

- (1). (a). On November 28, 2023, three people died when a building under construction collapsed in Bayan Lepas. Out of 18 workers work at the site, nine workers were trapped and two with serious injuries. Penang Fire and Rescue Department deputy director said the rescue was challenging due to the weight of the fallen structure. According to the report, a beam about 12 meter long and weighing about 14 tonnes had fallen and knocked down the 14 other beams at the site. They require the use of large machinery to remove heavy structures and access the victims.

Pada 28 November 2023, tiga orang meninggal dunia apabila bangunan yang sedang dibina runtuh di Bayan Lepas. Daripada 18 orang pekerja yang berkerja di tapak itu, 9 pekerja terperangkap dan 2 daripadanya mengalami kecederaan serius. Timbalan Pengarah Jabatan Bomba dan Penyelamat Pulau Pinang menyatakan bahawa usaha menyelamatkan mencabar adalah disebabkan oleh berat struktur yang roboh. Mengikut laporan, sebatang rasuk dengan panjang kira-kira 12 meter dan berat 14 tan telah roboh dan menjatuhkan lagi 14 rasuk lain di tapak tersebut. Mereka perlu menggunakan jentera besar untuk mengeluarkan struktur berat dan mengambil mangsa.

- (i). Describe THREE (3) safety measures that could be implemented to minimize the risk of such incident.

Huraikan TIGA (3) langkah keselamatan yang boleh dilaksanakan untuk mengurangkan risiko kejadian ini.

(3 marks/markah)

- (ii). Provide examples of effective communication strategies that should be employed in preventing and responding to incident at construction site.

Berikan contoh-contoh strategi komunikasi yang berkesan yang seharusnya digunakan dalam mencegah dan bertindak balas kepada kejadian di tapak pembinaan.

(5 marks/markah)

- (iii). Propose a comprehensive emergency response plan that includes preventive measure, preparedness strategy, and immediate response protocol to mitigate the impact of similar incident in construction environment.

Cadangkan pelan tindakan komprehensif termasuk langkah-langkah pencegahan, strategi kesiapsiagaan, dan protokol tindak balas segera untuk mengurangkan kesan kejadian serupa di sekitar kawasan pembinaan

(7 marks/markah)

- (b). A tragic incident happened at a cement factory in Ipoh, Perak on August 14, 2023, resulting in the death of a general worker who is trapped in a mixing machine. The worker was engaged in breaking hardened cement at a silo of manhole using sledgehammers and iron rods. The wet cement in the silo suddenly splashed out through the manhole and caused the victim to fall and be buried by the cement. Preliminary investigations revealed that the victim was employed by a contractor to do silo cleaning work. In response to the incident, the Department of Occupational Safety and Health, Perak, promptly issued a stop-work notice to the employer, to stop silo cleaning work until improvement actions were taken by the company.

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Satu kejadian tragis berlaku di kilang simen di Ipoh, Perak pada 14 Ogos 2023, menyebabkan kematian seorang pekerja am yang terperangkap dalam mesin pencampur. Pekerja itu terlibat dalam memecahkan simen keras di lorong silo menggunakan tukul besi dan rod besi. Simen basah di dalam silo tiba-tiba melimpah keluar melalui lorong, menyebabkan pekerja itu jatuh dan tertimbun oleh simen. Siasatan awal menunjukkan bahawa mangsa bekerja untuk sebuah syarikat kontraktor yang dilantik untuk kerja pembersihan silo di kilang simen tersebut. Sebagai tindak balas terhadap kejadian itu, Jabatan Keselamatan dan Kesihatan Pekerjaan, Perak dengan segera mengeluarkan notis berhenti kerja kepada majikan, bagi menghentikan kerja pembersihan silo sehingga tindakan penambahbaikan diambil oleh syarikat.

- (i). Discuss THREE (3) types of personal protective equipment (PPE) that should be used to protect the worker's safety during silo cleaning and its role.

Bincangkan TIGA (3) jenis alat pelindung diri (PPE) yang seharusnya digunakan untuk melindungi keselamatan pekerja semasa pembersihan silo serta peranannya.

(5 marks/markah)

- (ii). Suggest the specific training measures should be implemented to ensure that workers are aware of potential risks and follow safety procedure.

Cadangkan langkah-langkah latihan spesifik yang seharusnya dilaksanakan untuk memastikan kesedaran pekerja terhadap risiko potensi dan pematuhan prosedur keselamatan.

