



KEMENTERIAN SUMBER ASLI, ALAM SEKITAR
DAN PERUBAHAN IKLIM



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HARI PENGUATKUASA JAS

#Pemeriksaan Penguatkuasaan dan Pematuhan AKAS 1974

15 APRIL 2023

HARI BUMI

22 APRIL 2023

"INVEST IN OUR PLANET"

IKHLAS DARIPADA
SELURUH WARGA JABATAN ALAM SEKITAR

HARI ALAM SEKITAR SEDUNIA 2023

5 JUN 2023

"Hentikan Pencemaran Plastik"

#BeatPlasticPollution



JABATAN ALAM SEKITAR

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APRIL - JUN

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PRAKATA KETUA PENGARAH JAS 3

ARTICLE ON CONTAMINATED LAND 4-14

APRIL 2023

TAKLIMAT DIMENSI BARU SISTEM GEOSPAS DAN APLIKASI PORTAL GIS MESYUARAT MENTERI-MENTERI ALAM SEKITAR DAN AHLI-AHLI MAJLIS MESYUARAT KERAJAAN NEGERI YANG BERTANGGUNGJAWAB MENGENAI ALAM SEKITAR (MEXCOE) BIL. 1/2023	15-16
KOLOKIU ANJURAN BAHAGIAN PENILAIAN PADA BULAN APRIL 2023 PROGRAM LAWATAN KERJA KE STESEN PENGAWASAN KUALITI AIR MARIN MANUAL DI NEGERI JOHOR DI BAWAH PROGRAM PENGAWASAN KUALITI ALAM SEKITAR (EQMP)	17-18 19-20
PROGRAM "PLASTIC BUSTERS - HINDARI PLASTIK SEKALI GUNA" SEMPENA HARI BUMI 2023 BAZAR RAMADAN PUTRAJAYA	21
PROGRAM WORLD #QURAN HOUR 2023@JAS PERINGKAT JABATAN ALAM SEKITAR	22
HARI PENGUATKUASA JAS 2023	23
MESYUARAT PENYELARASAN PELAKSANAAN PEMBANGUNAN PROGRAM PENCEGAHAN DAN PEMANTAUAN KEBAKARAN TANAH GAMBUT SERTA KAWASAN LAIN BERISIKO KEBAKARAN UNTUK MENGATASI JEREBU BIL. 1/2023	25-26
PROGRAM BICARA KESIHATAN MENTAL (MENTAL HEALTH TALK) : PUNCA DAN CARA MENGATASINYA	27
HARI BUMI 2023	28 29

MEI 2023

YBM NRECC TURUN PADANG KE KAWASAN BERISIKO TERBAKAR DI JOHAN SETIA, KLANG SELANGOR	30
BENGKEL PEMURNIAN MANUSKRIP "BUKU PENGURUSAN ALAM SEKITAR DI MALAYSIA" BAGI KERJASAMA PENERBITAN ILMIAH JABATAN ALAM SEKITAR DAN DEWAN BAHASA DAN PUSTAKA & BENGKEL PENULISAN PROFESSIONAL (TEKS UCAPAN & PENULISAN GAYA DEWAN)	33
MAJLIS PELANCARAN HANDBOOK "ENVIRONMENTAL BEST MANAGEMENT PRACTICES GRID DEVELOPMENT'S PROJECT SITE"	34-35
BENGKEL BUSINESS REQUIREMENT SPECIFICATION (BRS) BAGI PEMBANGUNAN NAIK TARAF SISTEM INTEGRATED REMOTE MONITORING SYSTEM (IREMOTE)	36
MAJLIS PERHIMPUNAN BULANAN JAS BIL. 3/2023 & MAJLIS HARI RAYA AIDILFITRI JAS TAHUN 2023	37-38
LAPOR DIRI EMPAT (4) PENOLONG PEGAWAI KAWALAN ALAM SEKITAR GRED C29 LANTIKAN BAHARU	39
BENGKEL PENGEMASKINIAN SYARAT-SYARAT LESEN SERTA MESYUARAT PENYELARASAN ISU-ISU KILANG MINYAK KELAPA SAWIT MENTAH DAN KILANG GETAH ASLI MENTAH	40
WEBINAR ALAM SEKITAR:	
PEMERKASAAN PENGUATKUASAAN DAN PEMATUHAN AKAS 1974	41-42
KURSUS PRA PERSARAAN JABATAN ALAM SEKITAR TAHUN 2023	43
LAWATAN KERJA YB MENTERI SUMBER ASLI, ALAM SEKITAR DAN PERUBAHAN IKLIM KE TAPAK PELUPUSAN SAMPAH HARAM DI TWIN PALMS, SUNGAI LONG DAN BLACK WATER LAKE, BANDAR MAHKOTA CHERAS	44
MESYUARAT JAWATANKUASA INDUK JEREBU DAN CUACA KERING KEBANGSAAN BIL. 1/2023	45-46

JUN 2023

HARI ALAM SEKITAR SEDUNIA 2023	47
PROGRAM EKSPLORASI DIGITAL DAN BICARA INTELEK SIRI 1	48
PROGRAM RESENSI KELESTARIAN ALAM SEKITAR	49

HEBAHAN KOLEKSI BUKU PERPUSTAKAAN EIMAS	48-53
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CROSS WORD PUZZLE	54-55
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PRAKATA

KETUA PENGARAH JABATAN ALAM SEKITAR



Assalamualaikum wbt

dan Salam Sejahtera,

Setinggi-tinggi syukur ke hadrat Allah SWT kerana dengan izin dan rahmatNya, JAS telah berjaya menerbitkan eBuletin JAS Bilangan 2/2023.

Di kesempatan kali ini, saya ingin mengucapkan sekalung tahniah dan setinggi-tinggi penghargaan kepada semua pihak yang telah terlibat dalam menyumbangkan bahan serta artikel bagi menjayakan penerbitan eBuletin Bilangan 2/2023 pada kali ini.

eBuletin merupakan wadah yang diterbitkan pada setiap suku tahun bagi menghebahkan kepada umum berkenaan aktiviti dan program yang telah dilaksanakan serta dijayakan oleh JAS. Diharapkan dengan perkongsian program dan aktiviti yang telah dilaksanakan oleh JAS untuk suku kedua tahun 2023 ini akan dapat diteruskan momentum kecemerlangan untuk suku tahun ketiga dan seterusnya sepanjang tahun 2023 ini.

Demi menyuntik semangat dan menghargai pengorbanan seluruh anggota barisan hadapan JAS yang terlibat secara langsung dalam operasi penguatkuasaan, pemantauan, pendakwaan, pendidikan, komunikasi strategik, libat urus dan lain-lain sambutan Hari Penguatkuasa JAS telah dilaksanakan pada 15 April 2023 dengan tema "Pemeriksaan Penguatkuasaan dan Pematuhan AKAS 1974". Jabatan juga melaksanakan usaha untuk meningkatkan integriti pegawai melalui pelaksanaan program bersifat kerohanian dan kesihatan mental.

Akhir kata, marilah kita bersama-sama memacu JAS ke arah kecemerlangan dengan penerapan nilai-nilai positif seperti mementingkan kualiti keberhasilan kerja, komitmen, kerja berpasukan, integriti dan amanah dalam setiap tugas yang dipertanggungjawabkan kepada kita. Terima kasih kepada semua.

Selamat maju jaya.

"Alam Sekitar, Tanggungjawab Bersama"

WAN ABDUL LATIFF BIN WAN JAFFAR
Ketua Pengarah Alam Sekitar



ARTICLE ON CONTAMINATED LAND

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Overview of chemicals of potential concerns in contaminated land in Malaysia

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ABSTRACT

In developed countries, contamination of soil due to industrial activities and illegal toxic waste disposal has been identified as major environmental problems. Established mechanisms for identifying, prioritizing, characterizing, assessing, and improving soil conditions have been implemented to reduce risks to human health and environmental receptors. However, the Contaminated Land Management System (CLMS) and the practices for the management of this contaminated land in Malaysia, including the enforcement of legislation are ineffective. The objective of this study is to discuss an overview of potential chemical substances, especially regarding its existence in contaminated soil in Malaysia. The report also examines the parameters of several heavy metals especially arsenic and mercury found in contaminated soil areas. In addition, this study is an explanatory effort to assess the level and characteristics of illegal disposal including current enforcement practices in Malaysia after three guidelines related to contaminated land management were developed by the Department of Environment (DOE) Malaysia in 2009.

Keywords: Contaminated land management system; Potential chemical substances; Environmental Quality Act 1974

1. Introduction

Initially, the Environmental Quality Act 1974 (EQA 1974) was specifically enforced through the implementation of the Environmental Quality (Scheduled Waste) Regulations in 1989. Nonetheless, it has been replaced by the enforcement of the Environmental Quality Regulations (Scheduled

Waste) in 2005 and is still in effect today [1]. Fundamentally, this document has laid out a basis for planning the management of hazardous waste from the point of origin until it is appropriately disposed-off in compliance with established legislation. The statute also categorizes each of the contaminant characteristics according to its hazardous level (infectious, toxicity, reactivity, corrosiveness and flammability) and giving the Department of Environment (DOE)

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ARTICLE ON CONTAMINATED LAND

2

M.F.A. Jalil et al. / Desalination and Water Treatment (2022) 1–11

broad powers is given to regulate waste labelling, detention, transportation and storage records, including establishing a system to permit treatment, storage, disposal and recovery facilities. Other than that, according to the acts, for each incident of illegal hazardous and toxic materials waste disposal for which the perpetrator is unidentified, the trust fund allocations can be utilized to cover the expense of cleaning and disposal, as well as site preservation and conservation studies [2].

To date, it is discovered that many industrially polluted sites in Malaysia require remediation or restoration before they can be reused [3–7]. Previously, it was found that no legislation has addressed brownfield assessment methodology or target remedial values. It triggered the DOE to create a recommendation document for evaluating soil and groundwater pollution mainly for remediation purposes [8,9]. It includes several limitations on contaminants within those mediums. Moreover, land-use patterns, soil hydrological characteristics, and contamination depth are all taken into account in establishing the limit [10].

In general, it was determined that heavy metals accumulation in soils is due to the effect of industrial activities including wastewater irrigation [11], mine tailings [12], disposal of high metal by-product [13,14], fertilizer land application [15], animal manures [16], leaded gas and paints [17], sewage sludge [18], pesticides [19], coal combustion deposits [20], petrochemical spill and atmospheric deposition [21]. It was also reported that hazardous inorganic compounds such as lead (Pb), chromium (Cr), zinc (Zn), copper (Cu), cadmium (Cd), arsenic (As), mercury (Hg), and nickel (Ni) are often abundant in contaminated areas [22–26]. As a result of these human activities, soil acts as a significant absorber of heavy metals or contaminants of potential concern (COPCs) which are then released into the environment [27,28]. Unlike organic contaminants, which most likely to be degraded to carbon (IV) oxide by microbial action, most of metals cannot be degraded via microbial or chemical action [29–32]. Furthermore, their overall concentration in soils remains stable over time.

Previous review presented the overview of contaminants in soil which undetermined COPCs problems in Malaysia, such as the review was written by Maddela et al. [33], Pullagurala et al. [34], and Li et al. [35]. Therefore, in this study, the overview of system used by the government of Malaysia that related to COPCs problem in contaminated land was discussed. In order to provide a brief overview, this paper has reviewed the basic chemistry, potential sources of contamination, and associated environmental and health risks that related to heavy metals as well as several methodologies applied by the government in order to cope with the problem. This review can be useful for the future research that require a revision on the system used in Malaysia. Several data that were discussed in this paper were obtained by the DOE and available to the public through their official website (<https://www.doe.gov.my>).

2. Sources of pollution

2.1. Untreated wastewater

Almost hundreds of years ago, municipal and industrial wastewater, as well as associated effluents, have been

utilized for land irrigation and widespread in many parts of the world [36]. Around the world, wastewater is used to irrigate 20 million ha of arable land [37]. According to studies, wastewater irrigation agriculture produces 50% of the vegetable supply in a number of Asian and African cities' metropolitan areas. Previous studies in Malaysia showed the utilization of industrial and municipal wastewater as a resource of irrigation water [38,39]. For industrial wastewater, the level of metal was tolerable up to the optimum concentrations of 5% and 25% for the elongation of roots and shoots in *L. purpureus* and *B. chinensis*. Farmers' primary goal is growing yields and profits, on the other hand disregard environmental concerns. While concentrations of metals in sewage effluents are normally low, irrigation of land over time can lead to significant level of metal deposition in the soil [40]. Thus, it needs to remove wastewater sludge from the river for reducing the significant level of metal deposition. Fig. 1 demonstrates how DOE removes wastewater sludge from the river on a regular basis.

To resolve the problem, the Malaysian government has established Water Quality Index (WQI) to regulate the quality of river waters [41]. The standards are classified into six categories, from preserving the natural environment to drinking water treatment and irrigation for agriculture [42]. Also, water quality standards are measured in nearly seventy parameters, including chemical oxygen demand (COD), biochemical oxygen demand (BOD₅), ammonia nitrogen, and several number of bacteria coliforms, as well as a large number of pesticides and heavy metals [43,44]. Although no specific environmental standard exists for ponds and lakes, a proposed interim standard for coastal waters is currently being reviewed.

In Malaysia, wastewater standards have been specified in the 2009 environmental quality regulations especially for industrial effluents and sewage where the standards are applied to industrial wastewater and domestic wastewater [45]. The wastewater standards are prescribed in the form of a series of national standard uniforms and divided into two classes: Standard A and B. Standard A applies to intake points of upstream, while Standard B applies to downstream areas. Standard A is much more restrictive than



Fig. 1. Removing wastewater sludge from the river [15].

ARTICLE ON CONTAMINATED LAND*M.F.A. Jalil et al. / Desalination and Water Treatment (2022) 1–11*

3

Standard B and each standard has included 23 parameters, such as BOD₅, COD, SS, pH, temperature, CFU/100 mL, and various types of heavy metals.

2.2. Milling processes, metal mining, and industrial wastes

Metal ore's excavation and grinding, as well as other industries, have contaminated the soil in a number of countries [46]. Tailing, a dense and large particulate, settle in the aeration basin during mining. Then, it is released into existing sinkholes, including onsite wetlands, resulting in heightened concentrations of pollutants. Other materials are discharged in a range of industries, including textiles, tanning, petrochemicals, insecticides, and pharmaceutical facilities, and their compositions are quite diverse [47,48]. Fig. 2 shows an industrial leftover that was abandoned leaving behind contaminated site and required a clean-up.

3. Heavy metals and their potential risks

Analyzing and forecasting pollution-related consequences entails identifying and determining a variety of potential risk sources, estimating a variety of risk factors that come into contact with human-environment boundaries, estimating levels of exposure via identifying routes of exposure to a target organism, and quantifying health risks associated with this exposure. In order of abundance accordingly, Pb, Cr, As, Zn, Cd, Cu, and Hg are the most often reported heavy metals found in the sites [49]. Additionally, two metals found to be highly toxic, for instance arsenic (As) and mercury (Hg), that required an extensive treatment. It was mentioned that the presence of contaminants in excess of the permissible limits set by regulatory authorities, such as the World Health Organization (WHO), DOEs not automatically imply a risk to human health. Consequently, the United States Environmental Protection Agency's (USEPA) target hazard quotient (THQ) technique

can also be utilized to assess potential health concerns associated with long-term exposure to heavy metals [22].

