tourist around the world. Besides being famous for its natural beauty, such as its beaches, Bali is also famous for its unique and interesting arts and culture. All destinations are suitable for having a great moment with friends, family, and colleges.

Indonesian SHE Forum and ACSEL 2019 was held in Nusa Dua Beach Hotel & Spa, which is located 15 minutes from Ngurah Rai International Airport via the Bali Mandara toll road. The guestroom is furnished with authentic Bali decorations while providing garden and ocean views from the terrace or balcony.



Source: Nusa Dua Hotel Beach & Spa

SPEAKERS

Plenary Session 1



Prof. Mary Collins
Okinawa Institute of Science
and Technology
Japan



Prof. Yuji Matsumoto
The University of Tokyo
Japan



Prof. Jeongim Park
Soonchunghyang University
South Korea



Dr. Priscilla Lee
University of Hongkong
Hongkong



Dr. Martina Kelly
National University of Ireland, Galway
Republic of Ireland

Plenary Session 2



Muthia Ashifa, SKM, MKKK
Adaro Energy
Indonesia



Dr. Titis Mariyamah, MKK, SpOk
SAKA ENERGY
Indonesia



Prof. Drh. Wiku Adisasmito
INDOHUN
Indonesia

Plenary Session 3



Arthur Ario Lelono, Ph.D
The Indonesian Institute of Sciences (LIPI)
Indonesia



Prof. Dra. Fatma Lestari, M.Si., PhD
Universitas Indonesia
Indonesia



Mr. Saravanan Gunaratnam
National University of Singapore
Singapore



Lynn M. Fondren, CIH, MS
Sandia National Laboratories
USA



Dr. Tolga Durak, PhD, PE, ARM, CSP
Massachusetts Institute of Technology
USA

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We would like to thank our sponsors:



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SCHEDULE OF PROGRAMS

Schedule of 6th ACSEL & 4th Indonesian SHE Forum

Wednesday, 30 October 2019		
19.00-21.00	Board Meeting Venue: Kamasan Room	
Thursday, 31 October 2019		
08:00 – 08:30	Registration (30 min) Venue: Keraton Voyer	
08:30 – 08:45	Safety Induction (5 min) National Anthem- Indonesia Raya (5 min) Prayer (Doa) – 5 (min) Venue: Keraton Ballroom	
08:45 – 08:50	Welcoming Dance (5 min) Venue: Keraton Ballroom	
08:50 – 09:00	Opening Remarks (10 min) <ul style="list-style-type: none">• Prof. Fatma Lestari M.Si. Ph.D – Chair 6th ACSEL Report on 4th Indonesian SHE Forum and 6th ACSEL• Prof. Sidharta Utama, Ph.D., CFA - Vice Rector Universitas Indonesia• Tjokorda Oka Artha Ardana Sukawati – Vice Governor Bali Venue: Keraton Ballroom	
09:00 – 09:30	Keynote lecture (30 min) <ul style="list-style-type: none">• Ministry of Higher Education and Research• Ministry of Manpower Venue: Keraton Ballroom	
09:30 – 09:45	<ul style="list-style-type: none">• The Signing of HSE Commitment in Higher Education in Asia (15 min)• Photo Session All Participants• Visit to Poster and Booth Venue: Keraton Ballroom	
09:45 – 10:00	Coffee break (15 min)	
10:00 – 11:15	Plenary Session 1 (75 min – including Q&As) Chair: Dr. Kenji Iino PhD; Co-chair: Corina Riantoputra Ph.D <ul style="list-style-type: none">• Prof. Mary Collins - Okinawa Institute of Science and Technology (15 min)• Prof. Yuji Matsumoto - The University of Tokyo (15 min)• Prof. Jeongim Park - Soonchunghyang University (15 min)• Dr. Priscilla Lee – University of Hongkong (15 min)• Dr. Martina Kelly– National University of Ireland, Galway (15 min) Venue: Keraton Ballroom	
11:15 – 11:25	Mobilization to classroom (10 min)	
11:25 – 12:10	Plenary Session 2 A (45 min) Chair: Prof. DR. Dr. L. Meily Kurniawidjaja, M.Sc., Sp.Ok <ul style="list-style-type: none">• Prof. Drh. Wiku Bakti Bawono Adisasmito, M.Sc., Ph.D - INDOHUN (15 min)• Dr. Titis Mariyamah, MKK, SpOk - SAKA ENERGY (15 min)	Forum Diskusi K3L: 4th Indonesian SHE Forum – Day 1 (45 min) Bahasa Only Presentasi dari beberapa Perguruan Tinggi di Indonesia <ul style="list-style-type: none">• Dr. Ir. Rahmat Nurcahyo, M.Eng.Sc. (UI)• Dr. Yogi Wibisono Budhi, ST, MT (ITB)• Aminudin Arhab, S.IP (UGM)• Dr. Deden Saprudin, S.Si., M.Si. (IPB)