(5 marks/markah)

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- (2). (a). In considering the promotion and implementation of a positive safety and health culture in the workplace, analyze of the inherent challenges and potential limitations associated with each of the SIX (6) strategies an employer may employ. Evaluate the feasibility, effectiveness, and potential drawbacks of these approaches by providing insights into the challenges of fostering a culture of safety and health within an organizational context.

Dalam mempertimbangkan promosi dan pelaksanaan budaya keselamatan dan kesihatan yang positif di tempat kerja, analisis cabaran yang wujud dan potensi had yang dikaitkan dengan setiap ENAM (6) strategi yang mungkin digunakan oleh majikan. Nilai kebolehlaksanaan, keberkesanan dan potensi kelemahan pendekatan ini dengan memberikan pandangan tentang cabaran untuk memupuk budaya keselamatan dan kesihatan dalam konteks organisasi.

(12 marks/markah)

- (b). Considering the pivotal role of communication in workplace safety and health, critically observe the applicability and potential challenges associated with THREE (3) fundamental methods of effective communication. Give an example from a real-world situation where poor communication led to safety and health issues, and discuss how the proposed communication with THREE (3) methods of effective communication could have mitigated these challenges.

Memandangkan peranan penting komunikasi dalam keselamatan dan kesihatan tempat kerja, perhatikan secara kritis kebolehgunaan dan potensi cabaran yang dikaitkan dengan TIGA (3) kaedah asas komunikasi yang berkesan. Berikan contoh daripada situasi dunia sebenar di mana komunikasi yang lemah

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membawa kepada isu keselamatan dan kesihatan, dan bincangkan bagaimana cadangan TIGA (3) kaedah komunikasi berkesan boleh mengurangkan cabaran ini.

(6 marks/markah)

- (c). ISO 45001 is an international standard that specifies requirements for an occupational safety and health management system and also as a standard to enable organizations to proactively improve their occupational safety and health performance in preventing injury and ill health.

ISO 45001 ialah piawaian antarabangsa yang menetapkan keperluan untuk sistem pengurusan keselamatan dan kesihatan pekerjaan dan juga sebagai piawaian untuk membolehkan organisasi meningkatkan prestasi keselamatan dan kesihatan pekerjaan mereka secara proaktif dalam mencegah kecederaan dan keuzuran.

- (i). What is your view related to the implementation of ISO 45001:2018?

Apa pandangan anda berkaitan dengan pelaksanaan ISO 45001:2018?

(1 marks/markah)

- (ii). Explore potential challenges and ethical considerations associated with each role, and provide THREE (3) insights into how effective leadership at the highest level can contribute to the proactive improvement of Occupational Safety and Health, aligning with the goals of ISO 45001:2018.

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Terokai potensi cabaran dan pertimbangan etika yang dikaitkan dengan setiap peranan, dan berikan TIGA (3) pandangan tentang cara kepimpinan yang berkesan di peringkat tertinggi yang boleh menyumbang kepada peningkatan proaktif keselamatan dan kesihatan pekerjaan, sejajar dengan matlamat ISO 45001:2018.

(6 marks/markah)

- (3). (a). In general, ergonomic hazard can be divided into two main categories: physical and mental stress. Explain TWO (2) types of working environment that contribute to physical stress and suggest TWO (2) ways to minimize the hazard.

Secara amnya, bahaya ergonomik boleh dibahagikan kepada dua kategori utama: tekanan fizikal dan mental. Jelaskan DUA (2) jenis persekitaran kerja yang menyumbang kepada tekanan fizikal dan cadangkan DUA (2) cara untuk mengurangkan hazard tersebut.

(8 marks/markah)

- (b). Figure 1 shows the storage of different gas cylinders in a storeroom. Identify the hazards posed as shown in the picture. Thereafter, classify the hazards and recommend appropriate control measures to mitigate the hazards.

Rajah 1 menunjukkan penyimpanan silinder gas yang berlainan di dalam bilik stor. Kenalpasti bahaya daripada gambar rajah tersebut. Kemudian, klasifikasikan bahaya tersebut dan syorkan langkah kawalan yang sesuai untuk mengurangkan bahaya tersebut.

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Figure 1 / Rajah 1

(6 marks/markah)

- (c). Safety Data Sheets (SDSs) are widely used in manufacturing process for cataloguing information on chemicals, chemical compounds, and chemical mixtures. There are 16 key items in an SDS. List FIVE (5) of them.