3.1. Arsenic

Arsenic has been classified as a confirmed carcinogenic substance to humans by the International Agency for Research on Cancer (IARC). A measurable amount of arsenic in the human body is required to categorize human carcinogenic levels. Multiple human populations have an increase in lung cancer mortality primarily owing to inhalation, an increase in mortality from internal organ malignancies (liver, kidney, lung and bladder), and in the incidence of skin cancer, especially due to drinking water containing arsenic [50]. The global impacts of arsenic level are projected in Fig. 3 with the level of affections.

The International Agency for Research on Cancer has classified inorganic arsenic as carcinogenic to humans



Fig. 2. Illegal industry discharges the accumulation of COPCs [15].

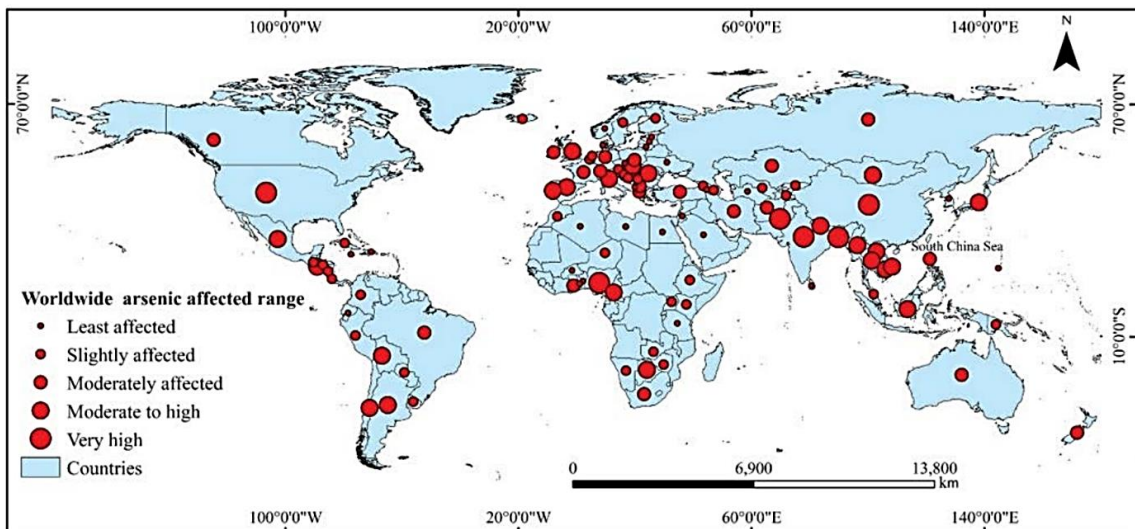


Fig. 3. Arsenic seems to have a global impact, as indicated by the scale of the plots [21].

ARTICLE ON CONTAMINATED LAND

4

M.F.A. Jalil et al. / Desalination and Water Treatment (2022) 1–11

Group 1 and carcinogenicity Category A [51]. Organic arsenic is classed as a “possibly carcinogenic to humans” chemical [52]. Arsenic is a metalloid belonging to the periodic table’s group VA and period 4 that can be mined from ores that primarily containing copper, lead, zinc, silver, and gold. It occurs naturally in a range of minerals, most notably as As_2O_3 , and is found in a variety of minerals as As_2O_3 . Additionally, it also is found in coal ash remains.

3.2. Mercury

Mercury is a highly lethal and hazardous heavy metal. It may emerge from a variety of natural and man-made sources. Mercury appears in three forms in the environment: elemental, inorganic and organic (methylmercury) [53]. The toxicity of the substance is determined by its availability in the environment and its reaction with human exposure [54]. Mercury is transported in a complex cycle through land, water, and the atmosphere [55]. Numerous natural and anthropogenic activities are mercury sources, including the presence of mercury in cinnabar, natural weathering of rocks, episodic mercury release from volcanoes, small-scale gold mining, coal-fired power plants burning medical waste, numerous daily-use devices in household activities, and fungicide. Mercury exposure occurs when people consume shellfish, fish containing methylmercury, or inhale mercury released accidentally when a substance or gadget degrades [56]. Mercury can react with inorganic salts such as chlorine, sulfur, and other elements to generate inorganic salts [57].

The USEPA has established guidelines to enhance consistency in the implementation and communication of risk assessments [58]. These criteria cover to the assessment of developmental effects, germ cell mutagenicity, carcinogenicity, and the exposure and consequences of chemical combinations. The guidelines for evaluating reproductive effects are already in place, as well as the guidelines for evaluating effects on other organ systems are being developed. Despite the existence of recommendations for assessing a variety of end goals, until recently, the emphasis was on carcinogenicity, sometimes at the expense of other critical types of toxicity [59,60]. Mercury is a member of the same periodic table family as zinc and cadmium. It is the only liquid metal at STP.

Mercury has natural two forms: as a dimeric cation mercury (I) (Hg^{2+} mercuric ion) and as mercury (II) (Hg^+ mercuric ion). Mercury (II) is the principal pollutant which poses a significant risk to humans due to its affinity for amino acids [61]. Mercury comes in various forms that can expose human health. Organic or high mercury has been discovered to induce a variety of neurological and cardiovascular problems and, in certain cases, reproductive and immune system dysfunction [62].

The nervous system is one of the most sensitive organs exposed to methylmercury and metallic mercury fumes, which lead direct cell damage. Entering the brain, methylmercury can provoke the neurological system to malfunction. Increased exposure to all types of mercury can permanently injury the brain and kidneys, along with affect a developing fetus in the womb [63].

3.3. Others

Heavy metals are found in soils in a variety of chemical forms which is directly related to their mobility and biological availability. Water contamination with heavy metals is practically unavoidable in certain areas due to natural causes (rock erosion) and anthropogenic activity (industries, agriculture and households) [64]. Wastewaters from mining, the electric sector, dye manufacturing, and chemical laboratories frequently contain the significant amounts of heavy metals such as cadmium (Cd), copper (Cu), and lead (Pb). Agricultural soils become contaminated with heavy metals as a result of wastewater irrigation that has severe impact on public health [65]. Certain heavy metals, such as Fe, Zn, Cu, and Se, are necessary for humans in certain amounts [7]. However, since they are non-biodegradable, they rapidly accumulate to dangerous levels in biological media and have negative repercussions in animals, plants, and humans in a certain excessive concentration [66]. The negative impacts of metal contents in human internal organs and organ systems are determined in term of the percentage of health risks as seen in Table 1.

4. Classification of chemical’s carcinogenic

The USEPA in 1986 released guidelines with categories and requirements on the classification of chemicals with carcinogenic potential based on a weighted evidence scheme, as seen in Table 2 [67].

5. Contaminated land management standard in Malaysia

Under the contaminated land management framework, there are two types of land classifications specified. It is either by establishing contact with the responsible party or land with no known guilty party or government-owned land with contamination that is not cleanable under current conditions due to a lack of resources. Only landfill, former mining property, agricultural land, dumping sites, and orphan land are exempt from this rule [8]. The flow of standard process is illustrated in Fig. 4.

5.1. Site screening levels

The Malaysian Recommended site screening levels were developed using the USEPA site screening levels to assess subsurface contamination that identified to pose an unacceptable human health risk [8]. The degrees of site screening will aid in the assessment and management of hazardous sites in Malaysia. The site screening levels are the criterion for determining if a piece of land is polluted, determining the need for remediation, and developing remediation objectives, such as target clean-up concentrations of COPCs at contaminated sites [68]. Previous study assessed the ecological and health risks of several metals, such as Cd, Cu, Ni, Zn, Cd, and Ni, in the top soils of different land, in Peninsular Malaysia [69]. The study showed that the ranges of the metals in the soils (mg/kg, dry weight) of this study were 0.24–12.43 for Cd (mean: 1.94), 4.66–2,363 for Cu (mean: 228), 2,576–116,344 for Fe (mean: 32,618), 2.38–75.67 for Ni (mean:

ARTICLE ON CONTAMINATED LAND

M.F.A. Jalil et al. / Desalination and Water Treatment (2022) 1–11

5

Table 1
Hazard index for heavy metals that have a significant influence on the organs and human systems [12]

Critical organs/system	Group	HI _{max}	HI _{mean}	Contribution made by specific metals into risk, %					
				Zn	Cd	Cr	Cu	Ni	Pb
Central nervous system	Adults	1.7	0.24						100
	Children	2.4	0.34						100
Cardiovascular system	Adults	22.5	3.21					100	
	Children	31.5	4.50					100	
Digestive system	Adults	8.9	1.27		80.90				9.10
	Children	12.5	1.78		80.90				9.10
Kidneys	Adults	33.61	4.79			0.09	32.97	66.94	
	Children	47.14	6.74			0.08	33.16	66.76	
Blood	Adults	14.11	1.23	16.01	83.63	0.36			
	Children	22.81	1.71	15.91	83.73	0.36			
Development	Adults	40.29	3.46					92.93	7.07
	Children	64.70	4.84					92.97	7.03
Reproductive system	Adults	1.7	0.24						100
	Children	2.4	0.34						100

Note: The term of HI refers to the Hazard Index, established to assess potential health hazards to consumers as a result of exposure to multiple potentially harmful substances.

Table 2
List of categories for chemicals with carcinogenic potential [67]

Category	Group	Requirement
Human carcinogen	A	Epidemiology studies have found enough evidence to indicate a causal link between exposure to the chemical and human cancer
Probable human carcinogen	B	In animals, there is sufficient evidence carcinogenicity, but in humans, there is either minimal (Group B1) or inadequate (Group B2) evidence
Potentially carcinogenic to humans	C	In the absence of human data, there is scant evidence of carcinogenicity in animals
Not classified as carcinogenic to humans	D	There is insufficient evidence of carcinogenicity in humans and animals, or no data is available
Evidence of Non-carcinogenicity in humans	E	In at least two adequate animal tests in separate species, as well as in both epidemiology and animal investigations, there is no evidence of carcinogenicity

16.04), 7.22–969 for Pb (mean: 115) and 11.03–3,820 for Zn (mean: 512) and there was no serious impact on children’s and adults’ health from the six land uses from Peninsular Malaysia.

5.2. Risk-based site management

The process of risk assessment is used to quantify the extent and likelihood of negative health and environmental effects, as well as other problems, linked with exposure to potentially dangerous substances. Environmental professionals can use risk assessment frameworks and tools to make informed decisions about the type and severity of risks associated with chemical emissions, as well as the best ways to manage those risks. Over the last three decades, scientific concepts and procedures that form the basis of such tools have been developed and widely adopted in several countries. These scientific concepts and procedures

released risk assessment recommendations and developed international drinking water quality criteria using a risk-based approach [27].

5.3. Conceptual Site Models

A Conceptual Site Model (CSM) is used to underpin environmental risk assessment and management by outlining realistic processes through which chemicals can migrate through the ecosystem and potentially harm receptors [70]. The CSM is most typically used to organize site investigation operations (such as COPCS selection or sample collection and analysis), and then, if unacceptable risks are discovered, it is used to lead the development of a suitable risk management strategy. For example, a comparison of mass reduction-based remediation vs containment, institutional or administrative controls to remove each whole Source–Pathway–Receptor relationship.

ARTICLE ON CONTAMINATED LAND

6

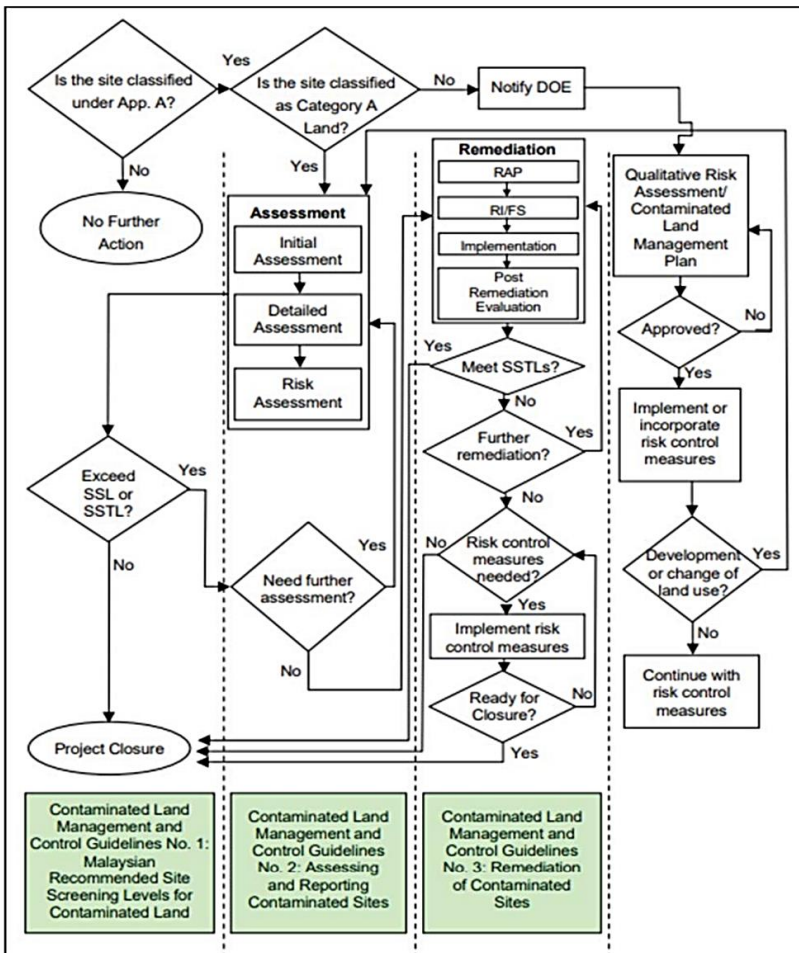
M.F.A. Jilil et al. / Desalination and Water Treatment (2022) 1–11

Fig. 4. Flowchart for the overall framework for contaminated land management.

A CSM is a written or graphic description of an environmental system and the biological, physical, and chemical processes that determine the movement of pollutants from sources to environmental receptors in the system [71]. A system diagram that shows pollutant sources, routes of exposure (pathways), and the receptors that are impacted by contaminants travel along those pathways. ‘Source-pathway-target (receptor) conceptualization’ is a simple way of putting it. In addition, it serves as a communication tool for members of the site assessment team, discipline experts, consultants and clients, clients and regulators and stakeholder groups. A decent test of a CSM is whether you would grasp essentially what is going on at the site if you were given the CSM [72].

5.4. Remediation of contaminated soils

Any soil remediation approach should become its main goal where the creation of a system that is safe for people and the environment, such as biochar application, microbiomes technique, and advanced oxidation process. Since

there are no statutory requirements as well as where standards are advisory, remediation is frequently susceptible to various legislative criteria and may also be guided by assessments of human health and environmental concerns. Typically, regulatory bodies will authorize remediation schemes that focus on reducing metal bioavailability only if lower metal bioavailability is associated with decreased risk and the bioavailability reductions are proven to be long-term. The physical and chemical characteristics of the heavy metal contamination in soil heavily influence the technique of heavy metal remediation [47]. In general, remediation technologies applied for contaminated land in Malaysia is shown in Fig. 5 [73].