	<ul style="list-style-type: none">Muthia Ashifa SKM., M.KKK- Adaro Energy (15 min) Venue: Keraton Ballroom	<ul style="list-style-type: none">Arief Rahman, M. Setyo Puji dan Guruh Pramudita (ITS) Venue: Garuda Room
12:10 – 13:10	Lunch break (60 min) Venue: Wedang Jahe Restaurant	
13:10 – 13:55	Poster Session (45 min) Venue: Keraton Voyer	
13:55 – 15:25	Oral presentation A 01-08 (90 min) Venue: Keraton Ballroom	Oral presentation B 01-08 (90 min) Venue: Garuda Room
15:25 – 15:40	Coffee break (15 min) Venue: Keraton Voyer	Coffee break (15 min) Venue: Garuda Room
15:40 – 17:20	Oral presentation A09-17 (120 min) Venue: Keraton Ballroom	Oral presentation B09-17 (120 min) Venue: Garuda Room
17:20 – 17:45	Announcements & Sunset (outdoor) photo session (15 min)	
17:45 – 19:00	Prayer and Free Time	
19:00 – 21:00	Gala dinner and dance performance & Best Poster announcement (120 min) Venue: Budaya Culture Theatre	
Friday, 1 November 2019		
08:15 – 09:30	Plenary Session 3 (75 min) Chair: Prof. Ruth Carol Vergin; Co-chair: Dr. Indri Hapsari Susilowati, S.KM., M.KKK <ul style="list-style-type: none">Arthur Ario Lelono, PhD - The Indonesian Institute of Sciences (LIPI) (15 min)Prof. Dra. Fatma Lestari M.Si., PhD- Universitas Indonesia (15 min)Saravanan Gunaratnam - National University of Singapore (15 min)Lynn M. Fondren, CIH, MS (Video Conference) – Sandia National Laboratories (15 min)Dr. Tolga Durak, PhD, PE, ARM, CSP - Massachusetts Institute of Technology (15 min) Venue: Keraton Ballroom	
09:30 – 10:30	Oral presentation A18-23 (60 min) Venue: Keraton Ballroom	Forum Diskusi K3L: 4th Indonesian HSE Forum – Day 2 (60 min) Bahasa Only <ul style="list-style-type: none">Yatin Nuryanto (FIB UI)Sunarto, Khusnul Khotimah, Anggraini Ratih (BATAN)Dr. Chandra (Klinik Makara UI)UPT K3L UIBeberapa perwakilan Perguruan Tinggi lainnyaDiskusi rencana tindak lanjut Venue: Garuda Room
10:30 – 10:45	Coffee break (15 min) Keraton Voyer	
10:45 – 11:00	Best oral announcement, 7 th ACSEL 2020 announcements and closing remarks (15 min) Venue: Keraton Ballroom	