Lembaran data keselamatan (SDSs) digunakan secara meluas dalam proses pembuatan untuk mengkatalogkan maklumat mengenai bahan kimia, sebatian kimia, dan campuran kimia. Terdapat 16 perkara utama dalam SDS. Senaraikan LIMA (5) daripadanya.

(5 marks/markah)

- (d). Suggest and explain THREE (3) ways to reduce the hazards working in the confined space.

Cadangkan dan terangkan TIGA (3) cara untuk mengurangkan bahaya bekerja di ruang terkurung.

(6 marks/markah)

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- (4). (a). On July 11, 1992, a Malaysian court ordered Asian Rare Earth (ARE), which is 35% owned by Mitsubishi Kasei in Japan, to immediately close its plant in Bukit Merah. The court also ordered the company to remove all its radioactive waste and toxic chemicals from the factory. ARE was a factory that processes monazite to produce yttrium and other rare earth chlorides used in colour television screens and electronic parts. In the process, radioactive thorium is produced as waste.

In the case of its Bukit Merah plant, this waste was dumped in the villagers' backyard, without any signs or fences to protect them. The nearby residents have complained about the smell and smoke from the factory that stinks so much, they had difficulty breathing and cried because of it. It had been reported that the processing of radioactive materials at Bukit Merah had been associated with 8 cases of leukemia and 7 deaths. The Malaysian government has invited a few specialist teams to visit the factory. It was found that the waste channel was totally not safe for the public, where the radiation levels were 800 times the permitted maximum level. The ARE case had been called "Japanese pollution export" by environmentalists.

Explain how this case relates with the requirements of Acts and Regulations related to environmental, health and safety (EHS) in Malaysia. Explain FIVE (5) relevant EHS Acts and Regulations and justify the stakeholder(s) involved (Appendix A is given as reference).

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Pada 11 Julai 1992, mahkamah Malaysia telah mengarahkan Asian Rare Earth (ARE), yang mana 35% dimiliki oleh Mitsubishi Kasei di Jepun, untuk segera menutup kilangnya di Bukit Merah. Mahkamah juga mengarahkan syarikat tersebut mengeluarkan semua sisa radioaktif dan bahan kimia beracun dari kilang itu. ARE merupakan sebuah kilang yang memproses monazit untuk menghasilkan yttrium dan klorida yang jarang digunakan dalam skrin televisyen berwarna dan bahagian elektronik. Dalam proses ini, torium radioaktif dihasilkan sebagai sisa.

Untuk kes kilang di Bukit Merah, sisa-sisa tersebut dibuang berhampiran di kawasan belakang tempat tinggal penduduk kampung, tanpa sebarang tanda atau pagar untuk melindungi mereka. Penduduk di kawasan berdekatan telah mengadu tentang bau dan asap yang melampau dari kilang, menyebabkan mereka mengalami kesukaran bernafas dan air mata mengalir. Laporan menyatakan bahawa pemprosesan bahan radioaktif di Bukit Merah telah dikaitkan dengan 8 kes leukemia dan 7 kematian.

Kerajaan Malaysia telah menjemput beberapa pasukan pakar untuk melawat kilang tersebut. Didapati bahawa saluran sisa tersebut tidak selamat untuk orang ramai, di mana tahap radiasi telah mencecah 800 kali lebih tinggi daripada tahap maksimum yang dibenarkan. Kes ARE telah digelar "eksport pencemaran Jepun" oleh pejuang alam sekitar.

Terangkan perkaitan kes ini dengan Akta-akta dan Peraturan-peraturan yang berkaitan alam sekitar, kesihatan dan keselamatan (EHS) di Malaysia. Terangkan LIMA (5) Akta dan Peraturan EHS yang berkaitan dan justifikasikan pihak berkepentingan yang terlibat (Lampiran A diberikan sebagai rujukan).

(15 marks/markah)

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- (b). "You'll be fine as long as you wear your respirator", said the supervisor to the employees as he entered the empty vessel (confined space). "There might be some residual toxic gas left over, but there won't be much. If you don't breathe it, the gas can't hurt you. Get in, do the inspection, and get out. It shouldn't take 5 minutes".