The applied technologies include soil vapour extraction, bio-remediation, remedial natural attenuation, containment, solidification and stabilization, contaminated soil excavation, and phytoremediation. It is noted that the predominant industry that conducted contaminated land remediation in Malaysia is the petroleum-based industry. Research on the development of effective methods for contaminated land remediation in Malaysia is still

ARTICLE ON CONTAMINATED LAND

M.F.A. Jalil et al. / Desalination and Water Treatment (2022) 1–11

7

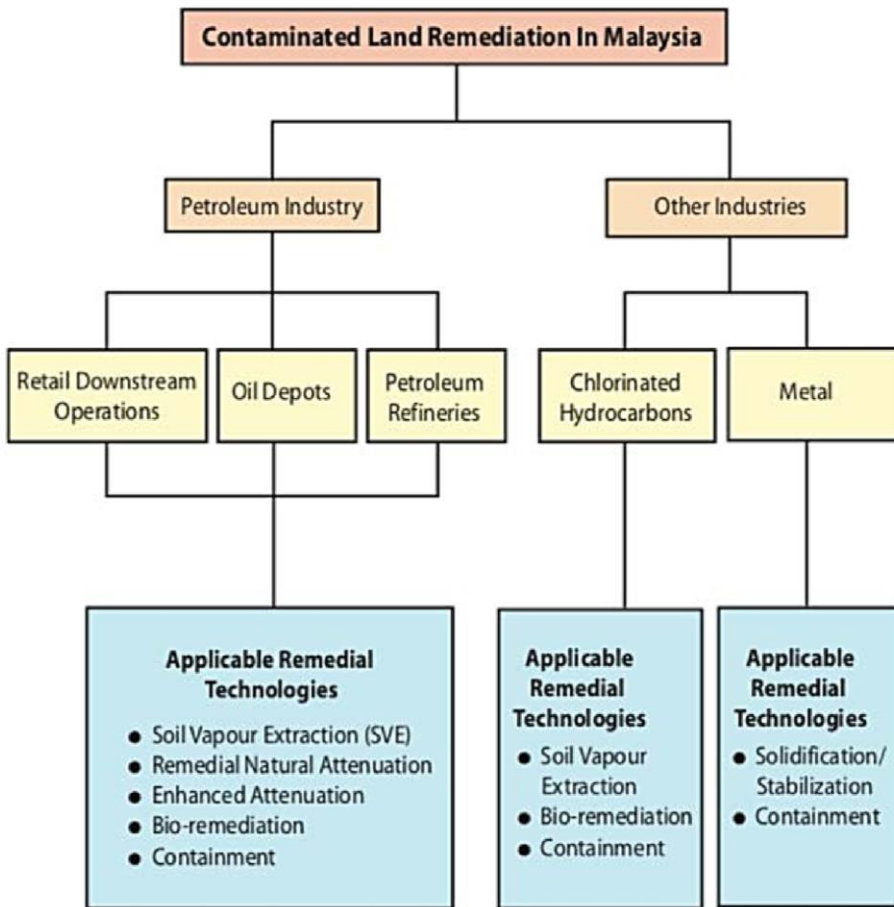


Fig. 5. Remediation technologies applied for contaminated land in Malaysia [73].

continuously conducted. For instance, the use of sugarcane bagasse (SCB) can be used for contaminated soil by Pb [74]. Alternatively, coconut flakes and plantation of *Centella asiatica* and *Chrysopogon zizanioides* can also be used not only for soil contamination but also for soil erosion control [75]. Electrokinetic-Bioremediation (Ek-Bio) by using by using 50 V/m of electrical gradient and *Lysinibacillus fusiformis* bacteria was found to be effective for reduction of approximately up to 78% of mercury concentration for the landfill soil [76].

5.5. Dose-response assessment

Site screening levels (SSLs) are the soil and groundwater criteria, or concentrations adopted under the contaminated land management framework that define if a land has a potential soil and groundwater contamination concern. Natural metal concentrations in soil and groundwater, on the other hand, can be caused by natural mineralization, weathering, or any other naturally occurring chemical processes of minerals that are accommodated in the soil matrix [8].

5.6. Selection of an appropriate set of COPCs

Indicator chemicals, also known as COPCs, are often chosen as the first step in a site-specific risk assessment to describe the site and focus assessment activities on the compounds that may pose the greatest potential harm to humans. In most cases, all detected chemicals are included in the original list used to choose COPCs. Only a few pollutants were quantitatively tested in surface waste material at WSS due to project financial constraints, and only these limited data could be used to determine risk. As a result, based on archival data on the chemical composition of waste on the site, indicator compounds were proposed for this risk assessment. Cadmium, copper, iron, manganese, lead, and zinc were among the heavy metals found. The choice of COPCs is a critical first stage in the site assessment and risk management process, as it ensures that the risk assessment detects any unacceptable risks and allows the assessor to successfully manage such risks. COPCs are the specific target analytes that need to be investigated in affected environmental media like soil, groundwater, surface water (if used for potable water supply), or soil gas

ARTICLE ON CONTAMINATED LAND

Table 3
Standard limit of SSLs analysis for each of related COPCs [8]

Analyte	CAS No.	Residential soil	Key	Industrial soil	Key	Residential air	Key	Industrial air	Key	Ground-water	Key
		mg/kg		mg/kg		ug/m ³		ug/m ³		ug/L	
Arsenic	7440-38-2	6.8 × 10 ⁻¹	C**R	3.0 × 10 ¹	c**R	6.5 × 10 ⁻⁴	C**	6.6 × 10 ⁻³	n	5.2 × 10 ⁻²	c*
Cadmium	7440-43-9					1.0 × 10 ⁻³	n	4.4 × 10 ⁻³	n	9.2 × 10 ⁻¹	n
Chromium	18540-29-9	3.0 × 10 ⁻¹	c*	6.3 × 10 ¹	c**	1.2 × 10 ⁻⁵	c	1.5 × 10 ⁻³	c*	3.5 × 10 ⁻²	c
Copper	7440-50-8	3.1 × 10 ²	n	4.7 × 10 ³	n					8.0 × 10 ¹	n
Lead acetate	301-04-2	1.9	c	8.2 × 10 ¹	c	3.5 × 10 ⁻²	c	1.5	c	2.8 × 10 ⁻¹	c
Lead chromate	7758-97-6	3.0 × 10 ¹	c	6.2 × 10 ¹	c*	6.8 × 10 ⁻⁶	c	8.2 × 10 ⁻⁴	c	4.1 × 10 ⁻²	c
Lead compound	7439-92-1	4.0 × 10 ²		8.0 × 10 ²	L	1.5 × 10 ⁻¹	L			1.5 × 10 ¹	L
Lead phosphate	7446-27-7	8.2 × 10 ¹	c	3.8 × 10 ³	c*	2.3 × 10 ⁻¹	c	1.0 × 10 ¹	c	9.1	c
Lead subacetate	1335-32-6	6.4 × 10 ¹	c	2.7 × 10 ³	c	2.3 × 10 ⁻¹	c	1.0 × 10 ¹	c	9.2	c
Mercury	439-97-6	9.4 × 10 ⁻¹	n	4.0	ns	3.1 × 10 ⁻²	n	1.3 × 10 ⁻¹	n	6.3 × 10 ⁻²	n
Mercury chloride	7487-94-7	2.3	n	3.5 × 10 ¹	n	3.1 × 10 ⁻²	n	1.3 × 10 ⁻¹	n	5.7 × 10 ⁻¹	n
Methylmercury	22967-92-6	7.8 × 10 ⁻¹	n	1.2 × 10 ¹	n					2.0 × 10 ⁻¹	n
Nickel acetate	373-02-4	6.7 × 10 ¹	n	8.1 × 10 ²	n	1.5 × 10 ⁻³	n	6.1 × 10 ⁻³	n	2.2 × 10 ¹	n
Nickel carbonate	333-67-3	6.7 × 10 ¹	n	8.1 × 10 ²	n	1.5 × 10 ⁻³	n	6.1 × 10 ⁻³	n	2.2 × 10 ¹	n
Nickel carbonyl	13463-39-3	8.2 × 10 ¹	n	1.1 × 10 ³	n	1.5 × 10 ⁻³	n	6.1 × 10 ⁻³	n	2.9 × 10 ⁻³	n
Nickel hydroxide	12054-48-7	8.2 × 10 ¹	n	1.1 × 10 ³	n	1.5 × 10 ⁻³	n	6.1 × 10 ⁻³	n	2.0 × 10 ¹	n
Nickel oxide	1313-99-1	8.4 × 10 ¹	n	1.2 × 10 ³	n	2.1 × 10 ⁻³	n	8.8 × 10 ⁻³	n	2.0 × 10 ¹	n
Nickel refinery dust	N/A	8.2 × 10 ¹	n	1.1 × 10 ³	n	1.5 × 10 ⁻³	n	6.1 × 10 ⁻³	n	2.2 × 10 ¹	n
Nickel salt	7440-02-0	1.5 × 10 ²	n	2.2 × 10 ³	n	9.4 × 10 ⁻³	n	3.9 × 10 ⁻²	n	3.9 × 10 ¹	n
Nickel subsulfide	12035-72-2	4.1 × 10 ⁻¹	c	1.9 × 10 ¹	c*	1.5 × 10 ⁻³	n	6.1 × 10 ⁻³	n	4.5 × 10 ⁻²	c
Zinc	7440-66-6	2.3 × 10 ³	n	3.5 × 10 ⁴	n					6.0 × 10 ²	n
Zinc phosphide	1314-84-7	2.3	n	3.5 × 10 ¹	ns					6.0 × 10 ⁻¹	N

(via vapor intrusion or exposure in confined spaces) to adequately manage risks to human health and the environment. Table 3 shows generics SSLs summary for related COPCs obtained from DOE analysis. COPCs selection should also consider the possibility of corrective treatment to adequately limit any actual risks and inform remedial system design. COPCs should then be assessed as part of a risk assessment to identify any unacceptable hazards to human health or the environment, as well as to support an effective risk management approach [77].

6. Conclusions

The most important clinically relevant finding was the system used by the government of Malaysia that related to COPCs problem in contaminated land. Effective law enforcement tactics must be implemented promptly to combat the illegal disposal of toxic waste. Secondly, a framework for the management of contaminated land must be devised and maintained. This is because toxic waste disposal activities have become increasingly prevalent in recent years. Some take place in industrial settings, while others take place in more rural places. With the year-over-year increase in occurrences, responsible enforcement authorities must redouble their efforts and enhance their overall oversight and innovation capacity. Understanding the nature, composition, and possible hazards of toxic

heavy metals in contaminated soils is critical for successful treatment methods selection. Restoration of heavy metal-contaminated soil is important to mitigate associated dangers, make land resources available for agricultural growth, boost food security, and address communal land concerns. While immobilization, soil washing, and phytoremediation are widely promoted as some of the most effective readily available treatments for removing heavy metals from soils, their effectiveness has been proved exclusively in industrialized countries. These technologies are recommended for field use and commercialization in underdeveloped countries where agriculture, urbanization, and industry have wreaked havoc on the environment.

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Conflicts of interest

The authors declare no conflict of interest.

ARTICLE ON CONTAMINATED LAND

M.F.A. Jalil et al. / Desalination and Water Treatment (2022) 1–11

9

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10

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ARTICLE ON CONTAMINATED LAND*M.F.A. Jalil et al. / Desalination and Water Treatment (2022) 1–11*

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TAKLIMAT DIMENSI BARU SISTEM GEOSPAS DAN APLIKASI PORTAL GIS

APRIL 2023 - Seksyen Geospasial, Bahagian Teknologi Maklumat telah selesai menaiktaraf Sistem GeoSpAS Versi 4.0 <https://mygeospas.doe.gov.my> dan dalam proses hebahan penggunaan kepada seluruh pegawai JAS. Pada peringkat awal, beberapa siri latihan telah diberikan kepada penyelaras GIS negeri oleh syarikat penyedia perkhidmatan.

Bagi memastikan setiap pegawai JAS tidak ketinggalan dalam mengoptimumkan penggunaan sistem ini, Seksyen Geospasial telah mengaturkan siri taklimat Pengenalan Sistem GeoSpAS V4.0 ke setiap JAS Negeri. Turut serta dalam siri taklimat ini ialah wakil dari ESRI Malaysia yang akan menerangkan fungsi aplikasi portal GIS.

Sepanjang bulan April hingga Julai 2023, sebanyak enam (6) taklimat telah dilaksanakan di enam (6) buah JAS negeri iaitu JAS Pahang (15 Mei 2023), JAS Terengganu (16 Mei 2023), JAS WP Kuala Lumpur (22 Mei 2023), JAS Melaka (24 Mei 2023), JAS Johor (25 Mei 2023) dan JAS Kelantan (20 Jun 2023).



Taklimat di JAS Pahang



Taklimat di JAS Terengganu



Taklimat di JAS Johor

**Taklimat di JAS WP Kuala Lumpur****Taklimat di JAS Melaka****Taklimat di JAS Kelantan**

Taklimat ini merangkumi penerangan mengenai perbezaan sistem GeoSpAS sedia ada dan baru, kategori pengguna dan jenis aplikasi yang sedia untuk digunakan beserta fungsi-fungsinya seperti Modul Umum, Story Map, Aplikasi JAS Negeri dan lain-lain.

Selaras dengan kemajuan teknologi, penggunaan dron yang semakin sinonim dengan Jabatan telah menyumbang kepada wujudnya penghasilan data raster. Untuk itu, Aplikasi Imej Raster telah diwujudkan dalam sistem GeoSpAS dalam menyeragamkan pengumpulan maklumat cerapan data dron.

Dengan adanya taklimat ini diharap semua pegawai JAS akan memanfaatkan semua aplikasi yang terdapat di dalam sistem GeoSpAS dalam menyempurnakan tugas Jabatan seperti penguatkuasaan, penilaian dan pengawasan.

MESYUARAT MENTERI-MENTERI ALAM SEKITAR DAN AHLI-AHLI MAJLIS MESYUARAT KERAJAAN NEGERI YANG BERTANGGUNGJAWAB MENGENAI ALAM SEKITAR (MEXCOE) BIL. 1/2023

10 APRIL 2023, SELANGOR - Mesyuarat Menteri-Menteri Alam Sekitar dan Ahli-ahli Majlis Mesyuarat Kerajaan Negeri yang Bertanggungjawab Mengenai Alam Sekitar (MEXCOE) Bil. 1/2023 pada 10 April 2023 (Isnin) berlangsung di Cyberview Resort & Spa, Cyberjaya Selangor.

Mesyuarat dipengerusikan oleh YB Tuan Nik Nazmi bin Nik Ahmad, Menteri Sumber Asli, Alam Sekitar dan Perubahan Iklim (NRECC). Mesyuarat MEXCOE dihadiri oleh Menteri-menteri dan Ahli Mesyuarat Kerajaan Negeri yang memegang portfolio berkaitan alam sekitar dari seluruh negara serta pegawai-pegawai Kementerian/ Jabatan/ Agensi yang berkaitan alam sekitar di peringkat Kerajaan Persekutuan dan Kerajaan Negeri.