PLENARY SESSIONS

PLENARY SESSION 1

1. **Prof. Mary Collins - Okinawa Institute of Science and Technology**
Safety and Emergency Management – an International University in Japan
2. **Prof. Yuji Matsumoto - The University of Tokyo**
Significance of Lignin and Forest in The Natural Historical Formation of Atmospheric Environment
3. **Prof. Jeongim Park - Soonchunghyang University**
A Decade Experience of Laboratory Safety Act in Korea & New Agenda for ACSEL
4. **Dr. Priscilla Lee – University of Hongkong**
Challenges in Managing Chemical Safety in Higher Education Settings in Hong Kong
5. **Dr. Martina Kelly– National University of Ireland, Galway**
Research, Training, and Implementation of Environmental Health & Safety at National University of Ireland, Galway

PLENARY SESSION 2

1. **Muthia Ashifa SKM., M.KKK – Adaro Energy**
Health Risk Assessment (HRA) Integration with Critical Control Management (CCM)
2. **dr. titis Mariyamah SpOK, MKK, MD – SAKA ENERGY**
Saka Energy Indonesia Mental Health Surveillance
3. **Prof. drh. Wiku Adisasmito, MSc. Ph.D – INDONESIA ONE HEALTH UNIVERSITY NETWORK (INDOHUN)**
The Urgency of Laboratory Bio-risk Management Policy in Indonesia

PLENARY SESSION 3

1. **Arthur Ario Lelono, PhD - The Indonesian Institute of Sciences (LIPI)**
Implementation of Occupational Safety, Health and Environmental (OSHE) Aspects in LIPI Study Case: Research Center for Chemistry
2. **Prof. Dra. Fatma Lestari M.Si., PhD - Universitas Indonesia**
INDUSTRY FOR 4.0: A New Approach for Occupational Health & Safety (OHS) Management
3. **Mr. Saravanan Gunaratnam - National University of Singapore**
The New Risk Paradigm: Advancement of Campus Makerspaces and Safe Innovation
4. **Lynn M. Fondren, CIH, MS (Video Conference) – Sandia National Laboratories**
Biorisk Management in Higher Education
5. **Dr. Tolga Durak, PhD, PE, ARM, CSP - Massachusetts Institute of Technology**
The New Risk Paradigm: Advancement of Campus Makerspaces and Safe Innovation

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ORAL PRESENTATIONS	
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Study of Health Care Guide for Protecting the Health of Research Jin-Hyuk Hong, Eun-jin Kim, Hyung-jun Jeon, Seong-pil Chung, Myung-hwan Lee, Yong-Hee Roh, Korea Research Institute of Bioscience	A-10
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Problem Source of Undergraduate Student that Cause Mental Health Disorders

Herlina J. EL- Matury¹, Fatma Lestari^{2*}, Besral³, Indri Hapsari Susilowati⁴

1. Occupational Health and Safety, Faculty of Public Health, Universitas Sumatera Utara, Medan, Indonesia
2. Occupational Health and Safety, Faculty of Public Health, Universitas Indonesia, Depok, Indonesia
3. Biostatistics and Population Studies, Faculty of Public Health, Universitas Indonesia, Depok, Indonesia
4. Occupational Health and Safety, Faculty of Public Health, Universitas Indonesia, Depok, Indonesia

Corresponding author: fatma@ui.ac.id

This study conducted to obtain the problems of undergraduate student problems as well as for construct validation and internal consistency of the problem source, which later could use as a valid and reliable instrument to identify the source of problems among undergraduate students. The cross-sectional study conducted on 704 students in 14 faculties. The making and development of questionnaires conducted based on student complaints during counseling at the Clinic at campus and literature study and obtained 50 items. Construct validation and internal consistency carried out confirmatory factor analysis using structural equation modeling in Lisrel software version 8.7 and grouping carried out using analysis factor in SPSS version 17 software. Results of structural equation modeling validation using the t-test obtained 24 valid variables with t values ≥ 1.96 . The results of analysis factors obtained 5 factors that are the problem of communication and adaptation, academic, personal, emotional, and disappointment. The study results suggest that it is necessary to introduce campus adaptation programs / activities, introduction of teaching and learning activities, communication workshops/trainings, mentoring from seniors to help communication and adaptation between friends, faculty staffs and lecturers.

Keywords: Undergraduate student, source of problem