"Tiada apa-apa akan berlaku padamu selagi kamu pakai alat pernafasan kamu," kata penyelia kepada pekerja sambil memasuki kebuk kosong (ruang terkurung). "Mungkin ada lagi sedikit sisa gas toksik yang tertinggal, tetapi tidak akan banyak. Jika kamu tidak bernafas, gas itu tidak membahayakan kamu. Ayuh, jalankan pemeriksaan dan terus keluar. Ia tidak mengambil masa lebih daripada 5 minit".

- (i). Is this supervisor giving proper advice? Justify your answer. *Adakah penyelia ini memberi nasihat yang tepat? Justifikasikan jawapan anda.*

(4 marks/markah)

- (ii). Explain TWO (2) relevant legislations and guidelines related to occupational safety and health that the supervisor and the worker need to refer to when conducting works in the confined space. You may refer to Appendix A.

Jelaskan DUA (2) undang-undang dan garis panduan yang berkaitan dengan keselamatan dan kesihatan di tempat kerja yang perlu dirujuk oleh penyelia dan pekerja ketika menjalankan tugas di dalam ruang terkurung. Anda boleh merujuk kepada Lampiran A.

(6 marks/markah)

Appendix A Relevant Legislations and Guidelines Related to Environmental, Health and Safety

Lampiran A Perundangan-perundangan dan Garis-garis Panduan yang berkaitan dengan Alam Sekitar, Kesihatan dan Keselamatan

Regulations under Occupational Safety and Health Act 1994 (OSHA 1994)

Peraturan-peraturan di bawah Akta Keselamatan dan Kesihatan Pekerja 1994 (OSHA 1994)

00. Occupational Safety and Health (Noise Exposure) Regulations 2019
01. Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013
02. Occupational Safety and Health (Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease) Regulations 2004
03. Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000
05. Occupational Safety and Health (Classification, Packaging and Labelling of Hazardous' Chemicals) Regulations 1997 (Revoked)
06. Occupational Safety and Health (Safety and Health Committee) Regulations 1996
07. Occupational Safety and Health (Control of Industrial Major Accident Hazards) Regulations 1996
08. Occupational Safety and Health (Employers' Safety and Health General Policy Statements) (Exception) Regulations 1995

Orders under OSHA 1994

Perintah-perintah di bawah OSHA 1994

01. Occupational Safety and Health (Prohibition of Use of Substances) Order 1999
02. Occupational Safety and Health (Safety and Health Officer) Order 1997

Codes of Practices under OSHA 1994

Tataamalan-tataamalan di bawah OSHA 1994

Chemical Management

Pengurusan Kimia

01. Industry Code of Practice on Chemicals Classification and Hazard Communication, 2014
02. Industry Code of Practice on Indoor Air Quality, 2010

Industrial Hygiene

Higien Industri

Industry Code of Practice for Safe Working in a Confined Space, 2010

Guidelines under OSHA 1994

Garis-garis Panduan di bawah OSHA 1994

Chemical

Kimia

01. Guidelines on Control and Safe Handling of Nanomaterials
02. (1) A Manual of Recommended Practice on Assessment of the Health Risks Arising from the Use of Chemicals Hazardous to Health at the Workplace (3rd Edition) (First Reprint 2018)
02. (2) Corrigenda - A Manual of Recommended Practice on Assessment of the Health Risks Arising from the Use of Chemicals Hazardous to Health at the Workplace (3rd Edition)
03. Guidelines for Asbestos Removal 2017
04. Guidelines on Mercury Management in Oil and Gas Industry, 2011
05. Panduan bagi Menggunakan Penaksiran Risiko Bahan Kimia Berbahaya kepada Kesihatan (CHRA) Secara Generik, 2006
06. Guidelines on Storage of Hazardous Chemicals: A Guide for Safe Warehousing of Packaged Hazardous Chemicals, 2005
07. Guidelines on the Use of Personal Protective Equipment Against Chemicals Hazards, 2005
08. Guidelines on the Monitoring of Airborne Contaminant for Chemicals Hazardous to Health, 2002
09. Guidelines on the Control of Chemicals Hazardous to Health, 2001