Mesyuarat MEXCOE Bil. 1/2023 telah dihadiri oleh Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar (KPAS), Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi), Puan Mashitah binti Darus Timbalan Ketua Pengarah (Pembangunan), dan turut hadir wakil pengarah-pengarah daripada Bahagian Penguatkuasa, Bahagian Penilaian, Bahagian Komunikasi Strategik, Bahagian Air dan Marin, Bahagian Bahan Berbahaya, EIMAS dan JAS Negeri.

JAS telah membentangkan sebanyak dua (2) kertas pertimbangan dan satu (1) kertas makluman.



Kertas pertimbangan Pemantapan Perancangan dan Pelaksanaan Projek Pembangunan ke arah Malaysia Lestari telah dibentangkan oleh Puan Rohimah binti Ayub, Pengarah, Bahagian Penilaian, JAS. Kertas ini bertujuan meningkatkan kerjasama dalam mengawal pembangunan pada peringkat perancangan dan pelaksanaan di samping pemantauan dan penguatkuasaan yang berterusan oleh JAS serta pihak-pihak berkepentingan iaitu Kerajaan Negeri dan agensi lain untuk memastikan pembangunan Malaysia lestari.

Manakala, Kertas pertimbangan Pemantapan Kawalan Pencemaran ke arah Meningkatkan Kualiti Alam Sekitar telah dibentangkan oleh Tuan Haji Shafe'ee bin Yasin, Pengarah, Bahagian Penguatkuasa, JAS. Kertas ini bertujuan memperkasakan kerjasama Kerajaan Negeri dan agensi lain dengan JAS bagi menangani isu pencemaran alam sekitar terutamanya yang di luar bidang kuasa JAS.

Selain itu, Puan Hajah Azuri Azizah binti Haji Saedon, Pengarah, Bahagian Komunikasi Strategik JAS turut membentangkan satu (1) lagi kertas makluman iaitu berkaitan dengan Program Sambutan Hari Alam Sekitar Negara (HASN) 2023 yang akan disambut pada 21 Oktober 2023. Kertas ini bertujuan mempertingkatkan sokongan dan kerjasama Kerajaan Negeri dan agensi lain bagi menjadikan Program Sambutan HASN sebagai program sambutan tahunan dalam takwim di peringkat Kerajaan Negeri. Tambahan juga, bagi mengeratkan penglibatan serta komitmen berterusan dengan Kerajaan Negeri dan agensi lain dalam memastikan usaha kelestarian alam sekitar secara kolektif dan holistik dapat direalisasikan.



KOLOKIUUM “AERIAL IMPACT ASSESMENT (AIA) DAN IMMEDIATE REMEDIAL ACTION PLAN (IRAP) BAGI PEMBANGUNAN DI KAWASAN CERUN”

11 APRIL 2023, PUTRAJAYA - Bahagian Penilaian telah menganjurkan satu sesi kolokium yang bertajuk “Aerial Impact Assesment (AIA) dan Immediate Remedial Action Plan (IRAP) Bagi Pembangunan Di Kawasan Cerun” secara dalam talian. Penceramah utama kolokium tersebut adalah terdiri daripada Tuan Haji Rohimi bin Harun, Ketua Penolong Pengarah daripada Seksyen Penguatkuasaan EIA, Bahagian Penilaian manakala penceramah jemputan pula adalah Ir. Dr. Tew Kia Hui yang merupakan salah seorang jururunding yang pakar berhubung hakisan tanah di Malaysia dan juga di Australia.

Kolokium tersebut adalah terbuka kepada semua pegawai Jabatan Alam Sekitar (JAS) Ibu Pejabat dan Negeri bagi menghadirinya. Seramai 65 orang pegawai JAS terutamanya Pegawai Penguatkuasaan EIA telah hadir secara dalam talian bagi menambahkan lagi pengetahuan masing-masing terutamanya berhubung tindakan remedi bagi pembangunan di kawasan cerun.

Tujuan utama kolokium ini diadakan adalah untuk memberi pemahaman kepada semua pegawai JAS berhubung Pelaksanaan Kajian Impak Dari Udara (*Aerial Impact Assessment, AIA*) Dan Pelan Tindakan Pembaikpulihan Segera (*Immediate Remedial Action Plan, IRAP*) Bagi Kerja-Kerja Remedi Terhadap Aktiviti-Aktiviti Yang Tertakluk Di Bawah Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan)(Penilaian Kesan Kepada Alam Sekeliling) 2015.

Berikutan terdapatnya aktiviti-aktiviti pembukaan tanah/ pemotongan bukit/ penggondolan tapak yang dilakukan oleh Penggerak Projek secara haram atau tidak mengikut syarat-syarat kelulusan Laporan EIA, maka JAS perlu mengambil tindakan penguatkuasaan segera bagi memastikan kesan banjir, hakisan dan kelodakan adalah terkawal dan aktiviti-aktiviti yang telah dijalankan tersebut tidak menyebabkan kerosakan dan pencemaran kepada alam sekitar dan sistem sungai yang berdekatan.

Sesi Kolokium bersama penceramah Tuan Haji Rohimi bin Harun, Ketua Penolong Pengarah, Bahagian Penilaian



Sehubungan dengan itu, satu pendekatan *smart enforcement* melalui Notis Arahan bagi menjalankan kajian Penilaian Impak Dari Udara (*Aerial Impact Assessment, AIA*) yang menggunakan teknologi dron dan Pelan Tindakan Pembaikpulihan Segera (*Immediate Remedial Action Plan, IRAP*) telah diperkenalkan di bawah Seksyen 31(1)(e) dan (g), Akta Kualiti Alam Sekeliling 1974.

Pendekatan ini adalah bertujuan untuk mendapatkan gambaran sebenar dan terkini keadaan gunatanah, topografi dan kecuraman cerun di tapak projek. Maklumat ini akan digunapakai untuk penilaian JAS bagi pelaksanaan syor remedi.

Semua pegawai JAS yang menghadiri sesi kolokium ini juga diberi pendedahan berkenaan rangka kerja untuk penyediaan dokumen penguatkuasaan di bawah Notis Arahan dan keperluan melaksanakan pemantauan secara berterusan terhadap pematuhan syarat-syarat kelulusan Laporan EIA.

Sesi Kolokium bersama penceramah jemputan Ir. Dr. Tew Kia Hui

LATARBELAKANG KEPERLUAN AIA & IRAP

Apakah sebenarnya dokumen AIA & IRAP ?

- **Penilaian Impak Dari Udara (*Aerial Impact Assessment – AIA*) adalah penilaian menggunakan dron (UAV) dengan pemakaian teknologi terkini LiDAR (*Light Detection And Ranging*) dan RGB (*Photogrammetry*) untuk kerja-kerja pemetaan dan penilaian impak dari udara secara khusus untuk menilai tahap dan lokasi pencemaran di tapak tercemar.**
- **Pelan Tindakan Pembaikpulihan Segera (*Immediate Remedial Action Plan – IRAP*) adalah pelan tindakan segera bagi membaikpulih keadaan tapak yang tercemar supaya kesan banjir, hakisan dan kelodakan dapat dikawal di tapak tersebut dan tidak menyebabkan pencemaran kepada alam sekitar dan sistem sungai yang berdekatan.**



PROGRAM LAWATAN KERJA KE STESEN PENGAWASAN KUALITI AIR MARIN MANUAL DI NEGERI JOHOR DI BAWAH PROGRAM PENGAWASAN KUALITI ALAM SEKITAR (EQMP)

11 APRIL 2023, JOHOR - Bahagian Air dan Marin, Jabatan Alam Sekitar (JAS) Ibu Pejabat telah mengadakan Program Lawatan Kerja Ke Stesen Pengawasan Kualiti Air Marin Manual di Negeri Johor di bawah Program Pengawasan Kualiti Alam Sekitar (EQMP) dari 11 hingga 13 April 2023 dengan kerjasama Seksyen Kawalselia Konsesi dan Pakar Scieno Transwater Sdn Bhd. Program tersebut diketuai oleh YBrs. Dr Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi) dan juga turut disertai oleh YBrs. Encik Rosli bin Osman, Pengarah Bahagian Air dan Marin, JAS Ibu Pejabat, YBrs. Dr. Mohd Famey bin Yusoff, Pengarah JAS Negeri Johor, wakil dari Bahagian Penilaian, wakil dari JAS Negeri Johor serta pegawai-pegawai dari Bahagian Air dan Marin.

Tujuan program lawatan tersebut diadakan adalah sebagai tinjauan teknikal di Stesen Pengawasan Kualiti Air Marin Manual di bawah Program EQMP serta mempelajari mengenai persampelan kualiti air marin di lapangan.



PROGRAM "PLASTIC BUSTERS - HINDARI PLASTIK SEKALI GUNA" SEMPENA HARI BUMI 2023 BAZAR RAMADAN PUTRAJAYA

13 APRIL 2023, PUTRAJAYA - Bersempena Hari Bumi 2023, Bahagian Komunikasi Strategik Jabatan Alam Sekitar (JAS) telah menganjurkan Program *Plastic Busters* bertempat di Bazar Ramadhan Putrajaya.

Objektif program adalah untuk meningkatkan kesedaran masyarakat dalam mengurangkan penggunaan plastik sekali guna bagi memacu agenda pelestarian alam sekitar. Ianya juga sebahagian daripada konsep kepenggunaan lestari atau gaya hidup lestari yang cuba diterapkan di kalangan masyarakat Malaysia.

Pelbagai aktiviti dijalankan pada program kali ini seperti agihan beg kitar semula kepada pengunjung Bazar Ramadhan dan pemberian kuih Tepung Pelita percuma kepada pengunjung yang membawa bekas makanan sendiri sumbangan dari youtuber iChang RM di mana pemberian ini diserahkan sendiri oleh beliau.

JAS juga amat berharap kempen ini dapat memberi kesedaran betapa pentingnya untuk mengelakkan penggunaan plastik sekali guna dan mengalakkan penggunaan bekas makanan yang di bawa sendiri ketika membeli makanan di bazar atau tempat lain.

Semoga inisiatif ini berjaya memacu negara dan rakyat Malaysia ke arah gaya hidup yang lebih lestari dan bertanggungjawab terhadap alam sekitar kerana Alam Sekitar Tanggungjawab Bersama.



PROGRAM WORLD #QURAN HOUR 2023@JAS PERINGKAT JABATAN ALAM SEKITAR

13 APRIL 2023, PUTRAJAYA – Jabatan Alam Sekitar telah mengadakan Program World#QuranHour2023@JAS dibawah anjuran Perpustakaan Enviro Digital@JAS secara hibrid iaitu kombinasi fizikal dan dalam talian. Ia dijalankan secara serentak di JAS seluruh negara.

Pemilihan Surah Al-Insan bagi program World#QuranHour hari ini boleh dijadikan panduan dan ikhtibar kepada masyarakat sekaligus mengangkat Al-Quran di bulan Ramadan untuk menjadi sebahagian ejen mengajak hati yang dekat dengan kitab suci itu untuk terus membaca dan menghayati mesej dalam kitab memandu kehidupan umat Islam.

Objektif program WORLD#QURAN HOUR 2023@JAS adalah seperti berikut:-

1. Menggalakkan pegawai JAS untuk hadir ke perpustakaan JAS bagi tujuan bermanfaat;
2. Kesatuan hati semua pegawai JAS untuk bersinergi dalam membawakan Misi Al-Quran, Surah Al-Insan, untuk memanusiawikan ummah dengan 11 karakter insan Al-AbRAR;
3. Menggalakkan pegawai JAS untuk membaca Al-Quran; dan
4. Meningkatkan amalan nilai murni, etika dan integriti pegawai serta kakitangan JAS.

Setinggi-tinggi penghargaan dan ucapan terima kasih kepada YBrs Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar yang telah menyampaikan ucapan aluan dan seterusnya bacaan dipimpin oleh Al Fadhil Ustaz Halmy bin Sirat. Turut hadir sama dalam program adalah Puan Hajah Azuri Azizah binti Haji Saedon, Pengarah Bahagian Komunikasi Strategik, Pengarah-pengarah Bahagian/Negeri dan seluruh warga Jabatan Alam Sekitar.



Hari Penguatkuasa JAS 2023

15 April 2023

“Pemeriksaan Penguatkuasaan dan Pematuhan AKAS 1974”



KEMENTERIAN SUMBER ASLI, ALAM SEKITAR
DAN PERUBAHAN IKLIM
JABATAN ALAM SEKITAR

HARI PENGUATKUASA JAS

#Pemeriksaan Penguatkuasaan dan Pematuhan AKAS 1974

15 APRIL 2023

“ALAM SEKITAR
TANGGUNGJAWAB BERSAMA”

IKHLAS DARIPADA
WAN ABDUL LATIFF BIN WAN JAFFAR
KETUA PENGARAH ALAM SEKITAR



JABATAN ALAM SEKITAR

“ ALAM SEKITAR TANGGUNGJAWAB BERSAMA ”

HARI PENGUATKUASA JAS 2023

Hari Penguatkuasa Jabatan Alam Sekitar disambut pada 15hb April setiap tahun bersempena dengan berkuatkuasanya Akta Kualiti Alam Sekeliling 1974 (AKAS 1974) dan penubuhan Bahagian Alam Sekitar, Jabatan Alam Sekitar pada tahun 1975. Ianya bertujuan untuk menyuntik semangat dan menghargai pengorbanan seluruh anggota barisan hadapan JAS yang terlibat secara langsung dalam operasi penguatkuasaan, pemantauan, pendakwaan, pendidikan, komunikasi strategik, libat urus dan lain-lain. Tema Hari Penguatkuasa JAS pada tahun 2023 adalah "Pemeriksaan Penguatkuasaan dan Pematuhan AKAS 1974". Tema ini menekankan betapa pentingnya semua pihak berkepentingan untuk memainkan peranan dalam usaha ke arah pemuliharaan dan pemeliharaan alam sekitar.

Majlis pra-pelancaran bagi Hari Penguatkuasa JAS 2023 telah disempurnakan oleh Yang Berhormat Tuan Nik Nazmi bin Nik Ahmad, Menteri Sumber Asli, Alam Sekitar dan Perubahan Iklim (NRECC) pada 3 April 2023 bertempat di Bilik Mesyuarat Cempaka, Aras 3, Pejabat JAS Ibu Pejabat semasa program lawatan rasmi beliau ke JAS.

“ 15 April 2023 merupakan Hari Penguatkuasa Jabatan Alam Sekitar. Dengan tema “Pemeriksaan Penguatkuasaan dan Pematuhan Akta Kualiti Alam Sekeliling 1974”, ianya amat bertepatan dengan hasrat NRECC untuk **memantapkan fungsi dan peranan Jabatan Alam Sekitar sebagai agensi penguatkuasa dalam memastikan kelestarian alam sekitar tetap terjamin selaras dengan kepesatan arus pembangunan dan perindustrian di Malaysia.**”

Nik Nazmi Nik Ahmad
Menteri Sumber Asli, Alam Sekitar dan Perubahan Iklim

“Alam Sekitar Tanggungjawab Bersama” UKK+ nreccmalaysia

“ Alam sekitar adalah tanggungjawab bersama. Menjadi harapan saya agar konsep ini dapat diterapkan dan dibudayakan dalam setiap tindakan yang kita ambil. **Saya menyeru agar semua anggota masyarakat dapat bersama-sama menyokong usaha dan inisiatif NRECC dan JAS dalam memastikan kelestarian alam sekitar sentiasa dapat dipelihara.**”

Nik Nazmi Nik Ahmad
Menteri Sumber Asli, Alam Sekitar dan Perubahan Iklim

“Alam Sekitar Tanggungjawab Bersama” UKK+ nreccmalaysia

Perutusan YBM NRECC sempena Hari Penguatkuasa JAS 2023



Program Turun Padang Ops Gempur Raya bersama Yang Berhormat Dato' Sri Huang Tion Sii, Timbalan Menteri NRECC

Selain itu, Ops Gempur Raya 2023 telah diaktifkan pada 3 hingga 25 April 2023 di seluruh Negara, dalam usaha mencegah berlakunya insiden-insiden pencemaran alam sekitar khususnya pencemaran air pada musim perayaan Hari Raya Aidilfitri. Operasi tersebut telah melibatkan pemeriksaan ke atas premis industri secara bersasar dan pemantauan udara melalui dron di kawasan tumpuan pencemaran bagi mengesan sebarang aktiviti yang mencurigakan dan berisiko menyebabkan pencemaran alam sekitar. Bersempena dengan Hari Penguatkuasa JAS 2023 tersebut, Program Turun Padang Ops Gempur Raya bersama Yang Berhormat Dato' Sri Huang Tion Sii, Timbalan Menteri NRECC telah diadakan pada 18 April 2023 yang melibatkan pemeriksaan di sebuah premis yang terletak di Kawasan Perindustrian Bangi, Selangor.

Sepanjang Ops Gempur Raya 2023, sebanyak 404 premis dari pelbagai sektor industri telah diperiksa. Sebanyak 211 tindakan undang-undang telah diambil ke atas premis-premis yang gagal mematuhi AKAS 1974 yang merangkumi 112 notis arahan, 60 kompaun berjumlah RM 120,000 dikeluarkan, 19 penahanan operasi kelengkapan dan 20 kes untuk penyediaan kertas siasatan bagi tujuan pendakwaan.

Selain itu, bersempena dengan Hari Penguatkuasa JAS 2023 ini juga, JAS telah memberikan pengurangan kompaun sehingga 50% tertakluk kepada mana-mana kompaun yang dikeluarkan oleh JAS sebelum 15 April 2023 dan belum membuat sebarang rayuan dan bayaran perlu dijelaskan sebelum 15 Mei 2023.



Pelaksanaan Ops Gempur Raya oleh JAS Negeri



MESYUARAT PENYELARASAN PELAKSANAAN PEMBANGUNAN PROGRAM PENCEGAHAN DAN PEMANTAUAN KEBAKARAN TANAH GAMBUT SERTA KAWASAN LAIN BERISIKO KEBAKARAN UNTUK MENGATASI JEREBU BIL. 1/2023

17 APRIL 2023, PUTRAJAYA – Bahagian Udara, Jabatan Alam Sekitar (JAS) telah mengadakan Mesyuarat Penyelarasan Program Pembangunan Program Pencegahan Dan Pemantauan Kebakaran Tanah Gambut Serta Kawasan Lain Berisiko Kebakaran Untuk Mengatasi Jerebu Bil. 1/2023 secara hibrid yang dipengerusikan oleh YBr. Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar. Turut hadir bersama adalah YBr. Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi) dan Tuan Haji Shafe'ee bin Yasin, Pengarah Bahagian Penguatkuasa yang menanggung tugas Pengarah Bahagian Udara. Mesyuarat ini dihadiri oleh wakil dari Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim, JAS Negeri dan Agensi Pelaksana seperti Jabatan Pengairan dan Saliran (JPS), Jabatan Mineral dan Geosains (JMG), Jabatan Perhutanan, Majlis Bandaraya Miri, Lembaga Sumber Asli dan Alam Sekitar Sarawak (NREB), Jabatan Perlindungan Alam Sekitar (JPAS), dan Unit Pengurusan Bencana Negeri Selangor.



Mesyuarat ini juga turut menjemput Jabatan Meteorologi Malaysia bagi menyampaikan taklimat berhubung Keadaan Cuaca Semasa Dan Tinjauan Cuaca Jangka Panjang bagi tempoh April–Sept 2023 yang disampaikan oleh Puan Khaizainani binti Salleh, Pengarah Pusat Iklim Nasional.

Mesyuarat ini diadakan untuk menyelaraskan program/aktiviti dan peruntukan yang disalurkan kepada JAS Negeri dan Agensi Pelaksana seperti JPS, JMG, dan Jabatan Perhutanan bagi tujuan pencegahan dan pemantauan kebakaran.



PROGRAM BICARA KESIHATAN MENTAL (MENTAL HEALTH TALK) : PUNCA DAN CARA MENGATASINYA



17 APRIL 2023, DEWAN BAUDURI, WISMA SUMBER ASLI - Program Bicara Kesihatan Mental ini telah diadakan dengan objektif utama untuk memberikan pendedahan kepada faktor-faktor risiko, rawatan dan cara mengatasi masalah kesihatan mental. Dari sudut yang lebih luas, apakah peranan yang dilakukan seseorang samada sebagai rakan sekerja, ahli keluarga, sahabat dan anggota masyarakat, jika berhadapan dengan individu terdekat yang sedang mempunyai cabaran dalam kesihatan mental.

Program Bicara Kesihatan Mental ini disampaikan oleh YBrs. Dr. Norfaridah. binti Masiran, Pakar Perubatan Keluarga daripada Pejabat Kesihatan Daerah Langkat. Program anjuran Seksyen Sumber Manusia, Bahagian Pentadbiran dan Kewangan ini telah mendapat sambutan yang menggalakkan dengan kehadiran seramai 100 orang warga Jabatan dan sebanyak 250 penyertaan daripada warga JAS seluruh Malaysia (secara atas talian) telah direkodkan.



HARI BUMI 2023

KEMENTERIAN SUMBER ASLI, ALAM SEKITAR
DAN PERUBAHAN IKLIM
JABATAN ALAM SEKITAR

SELAMAT MENYAMBUT
HARI BUMI

22 APRIL 2023

“ INVEST IN OUR PLANET ”

Tulus Ikhlas Daripada
YB Tuan Nik Nazmi Bin Nik Ahmad
Menteri
Sumber Asli, Alam Sekitar
& Perubahan Iklim (NRECC)

JABATAN ALAM SEKITAR

“ ALAM SEKITAR TANGGUNGJAWAB BERSAMA ”

1

Tahukah anda bahawa pada 22 April merupakan tarikh sambutan Hari Bumi. Ianya sambutan tahunan yang diraikan oleh masyarakat dunia sebagai satu bentuk dukungan bagi menggalakkan masyarakat dunia utk bersatu dalam menjaga bumi ini. Sambutan yang diasaskan oleh Sir Gaylord Nelson kini diraikan oleh 192 buah negara di seluruh dunia dan penglibatan hampir 1 bilion masyarakat. Oleh itu, kita sebagai masyarakat prihatin mari kita amalkan perkara-perkara mudah yang kita boleh lakukan dalam kehidupan seharian dan turut sama-sama membantu dalam menyokong usaha masyarakat dunia melestarikan bumi ini.

Seluruh warga JAS mengucapkan Selamat Hari Bumi 2023

YBM NRECC TURUN PADANG KE KAWASAN BERISIKO TERBAKAR DI JOHAN SETIA, KLANG SELANGOR

7 MEI 2023, SELANGOR - YB Tuan Nik Nazmi bin Nik Ahmad, Menteri Sumber Asli, Alam Sekitar dan Perubahan Iklim (NRECC) hari ini telah turun padang ke Kawasan Revolusi Hijau Johan Setia, Klang, Selangor.

Lawatan ini bagi melihat kaedah pemantauan dan tindakan dalam menangani serta mencegah kebakaran di kawasan berisiko serta mudah terbakar (*fire prone*) iaitu tanah gambut di situ yang dijalankan di bawah Program Pencegahan Kebakaran Tanah Gambut oleh Jabatan Alam Sekitar (JAS) dan agensi- agensi pelaksana lain seperti Jabatan Mineral dan Geosains (JMG), Jabatan Pengairan dan Saliran (JPS), pihak Bomba dan Penyelamat serta Pihak Berkuasa Tempatan di Daerah Klang.

Turut hadir bersama YB Hee Loy Sian, Exco Pelancongan, Alam Sekitar & Teknologi Hijau dan Hal Ehwal Orang Asli Negeri Selangor, Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Jabatan Alam Sekitar dan YBhg. Dato' Mohamad Razif bin Haji Abd Mubin, Timbalan Ketua Setiausaha (Tenaga, Alam Sekitar & Perubahan Iklim).



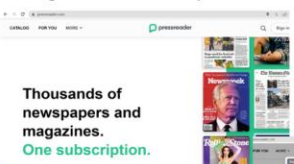
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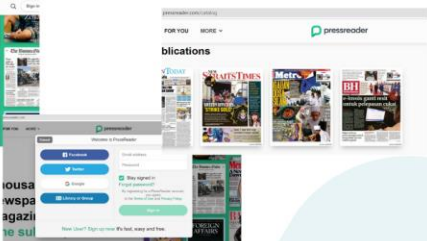
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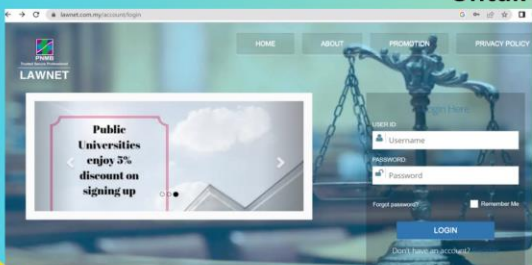
KEMENTERIAN SUMBER ASLI, ALAM SEKITAR DAN PERUBAHAN IKLIM
JABATAN ALAM SEKITAR



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**BUKU BARU @JAS
SIRI 2/2023**

**INTERNATIONAL ENVIRONMENTAL AGREEMENTS
(THE INTERNATIONAL LIBRARY OF LAW AND THE
ENVIRONMENT SERIES, 10)**

by Peter H. Sand (Editor)
ISBN: 9781788118644



Elgar

THE INTERNATIONAL LIBRARY OF LAW AND THE ENVIRONMENT 10

**INTERNATIONAL
ENVIRONMENTAL
AGREEMENTS**

Edited by
PETER H. SAND



There has been an exponential growth in international environmental treaty making over the past fifty years to the point of treaty congestion with a total of more than 1,300 multilateral (global and regional) agreements on the topic and close to 3,000 bilateral ones currently in force.

This research review addresses this phenomenon from a variety of disciplinary perspectives such as international law, political science and ecological economics.

The objective is comparative analysis, with a view to identifying common features and common problems of transnational environmental regimes in light of their historical evolution, their application and effectiveness in practice and possible lessons learned in their institutional interplay with each other.

*"Books serve to show a man that those original thoughts of his aren't very new after all."
Abraham Lincoln*

BENGGEL PEMURNIAN MANUSKRIP “BUKU PENGURUSAN ALAM SEKITAR DI MALAYSIA” BAGI KERJASAMA PENERBITAN ILMIAH JABATAN ALAM SEKITAR DAN DEWAN BAHASA DAN PUSTAKA & BENGGEL PENULISAN PROFESSIONAL (TEKS UCAPAN & PENULISAN GAYA DEWAN)

15 MEI 2023, SHAH ALAM – Program Bengkel Pemurnian Manuskrip “Buku Pengurusan Alam Sekitar Di Malaysia” Bagi Kerjasama Penerbitan Ilmiah Jabatan Alam Sekitar Dan Dewan Bahasa Dan Pustaka & Bengkel Penulisan Professional (Teks Ucapan & Penulisan Gaya Dewan) telah diadakan. Majlis Perasmian telah disempurnakan oleh YBrs. Puan Mashitah binti Darus, Timbalan Ketua Pengarah (Pembangunan) Jabatan Alam Sekitar (JAS). Turut hadir Puan Hajah Azuri Azizah binti Haji Saedon, Pengarah Bahagian Komunikasi Strategik, Puan Zuraini binti Ahmad Tajudin, Pengarah JAS WPKL dan pegawai-pegawai JAS. Turut hadir adalah Puan Munirah binti Ghazali dan Puan Nurfarhana binti Hamzah, Editor Bahagian Buku Umum, Dewan Bahasa dan Pustaka (DBP). Program ini adalah anjuran Bahagian Komunikasi Strategik, JAS dengan Kerjasama DBP bagi Kerjasama penerbitan ilmiah JAS dan DBP. Bengkel selama empat (4) hari mulai 15 hingga 18 Mei 2023 ini jua akan diselitkan dengan slot ceramah Penulisan Professional: Teks Ucapan & Penulisan Gaya Dewan daripada En. Mohamad Ikhwan Al-Syahid bin Abdullah Tahir, Perunding Latihan (Bahasa), Institut Tadbiran Awam Negara (INTAN).

Objektif utama penganjuran Program adalah untuk menggalakkan budaya menulis di kalangan pegawai JAS selain menyediakan platform bagi pegawai-pegawai JAS yang berpengalaman berkongsi pengetahuan melalui penulisan, membangunkan kapasiti pegawai dalam kemahiran penulisan professional dan meningkatkan penerbitan buku ilmiah Jabatan dalam bidang alam sekitar bagi menyampaikan usaha dan tindakan JAS dalam menangani isu alam sekitar.



MAJLIS PELANCARAN *HANDBOOK* “ENVIRONMENTAL BEST MANAGEMENT PRACTICES GRID DEVELOPMENT’S PROJECT SITE”

16 MEI 2023, PUTRAJAYA - Bahagian Penilaian, Jabatan Alam Sekitar (JAS) bersama-sama Tenaga Nasional Berhad (TNB) telah menerbitkan satu *handbook* yang bertajuk “*Environmental Best Management Practices Grid Developments Project Site*”. *Handbook* ini telah dilancarkan bersama oleh YBrs. Timbalan Ketua Pengarah Pembangunan (TKPP) JAS, Puan Mashitah Binti Darus dan *Chief Grid Officer (CGO)*, *Grid Division* TNB, Ir. Dev Anandan pada 16 Mei 2023 bertempat di Hotel Dorsett, Putrajaya. Majlis pelancaran ini telah dihadiri oleh 200 orang peserta terdiri daripada Pengarah – pengarah serta pegawai – pegawai JAS Ibu Pejabat dan JAS Negeri, ketua – ketua jabatan TNB, pegawai – pegawai TNB serta kontraktor – kontraktor TNB.

Majlis pelancaran ini dimulakan dengan ucapan daripada *CGO Grid Division TNB* dan TKPP JAS sebelum gimik pelancaran buku dan simbolik komitmen terhadap ESG oleh TNB dijalankan. Seterusnya program diteruskan dengan sesi perkongsian dan *sharing knowledge* daripada TNBR bertajuk “*TNB Commitment Towards Sustainable Environment*” dan JAS bertajuk “*The Role of EIA in Environmental Management in Malaysia*”. Sesi pelancaran diakhiri dengan Kahoot Quiz untuk menilai pemahaman peserta berkenaan *Best Management Practices*.