General

Umum

01. Guidelines on Grass Cutter Safety Handling 2018

02. Guidelines on Occupational Safety and Health in Construction, Operation and Maintenance of Biogas Plant, 2016
03. Guidelines on Contract Management 2015
04. Guidelines in Courier Services Industry 2015
05. Guidelines for The Factories and Machinery (Special Scheme Inspection) (Risk-Based Inspection), 2014
06. Guidelines for Media Professionals, 2012
07. Guidelines on Occupational Safety and Health Management Systems (OSHMS), 2011
08. Guidelines on Occupational Safety and Health Act 1994 (Act 514), 2006
09. Guidelines on Occupational Safety and Health (Notification of Accident, Dangerous Occurrence, Occupational Poisoning & Occupational Disease) Regulations 2004 (NADOPOD), 2005
10. Guidelines on Occupational Safety and Health in the Service Sector, 2004

HIRARC

HIRARC

01. Guidelines for Hazard Identification, Risk Assessment and Risk Control (HIRARC), 2008

Occupational Health

Kesihatan Pekerjaan

01. Guidelines on Aedes Mosquito Control in Construction Sites, 2015
02. Guidelines for the Protection of Employees Against the Effects of Haze at Workplaces, 2013
03. Guidelines on Occupational Health Services, 2005
04. Guidelines on Preventing and Responding to Drugs and Alcohol Problems in the Workplace, 2004
05. Guidelines on First Aid in the Workplace (2nd Edition), 2004
06. Guidelines on Reproductive Health Policy & Programmes at the Workplace, 2002
07. Guidelines on Medical Surveillance, 2001
08. Guidance for the Prevention of Stress and Violence at the Workplace, 2001

Regulations under Atomic Energy Licensing Act 1984 (Act 304)

Peraturan- peraturan di bawah Akta Perlesenan Tenaga Atom 1984 (Akta 304)

01. Radiation Protection (Licensing) Regulations 1986
02. Radiation Protection (Basic Safety Standards) Regulations 1988
03. Radiation Protection (Transport) Regulations 1989

Rules under Environmental Quality Act 1974 (EQA 1974)

Kaedah-kaedah di bawah Akta Kualiti Alam Sekitar 1974 (EQA 1974)

- Environmental Quality (Compounding of Offences) (Open Burning) Rules 2000
Environmental Quality (Compounding of Offences) (Amendment) Rules 1999

Regulations under EQA 1974

Peraturan- peraturan di bawah EQA 1974

- Environmental Quality (Control of Emission from Diesel Engines) Regulations 1996 (Amendment 2000)
Environmental Quality (Clean Air) Regulations 1978 (Amendment 2000)
Environmental Quality (Scheduled Wastes) Regulations 2005 (Amendment 2007)
Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations 1977 (Amendment 1982)
Environmental Quality (Prescribed Premises Scheduled Wastes Treatment and Disposal Facilities) Regulations 1989 (Amendment 2006)
Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations 1978
Environmental Quality (Refrigerant Management) Regulations 1999
Environmental Quality (Halon Management) Regulations 1999
Environmental Quality (Scheduled Wastes) Regulations 2005
Environmental Quality (Motor Vehicle Noise) Regulations 1987
Environmental Quality (Industrial Effluent) Regulations 2009
Environmental Quality (Control of Petrol and Diesel Properties) Regulations 2007
Environmental Quality (Control of Lead Concentration in Motor Gasoline) Regulations 1985

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Environmental Quality (Control of Emission from Diesel Engines) Regulations 1996

Environmental Quality (Control of Emission from Petrol Engines) Regulations 1996

Environmental Quality (Control of Emission from Motorcycles) Regulations 2003

Environmental Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulations 2009

Environmental Quality (Sewage) Regulations 2009

Environmental Quality (Appeal Board) Regulations 2003

Environmental Quality (Licensing) Regulations 1977

Orders under EQA 1974

Perintah-perintah di bawah EQA 1974

Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015

Environmental Quality (Prescribed Activities) (Open Burning) Order 2003

Environmental Quality (Prohibition on The Use of Chlorofluorocarbons and Other Gases as Propellants and Blowing Agents) Order 1993

Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities Order) (Amendment) 2006

Environmental Quality (Prescribed Conveyance) (Scheduled Wastes) Order 2005

Environmental Quality (Delegation of Powers on Marine Pollution Control) Order 1994

Environmental Quality (Delegation of Powers Halon Management) Order 2000

Environmental Quality (Delegation of Powers) (Investigation of Open Burning) Order 2000

Environmental Quality (Delegation of Powers) Order 2005

Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Order 1978

Environmental Quality (Prescribed Premises) (Crude Palm Oil) Order 1977

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