Ucapan YBrs. Puan Mashitah Binti Darus,
Timbalan Ketua Penagrah Pembangunan
Jabatan Alam Sekitar

Handbook ini merupakan panduan kepada semua kakitangan bagi projek pembangunan Grid TNB termasuk kontraktor dan semua pihak yang berkaitan bagi amalan pengurusan terbaik (BMP) berhubung dengan pengurusan alam sekitar semasa peringkat pembinaan di tapak projek. Kandungan buku panduan ini adalah berdasarkan amalan pengurusan terbaik (BMP) yang telah dilaksanakan oleh pihak TNB semasa pembangunan projek talian pemancar.

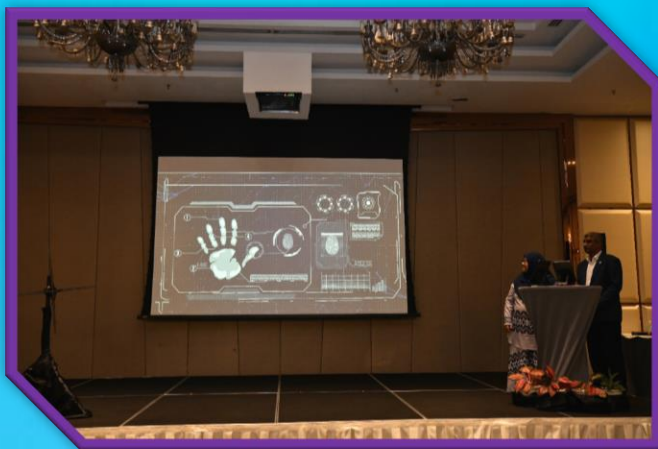
Justeru itu, gandingan informasi secara teori dan praktikal dari kedua-dua belah pihak telah diadakan dalam menghasilkan panduan ini dapat memberikan gambaran yang jelas berkaitan pelaksanaan *best management practise* dalam pelaksanaan projek *transmission line* yang dijalankan bagi menjamin pembangunan yang lebih lestari.

GAMBAR SEKITAR MAJLIS PELANCARAN *HANDBOOK "ENVIRONMENTAL BEST MANAGEMENT PRACTICES GRID DEVELOPMENT'S PROJECT SITE"*



Ucapan YBrs. Ir. Dev Anandan, CGO Grid Division TNB

Gimik Pelancaran "Environmental Best Management Practices Grid Developments Project Site"



Penyiraman pokok hutan sebagai simbolik ESG



Gimik Pelancaran "Environmental Best Management Practices Grid Developments Project Site"



Sharing knowledge daripada Puan Rohimah Binti Ayub, Pengarah Bahagian Penilaian, JAS



Peserta Majlis Pelancaran Handbook "Environmental Best Management Practices Grid Development's Project Site"



BENGGEL BUSINESS REQUIREMENT SPECIFICATION (BRS) BAGI PEMBANGUNAN NAIK TARAF SISTEM INTEGRATED REMOTE MONITORING SYSTEM (IREMOTE)



16,17 & 30 Mei 2023, SELANGOR – Bengkel Business Requirement Specification (BRS) bagi pembangunan naik taraf Sistem Integrated Remote Monitoring System (iREMOTE) untuk Jabatan Alam Sekitar telah diadakan di Cyberjaya, Selangor.

Bengkel ini telah dihadiri oleh pegawai-pegawai daripada Bahagian Penguatkuasa, Bahagian Udara, Bahagian Teknologi Maklumat dan wakil daripada JAS Negeri.

Tujuan bengkel diadakan adalah untuk mengenal pasti keperluan bisnes dan skop yang perlu diliputi bagi tujuan pembangunan sistem aplikasi iREMOTE. Melalui bengkel ini, dokumen Business Requirement Specification (BRS) akan dibangunkan oleh pihak pembekal dan dijadikan dokumen rujukan utama bagi tujuan pembangunan sistem.

MAJLIS PERHIMPUNAN BULANAN JAS BIL. 3/2023 & MAJLIS HARI RAYA AIDILFITRI JAS TAHUN 2023

Ketibaan YBrs. Tuan KPAS dan Pengurusan Tertinggi JAS



Ketua Pengarah Alam Sekitar menyampaikan ucapan

18 Mei 2023, PUTRAJAYA - JAS telah mengadakan perhimpunan bulanan Bil 3 Tahun 2023 bertempat di Dewan Baiduri Wisma Sumber Asli. Perhimpunan yang turut dihadiri oleh barisan pengurusan tertinggi jabatan serta semua warga JAS Ibu Pejabat Putrajaya menjadi satu medium penyampaian maklumat serta memberi peluang kepada warga jabatan bertemu dan berinteraksi.

YBrs. Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar dalam ucapannya turut memaklumkan bahawa dalam mesyuarat Jawatankuasa Pengurusan Bencana Pusat, JAS antara lain perlu meningkatkan komitmen dalam menghadapi tempoh Monsun Barat Daya di mana negara menghadapi cuaca kering yang dikhuatiri kejadian pembakaran terbuka akan meningkat. Perkara kedua juga yang perlu ditekankan semasa musim kering dan cuaca panas ini adalah berhubung paras air sungai semakin berkurangan yang akan memberi kesan secara langsung kepada penurunan kualiti air sungai. Sehubungan itu Warga JAS diseru untuk mempertingkatkan usaha pencegahan dan bersiap siaga mengambil langkah perlu sebagaimana yang telah digariskan dalam menangani kedua-dua isu ini yang merupakan antara punca yang memberi impak kepada kemerosotan kualiti udara, keadaan jerebu setempat dan pencemaran air yang akan menjejaskan kesihatan awam. JAS juga akan mempertingkatkan hebahan berkaitan perubahan monsun yang melibatkan perubahan cuaca melalui semua platform media sosial.

Nyanyian Lagu Negaraku dan Alam Gemilang



Pelancaran eGAMES



MAJLIS PERHIMPUNAN BULANAN JAS BIL. 3/2023 & MAJLIS HARI RAYA AIDILFITRI JAS TAHUN 2023

Di samping itu juga majlis turut melancarkan egames bertemakan alam sekitar yang merupakan aktiviti-aktiviti kesedaran dan pendidikan alam sekitar bersesuaian dengan Dasar Alam Sekitar Negara dalam memberikan pendidikan dan kesedaran alam sekitar secara menyeluruh dengan penggabungan penyebaran maklumat dengan cara yang lebih interaktif.

Ketua Pengarah juga dalam ucapannya turut menekankan JAS, sebagai sebuah agensi, yang turut terlibat dalam penguatkuasaan sentiasa peka terhadap perkara berhubung integriti semasa menjalankan tugas dan haruslah meletakkan sempadan dan mematuhi setiap garis panduan yang telah ditetapkan dalam perkhidmatan awam semasa melaksanakan tugas. Perkara ini haruslah diambil serius dalam memastikan seluruh warga JAS tidak terjerumus kepada perkara-perkara yang boleh mencalar kredibiliti sebagai penjawat awam. Jabatan juga sentiasa memberi kerjasama yang baik dan telus dengan pihak berkuasa yang berkenaan berhubung isu integriti.

Seluruh warga JAS juga ditekankan untuk melaksanakan tanggung jawab dengan keadaan kesihatan yang baik dengan pengamalan gaya hidup sihat kerana tugas dilapangan yang terdedah kepada cuaca yang tidak menentu memerlukan semua warga menjaga kesihatan. Disamping itu juga seluruh warga turut dititipkan pesanan untuk berusaha melaksanakan amanah dengan sebaik mungkin di dalam memastikan kelestarian alam sekitar kita kekal terpelihara.



LAPOR DIRI EMPAT (4) ORANG PENOLONG PEGAWAI KAWALAN ALAM SEKITAR GRED C29 LANTIKAN BAHARU

Ibu Pejabat Jabatan Alam Sekitar telah menerima kemasukan empat (4) orang Penolong Pegawai Kawalan Alam Sekitar (PPKAS) Gred C29 lantikan baharu pada 22 Mei 2023 yang lalu. Pegawai-pegawai baharu ini telah diberikan latihan intensif selama dua (2) hari sebagai pengenalan kepada JAS dan fungsi Bahagian-bahagian yang ada, termasuk pengenalan kepada aspek-aspek teknikal yang bersesuaian dengan bidang tugas pegawai-pegawai ini kelak. Sesi perkongsian ilmu telah disampaikan oleh pegawai daripada Seksyen Sumber Manusia - Bahagian Pentadbiran dan Kewangan, Bahagian Penguatkuasa, Bahagian Udara, Bahagian Penilaian dan Bahagian Bahan Berbahaya.

Semoga pegawai-pegawai baharu ini dapat memberikan khidmat terbaik di Jabatan Alam Sekitar dan perkhidmatan awam secara keseluruhannya



BENKEL PENGEMASKINIAN SYARAT-SYARAT LESEN SERTA MESYUARAT PENYELARASAN ISU-ISU KILANG MINYAK KELAPA SAWIT MENTAH DAN KILANG GETAH ASLI MENTAH

23 MEI 2023, PUTRAJAYA – Ibu Pejabat Jabatan Alam Sekitar (JAS) telah menganjurkan Bengkel Pengemaskinian Syarat-Syarat Lesen serta Mesyuarat Penyelarasan Isu-Isu Kilang Minyak Kelapa Sawit Mentah dan Kilang Getah Asli Mentah. Bengkel dan mesyuarat tersebut telah dianjurkan oleh Seksyen Audit Penguatkuasaan dan Kawal Selia Kilang Kelapa Sawit & Kilang Getah, Bahagian Penguatkuasa JAS Ibu Pejabat dan telah berlangsung selama dua (2) hari bermula dari 23 hingga 24 Mei 2023 di Bilik Mesyuarat Melati, Ibu Pejabat JAS, Putrajaya. Program ini telah dirasmikan oleh Tuan Haji Shafe'ee bin Yasin, Pengarah Bahagian Penguatkuasa, JAS Ibu Pejabat. Seramai sembilan (9) orang wakil dari JAS Negeri telah menyertai bengkel dan mesyuarat tersebut. Peserta adalah terdiri daripada pegawai-pegawai yang telah dilantik sebagai ahli 'Kumpulan Pemikir' (Think Tank Group) bagi membincangkan isu-isu melibatkan Kilang Minyak Kelapa Sawit Mentah (KKS) dan Kilang Getah Asli Mentah (KG).



Peserta bersama dengan Pengarah Bahagian Penguatkuasa, JAS Ibu Pejabat

Objektif utama pelaksanaan bengkel tersebut adalah untuk membincangkan serta mengemaskini syarat-syarat lesen KKS dan juga lesen KG sedia ada bagi penyelarasan syarat-syarat lesen yang akan digunapakai oleh semua JAS Negeri. Hasil perbincangan telah dibentangkan di dalam mesyuarat bersama Pengarah Bahagian Penguatkuasa bagi mendapatkan ketetapan berhubung syarat-syarat lesen yang telah dikemaskini. Pihak JAS Ibu Pejabat akan mengeluarkan Arahan Pejabat berhubung penyelarasan terkini syarat-syarat lesen tersebut. Mesyuarat juga telah membincangkan mengenai isu-isu terkini berkaitan KKS yang memerlukan ketetapan pihak JAS Ibu Pejabat.

Secara keseluruhannya, bengkel dan mesyuarat tersebut telah dilaksanakan dengan jayanya dan mencapai objektif pelaksanaannya.



Perasmian Bengkel dan Mesyuarat oleh Tuan Haji Shafe'ee bin Yasin, Pengarah Bahagian Penguatkuasa, JAS Ibu Pejabat

WEBINAR ALAM SEKITAR: PEMERKASAAN PENGUATKUASAAN DAN PEMATUHAN AKAS 1974

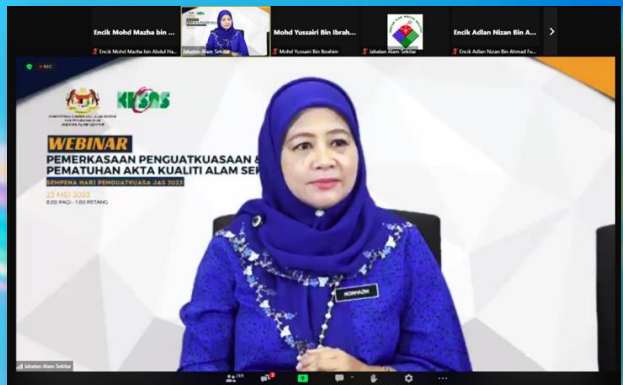
23 MEI 2023, PUTRAJAYA – Bahagian Penguatkuasa, Jabatan Alam Sekitar (JAS) Ibu Pejabat telah mengadakan Webinar Alam Sekitar: Pemerkasaan Penguatkuasaan Dan Pematuhan AKAS 1974 bersempena dengan Hari Penguatkuasa JAS 2023.

Program webinar tersebut bertujuan untuk:

- Menerangkan pendekatan dalam memantapkan penguatkuasaan dan perancangan projek pembangunan dalam usaha mengekalkan kelestarian alam sekitar;
- Memaklumkan industri berhubung dengan keperluan pematuhan kepada AKAS 1974; dan
- Mewujudkan hubungan komunikasi antara pemegang taruh dan JAS berkaitan isu-isu pematuhan AKAS 1974.



Barisan moderator dan penceramah webinar



Moderator bagi forum webinar, Yang Berusaha Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi)



Webinar Pemerkasaan & Penguatkuasaan Pematuhan Akta Kualiti Alam Sekeliling 1974 telah dirasmikan oleh Yang Berusaha Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar.

Webinar Alam Sekitar: Pemerkasaan Penguatkuasaan Dan Pematuhan AKAS 1974 tersebut telah dirasmikan oleh Yang Berusaha Encik Wan Abdul Latiff Wan Jaffar, Ketua Pengarah Alam Sekitar. Ianya melibatkan dua (2) sesi pembentangan dan forum bersama penceramah bagi mengupas isu-isu pematuhan penguatkuasaan Akta Kualiti Alam Sekeliling 1974 khususnya dalam aktiviti perindustrian dan pembangunan dalam usaha mengekalkan kelestarian alam sekitar. Moderator bagi webinar tersebut adalah Yang Berusaha Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi). Sesi pembentangan adalah seperti berikut:

- a) Pemantapan Kawalan Pencemaran Ke Arah Meningkatkan Kualiti Alam Sekitar oleh Tuan Haji Shafe'ee bin Yasin, D.S.M., Pengarah Bahagian Penguatkuasa.
- b) Pemantapan Perancangan Dan Pelaksanaan Projek Pembangunan Ke Arah Malaysia Lestari oleh Puan Rohimah binti Ayub, Pengarah Bahagian Penilaian.

Webinar ini telah dihadiri seramai 274 peserta dari pelbagai sektor industri, syarikat juru runding, universiti dan lain-lain. Semua peserta diberikan sijil penyertaan dan memperolehi dua (2) jam CPD.

ISU-ISU PEMATUHAN AKAS 1974

PELEPASAN BAHAN PENCEMAR KE UDARA
Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014

P5	Gagal mengemukakan pembetulan bertulis pemasangan cerobong/SKPU	P7(4)	Gagal melantik OYB bagi mengendalikan SKPU	P9 (a)	Gagal melengkapkan premis dengan kelengkapan/peralatan untuk pemantauan prestasi SKPU
P7 (1)	Gagal melengkapkan premis dengan SKPU	P7(5)	Gagal mengemukakan pengisytiharan bertulis pemasangan cerobong/SKPU	P9 (b)	Tidak menjalankan pemantauan prestasi bagi komponen SKPU
P7(3)	Gagal mengendalikan dan menyenggara SKPU dengan baik	P8	Tidak memaklumkan KRS mengenai kegagalan SKPU dalam tempoh ditetapkan (<1 jam)	P10	Gagal menyediakan penyenggaraan pemantauan prestasi SKPU

Sesi Pemantapan Kawalan Pencemaran Ke Arah Meningkatkan Kualiti Alam Sekitar oleh Tuan Haji Shafe'ee bin Yasin, D.S.M., Pengarah Bahagian Penguatkuasa

PENGUATKUASAAN PROJEK EIA, 2022

SIASATAN PENGUATKUASAAN 1,949

NOTIS ARAHAN = 364
KOMPAUN = 222
KES MAHKAMAH = 51
PERINTAH LARANGAN = 6

10 ADUAN PROJEK EIA DITERIMA OLEH JAS

Sesi Pemantapan Perancangan Dan Pelaksanaan Projek Pembangunan Ke Arah Malaysia Lestari oleh Puan Rohimah binti Ayub, Pengarah Bahagian Penilaian



Urusetia Webinar: Pemerkasaan Penguatkuasaan dan Pematuhan AKAS 1974 bersama-sama moderator dan penceramah

KURSUS PRA PERSARAAN JABATAN ALAM SEKITAR TAHUN 2023

29 - 31 MEI 2023, HOLIDAY VILLA BEACH RESORT CHERATING, PAHANG - Kursus Pra Persaraan Jabatan Alam Sekitar Tahun 2023 anjuran Seksyen Sumber Manusia, Bahagian Pentadbiran dan Kewangan, Jabatan Alam Sekitar ini dikendalikan oleh JETT Training & Trading dan telah melibatkan seramai 19 orang pegawai JAS seluruh Malaysia yang bakal bersara pada tahun 2023 dan 2024.

Kursus selama 3 hari 2 malam ini disediakan bagi memberikan persediaan-persediaan asas serta maklumat yang diperlukan kepada bakal pesara bagi menghadapi hari-hari persaraan dan mendapatkan persaraan idaman yang bahagia. Terutamanya dalam memberikan panduan dalam penyediaan dokumentasi dan tentu sekali dalam memberikan sedikit pendedahan berkaitan IQ dan EQ (kehidupan dan kewangan) para bakal pesara.

Para peserta juga turut diberikan latihan praktikal teknik pernafasan dan senaman menggunakan kaedah Tai Chi iaitu satu kaedah senaman yang menggabungkan beberapa pergerakan sederhana perlahan yang baik untuk kesihatan badan secara keseluruhan.

LAWATAN KERJA YB MENTERI SUMBER ASLI, ALAM SEKITAR DAN PERUBAHAN IKLIM KE TAPAK PELUPUSAN SAMPAH HARAM DI TWIN PALMS, SUNGAI LONG DAN BLACK WATER LAKE, BANDAR MAHKOTA CHERAS

30 MEI 2023, CHERAS - YB Nik Nazmi Nik Ahmad, Menteri Sumber Asli Alam Sekitar dan Perubahan Iklim (NRECC) telah turun padang ke tapak pelupusan Sampah haram di Twins Palms, Sungai Long dan Black Water Lake.

Turut hadir YB Tuan Haji Akmal Nasrullah bin Mohd Nasir, Timbalan Menteri Pembangunan Kerajaan Tempatan, Encik Wan Abdul Latiff Bin Wan Jaffar, Ketua Pengarah Alam Sekitar (JAS) dan YB Tuan Hee Loy Sian, Pengerusi Jawatankuasa Tetap Pelancongan, Alam Sekitar & Teknologi Hijau dan Hal Ehwal Orang Asli Negeri Selangor.

Antara perkara yang diambil perhatian oleh YBM di dalam lawatan ini adalah berhubung kerjasama kementerian, jabatan dan agensi berkaitan serta Kerajaan Negeri dalam tindakan dan mengambil tindakan serius bagi membentaras kewujudan tapak-tapak pelupusan sampah haram dan isu pembakaran terbuka di tapak-tapak tersebut. Menurut rekod JAS bagi tempoh 1 Januari 2023 sehingga 25 Mei 2023, sejumlah 101 kes aduan telah dilaporkan yang melibatkan pembakaran terbuka di tapak pelupusan sampah haram di seluruh negara.

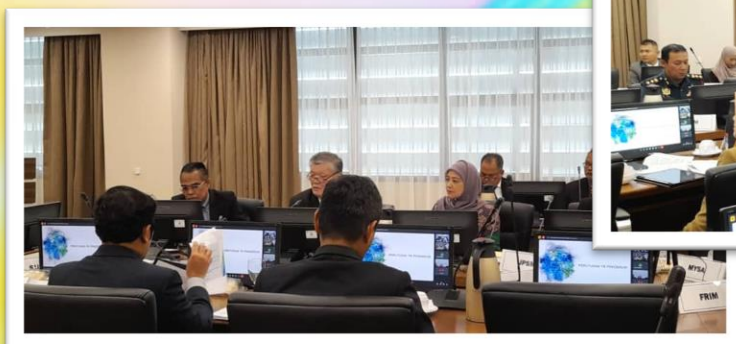


MESYUARAT JAWATANKUASA INDUK JEREBU DAN CUACA KERING KEBANGSAAN BIL. 1/2023



26 MEI 2023, PUTRAJAYA – Mesyuarat Jawatankuasa Induk Jerebu dan Cuaca Kering Kebangsaan Bil. 1/2023 yang dipengerusikan oleh Yang Berhormat Tuan Nik Nazmi bin Nik Ahmad, Menteri Sumber Asli, Alam Sekitar dan Perubahan Iklim telah diadakan secara hibrid di Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim, Putrajaya. Mesyuarat telah dihadiri oleh YBrs. Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar, YBrs. Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi) dan YBrs. Tuan Haji Shafe'ee bin Yasin, Pengarah Bahagian Penguatkuasa yang menanggung tugas Pengarah Bahagian Udara. Mesyuarat ini turut dihadiri oleh wakil-wakil dari kerajaan Negeri, kementerian, jabatan dan agensi berkaitan pengurusan insiden jerebu.

Mesyuarat ini diadakan bagi melaporkan status terkini keadaan cuaca, kualiti udara, tindakan dan strategi bagi mencegah pembakaran terbuka serta jerebu setempat, di samping mengatur persediaan menghadapi kemungkinan berlakunya insiden jerebu merentas sempadan.



Dalam menangani perkara ini komitmen semua pihak amat diperlukan yang melibatkan kerjasama bersama pihak PBT dalam tindakan membanteras kewujudan tapak pelupusan sampah haram yang menjadi punca kepada pencemaran terutama dalam kes-kes yang melibatkan pembakaran terbuka, pencemaran air dan pelupusan buangan berbahaya.

Kerajaan sentiasa mempertingkatkan usaha-usaha pencegahan aktiviti pembakaran terbuka yang boleh menyebabkan jerebu tempatan dan menjejaskan kualiti udara serta kesihatan awam. Orang ramai diingatkan supaya tidak melakukan pembakaran terbuka terutama di kawasan mudah terbakar seperti di kawasan tanah gambut dan tapak pelupusan sampah. Jika disabitkan kesalahan, pesalah boleh dikenakan tindakan di bawah Seksyen 29A, Akta Kualiti Alam Sekeliling 1974 [Akta 127] iaitu kompaun sehingga RM2,000 bagi setiap kesalahan, atau didakwa di mahkamah dengan denda maksimum RM500,000 atau penjara tidak melebihi lima tahun atau kedua-duanya sekali.

Berikutan cuaca panas dan kering yang sedang dialami negara, kebakaran terbuka mudah berlaku terutama di kawasan tanah gambut dan tapak-tapak pelupusan sampah yang tidak dikawal. Saya menyeru orang awam untuk melaporkan sebarang aktiviti pembakaran terbuka yang mencemarkan alam sekitar di talian bebas tol 1-800- 88-2727 yang beroperasi 24 jam sehari atau e-mel ke aduan_k@doe.gov.my dan melalui portal e-aduan JAS di <https://eaduan.doe.gov.my> .



SELAMAT MENYAMBUT HARI ALAM SEKITAR SEDUNIA 2023

KEMENTERIAN SUMBER ASLI, ALAM SEKITAR
DAN PERUBAHAN IKLIM
JABATAN ALAM SEKITAR

**HARI ALAM SEKITAR
SEDUNIA 2023**
5 JUN 2023

"Hentikan Pencemaran Plastik"

#BeatPlasticPollution

Tulus Ikhlas Daripada
YB Tuan Nik Nazmi Bin Nik Ahmad
Menteri Sumber Asli, Alam Sekitar
& Perubahan Iklim (NRECC)

JABATAN ALAM SEKITAR

ALAM SEKITAR TANGGUNGJAWAB BERSAMA

Selamat menyambut Hari Alam Sekitar Sedunia 2023
"Hentikan Pencemaran Plastik"
#BeatPlasticPollution

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Menteri Sumber Asli, Alam Sekitar & Perubahan Iklim

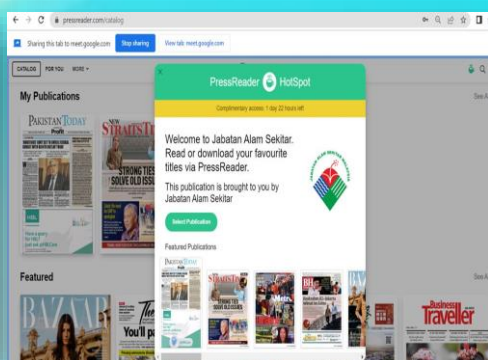
PROGRAM EKSPLORASI DIGITAL DAN BICARA INTELEK SIRI 1

9 JUN 2023, PUTRAJAYA – Jabatan Alam Sekitar (JAS) melalui Eksplorasi Digital dan Bicara Intelek Siri 1. Untuk Bicara Intelek Siri 1 ini telah disampaikan oleh Tuan Haji Shaari bin Amat, Ketua Penolong Pengarah, Bahagian Penguatkuasa. Beliau telah berkongsi pengalaman beliau selama 35 tahun berkhidmat sebagai Pegawai di JAS.

Antara isi bicara intelek beliau adalah berkenaan isu di dalam menjalankan penguatkuasaan, persediaan pegawai sebelum, semasa dan selepas penyiasatan dijalankan oleh JAS. Perkongsian dan penerangan yang jelas berkenaan peralatan yang digunakan bagi menjalankan operasi juga turut dikongsi. Tidak cukup dengan pengalaman menjalankan tugas lapangan, tips persediaan untuk mengendalikan perbicaraan kes di mahkamah turut dikongsi. Perkongsian ini memberi inspirasi dan semangat kepada pegawai-pegawai JAS supaya lebih bersemangat dan terus berbakti dalam memartabatkan JAS dan perkhidmatan awam seluruhnya.

Turut hadir YBrs. Puan Hajah Azuri Azizah binti Haji Saedon, Pengarah Bahagian Komunikasi Strategik, Encik Mohd Helmi bin Ahmad, Ketua Penolong Pengarah Kanan, Bahagian Komunikasi Strategik. Program ini telah dijalankan secara hibrid (kombinasi fizikal di Perpustakaan Enviro@JAS dan secara maya melalui platform googlemeet dengan kehadiran seramai 80 orang pegawai-pegawai JAS.

Seterusnya Eksplorasi Digital telah disampaikan oleh Puan Wan Na'ima binti Wan Nawang, Pustakawan Perpustakaan Enviro@JAS melalui pendedahan dan latihan penggunaan Pressreader (kemudahan yang boleh diakses oleh semua warga JAS).



PROGRAM RESENSI KELESTARIAN ALAM SEKITAR

12 JUN 2023, PUTRAJAYA – Jabatan Alam Sekitar melalui Perpustakaan Enviro@JAS telah mengadakan Program Resensi Kelestarian Alam Sekitar di Sekolah Kebangsaan Putrajaya Presint 17(1) sempena Sambutan Hari Alam Sekitar Sedunia dan Pelancaran Program Galakan Membaca SKPP 17(1). Program ini merupakan program jalinan kerjasama Jabatan Alam Sekitar dengan Sekolah Kebangsaan Putrajaya Presint 17(1). Keseluruhan program melibatkan murid sekolah Tahap 1 dan Tahap 2 melalui Pameran dan kuiz Kesedaran Alam Sekitar, taklimat ringkas Sekolah Lestari Anugerah Alam Sekitar (SLAAS) dan Rakan Alam Sekitar.

Guru-guru SKPP 17(1) juga telah menyertai Pertandingan Video Resensi Buku Kelestarian Alam Sekitar sebagai salah satu strategi galakan membaca yang perlu ditonjolkan kepada murid-murid sekolah dalam meningkatkan minat dan budaya membaca dan pendedahan tentang pentingnya melestarikan alam sekitar melalui pembacaan.


Program ini telah dirasmikan oleh En. Mohd Hanizad bin Ismail, Guru Besar Sekolah SKPP 17(1). Taklimat ringkas berkaitan peranan JAS dan Sekolah Lestari Anugerah Alam Sekitar (SLAAS) telah disampaikan oleh Puan Zuraini binti Siam, Ketua Penolong Pengarah Bahagian Komunikasi Strategik, JAS.

Objektif utama penganjuran program adalah untuk mempertingkatkan hebahan perpustakaan berkaitan jabatan kepada pihak (agens) luar dengan pendekatan yang lebih mesra melalui pelbagai aktiviti menarik dalam mempromosikan Kempen Kesedaran Alam Sekitar.



Bil.44/2023

PERPUSTAKAAN ENVIRO DIGITAL@EIMAS



Computer Simulated Plant Design for Waste Minimization/ Pollution Prevention

Environmental science combined with computer technology. One click on a mouse and information flows into your PC from up to 10,000 miles away. When you receive this information you can ferret through the data and use it in any number of computer programs. The result: solutions to plant design problems that affect the health and well being of people around the globe. What does that mean to you, the environmental professional, scientist, or engineer?

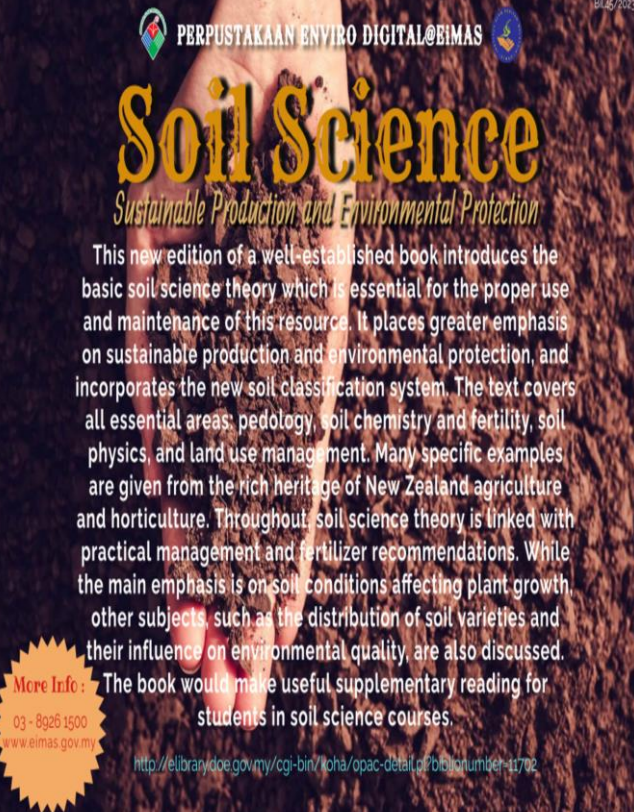
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<http://elibrary.doe.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=11940>

Bil.45/2023

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Soil Science

Sustainable Production and Environmental Protection

This new edition of a well-established book introduces the basic soil science theory which is essential for the proper use and maintenance of this resource. It places greater emphasis on sustainable production and environmental protection, and incorporates the new soil classification system. The text covers all essential areas: pedology, soil chemistry and fertility, soil physics, and land use management. Many specific examples are given from the rich heritage of New Zealand agriculture and horticulture. Throughout, soil science theory is linked with practical management and fertilizer recommendations. While the main emphasis is on soil conditions affecting plant growth, other subjects, such as the distribution of soil varieties and their influence on environmental quality, are also discussed. The book would make useful supplementary reading for students in soil science courses.

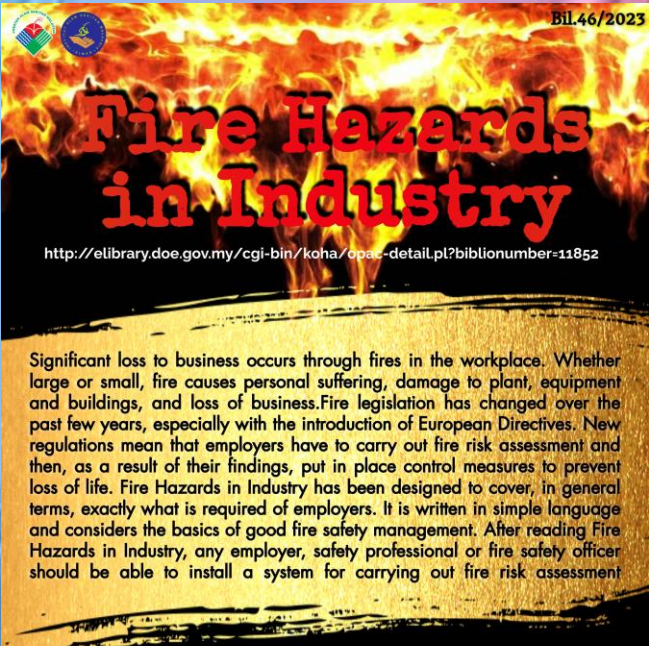
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Bil.46/2023

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Fire Hazards in Industry

<http://elibrary.doe.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=11852>

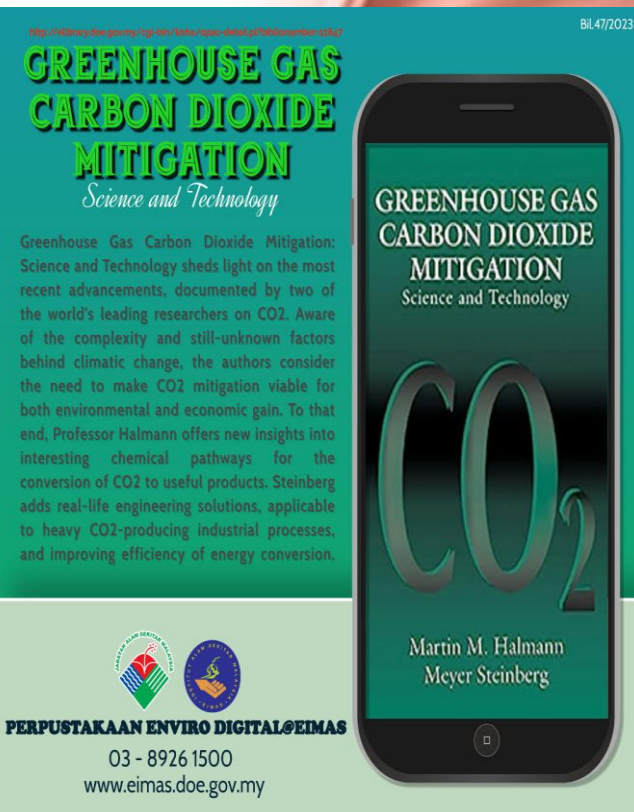
Significant loss to business occurs through fires in the workplace. Whether large or small, fire causes personal suffering, damage to plant, equipment and buildings, and loss of business. Fire legislation has changed over the past few years, especially with the introduction of European Directives. New regulations mean that employers have to carry out fire risk assessment and then, as a result of their findings, put in place control measures to prevent loss of life. Fire Hazards in Industry has been designed to cover, in general terms, exactly what is required of employers. It is written in simple language and considers the basics of good fire safety management. After reading Fire Hazards in Industry, any employer, safety professional or fire safety officer should be able to install a system for carrying out fire risk assessment

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Bil.47/2023

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GREENHOUSE GAS CARBON DIOXIDE MITIGATION

Science and Technology

Greenhouse Gas Carbon Dioxide Mitigation: Science and Technology sheds light on the most recent advancements, documented by two of the world's leading researchers on CO₂. Aware of the complexity and still-unknown factors behind climatic change, the authors consider the need to make CO₂ mitigation viable for both environmental and economic gain. To that end, Professor Halmann offers new insights into interesting chemical pathways for the conversion of CO₂ to useful products. Steinberg adds real-life engineering solutions, applicable to heavy CO₂-producing industrial processes, and improving efficiency of energy conversion.

Martin M. Halmann
Meyer Steinberg

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Bil.40/2023

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Hazardous Air Pollutant Handbook

Measurements, Properties, and Fate in Ambient Air

<http://elibrary.doe.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=11596>

Hazardous Air Pollutant Handbook: Measurements, Properties, and Fate in Ambient Air provides a comprehensive review of the 188 compounds and compound classes designated as Hazardous Air Pollutants (HAPs) by the Clean Air Act Amendments of 1990, with a specific focus on their potential presence in ambient air. The relevant chemical and physical properties of the compounds are discussed and tabulated, and suitable methods for their measurement in ambient air are identified. A survey of measurements of ambient HAP concentrations is provided for use in historical comparisons and for evaluating the current human health risks from these chemicals. Finally, the book reviews the atmospheric reactions that control the lifetime and fate of the HAPs in ambient air, and summarizes the current knowledge about their transformation products.

For More Info :

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Bil.41/2023

INDUSTRIAL ECOLOGY

Environmental Chemistry and Hazardous Waste

<http://elibrary.doe.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=10788>

Industrial ecology may be a relatively new concept - yet it's already proven instrumental for solving a wide variety of problems involving pollution and hazardous waste, especially where available material resources have been limited. By treating industrial systems in a manner that parallels ecological systems in nature, industrial ecology provides a substantial addition to the technologies of environmental chemistry.

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Bil.42/2023

Advances in Spatial Analysis and Decision Making

<http://elibrary.doe.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=367>

While traditional aspects of GIS have been growing rapidly in recent years, new developments have focused on the geographic information service and delivery, which will realise the benefits of spatial information to the community. The analysis and application of spatial information for decision support systems is an important development in realising these benefits. This book is a collection of peer-reviewed articles presented at the ISPRS Workshop on Spatial Analysis and Decision Making in Hong Kong in 2003.

FOR MORE INFORMATION CONTACT :

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Bil.43/2023

HEAVY METALS RELEASE IN SOILS

Understanding the mechanisms associated with metal complexes and the sequestering metal contaminants in the environment is essential for effective remediation. Heavy Metal Release in Soils describes and quantifies desorption/release kinetics and dissolution reactions in the release of heavy metals from soil.

Edited by
H. MAGDI SELIM
DONALD L. SPARKS

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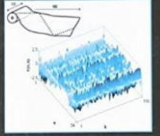
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Bil.36/2023

Chemical Process Performance Evaluation


<http://elibrary.doe.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=16031>

**Chemical Process
Performance
Evaluation**




Ali Cinar
Ahmet Palazoglu
Ferhan Kayihan


This book introduces practical multivariate statistical methods and empirical modeling development techniques, such as principal components regression, partial least squares regression, input-output modeling, state-space modeling, and modeling process signals for trend analysis. Then the authors examine fault diagnosis techniques based on episodes, hidden Markov models, contribution plots, discriminant analysis, and support vector machines. They address controller process evaluation and sensor failure detection, including methods for differentiating between sensor failures and process upset. The book concludes with an extensive discussion on the use of data analysis techniques for the special case of web and sheet processes. Case studies illustrate the implementation of methods presented throughout the book.




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Bil.37/2023



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THE SUSTAINABLE MANAGEMENT OF TROPICAL CATCHMENTS

Edited by **DAVID HARPER**
and **TONY BROWN**

The Sustainable Management of Tropical Catchments

<http://elibrary.doe.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=11542>

This book presents ideas, techniques and case studies, knowledge of which will help researchers in many scientific and social disciplines to understand the complexities better, and politicians and bureaucrats to understand the consequences of development decisions and learn from the failure of many earlier ones

Bil.38/2023

Chemical Management

Reducing Waste and Cost Through Innovative Supply Strategies

DESCRIPTION

The only step-by-step guide to an exciting new chemical management and waste minimization methodology


TABLE OF CONTENTS

- *It's Time to Change Your Chemical Management Strategy*
- *The Chemical Beast: The Hidden Cost of Chemicals*
- *Inherently Wasteful Relationships*
- *Total Cost of Chemical Ownership*

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
**Chemical
Management**




Reducing Waste and Cost
Through Innovative
Supply Strategies

Thomas J. Bierma
Francis L. Waterstraat Jr.

Bil.39/2023



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A Systems Approach to the Environmental Analysis of Pollution Minimization

★★★★★

The environmental analysis of pollution problems always involves the use of mass and energy balances to quantify the extent of pollution and its sources. This same form of analysis can be applied to ecosystems, production systems, a whole country or a region. A Systems Approach to the Environmental Analysis of Pollution Minimization identifies and describes the common factors shared by these systems. The book is organized in twelve chapters and progresses from general concepts to specific assessment methods. Chapter one is a general introduction to environmental management principles. Chapter two discusses conservation principles and their applications to environmental health. Chapters three and four explore ecosystem health, properties and analysis. Chapters five through eleven present different methods of analysis including Green Accounting, Clean Technology, Life Cycle Analysis, and Risk Assessment. Editor Sven Jorgensen closes the book with a sweeping summary.

A
Systems Approach
to the
Environmental Analysis
of
Pollution Minimization

Edited by
Sven E. Jorgensen

 CRC Press

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Bil.32/2023

Urban Transportation Planning

The book can serve as an ideal textbook for both undergraduate and graduate courses in Urban Transportation Planning. It fills an appropriate and important niche by giving proper emphasis to what "actors" and activities can influence the quality of the planning process and its eventual impact on a community. The incorporation of major legislation (ISTEA, CAAA, etc.) and other developments (GIS, traffic impact analysis, 1000 Friends of Oregon, etc.) that affect transportation planning distinguishes the text among others in the area.

Urban Transportation Planning
Second Edition

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Agricultural Nonpoint Source Pollution

Watershed Management and Hydrology

About this book

If you work in the water quality management field, you know the challenges of monitoring and controlling pollutants in our water supply. The increasing problem of agricultural nonpoint source pollution requires complex solutions. Agricultural Nonpoint Source Pollution: Watershed Management and Hydrology covers the latest techniques and methods of managing large watershed areas, with an emphasis on controlling non-point source pollution, especially from agricultural run-off.

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Bil.33/2023

AGRICULTURAL NONPOINT SOURCE POLLUTION

Watershed Management and Hydrology

Edited by
**William F. Ritter
Adel Shirmohammadi**

Bil.34/2023

Environment FORENSICS

principles & applications

<http://elibrary.doe.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=11599>

Environmental Forensics: Principles and Applications discusses non-chemical methods such as corrosion modeling, inventory reconciliation, and aerial photography interpretation. The book also covers chemical fingerprinting used to identify the origin and age of a contaminant release- relevant techniques include the use of radioactive isotope analysis, degradation modeling based on half-lives, and fuel additives such as MTBE.

ENVIRONMENTAL FORENSICS
Principles & Applications
Robert D. Morrison
CRC PRESS

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Bil.35/2023

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WASTE MANAGEMENT AND VALORIZATION

Alternative Technologies

This book provides an overview of waste valorization and includes the editor's research in addition to other experts and recent and relevant studies on this critical topic. It covers treatment and pretreatment technologies and methodologies, energy recovery from solid wastes, recycling and reuse, additional cutting-edge valorization methodologies. Primarily aimed at researchers and advanced students in biochemical, engineering, and environmental fields, this book should also provide a valuable reference for municipal legislators and industry practitioners.

Waste Management and Valorization
Alternative Technologies
Elena Cristina Rada Editor
A&P CRC Press

<http://elibrary.doe.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=17940>

Bil.28/2023

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Design for
ENVIRONMENT
a guide to sustainable product development

Drawing on the experiences of dozens of major corporations, *Design for Environment, Second Edition*, offers a business rationale for developing sustainable products and processes, as well as a comprehensive toolkit for practicing DfE in the context of product life-cycle management. Learn how environmental innovation creates business value, and helps companies to meet global energy and environmental challenges

<http://elibrary.doe.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=418>

Bil.29/2023

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Environmental Economics
A Critical Overview

A comprehensive, jargon-free introductory text on the issues, ideas, theories and problems of environmental economics, ideal for both students of economics and those without economic training. Environmental Economics is a fundamental area of environmental studies, covering the exploitation, evaluation and conservation of natural resources, and the impact of this on local, regional, national and international economics. This book stresses the links between economic concepts and real world issues and deals with population, natural resources, valuation, environmental regulation, economic instruments, cost-benefit analysis, waste, water resources, air pollution, global warming, biodiversity and world trade.

Environmental Economics
A critical overview
Alan Gilpin

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Bil.30/2023

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The Precautionary Principle
A Critical Appraisal of Environmental Risk Assessment

ABOUT THE BOOK
The "precautionary principle"—the environmental version of the admonition first, do no harm—is now enshrined in numerous international environmental agreements including treaties addressing global warming, biological diversity, and various pollutants. Some environmentalists have invoked this principle to justify policies to control, if not ban, any technology that cannot be proven to cause no harm. In this innovative book, Goklany shows that the current use of the precautionary principle to justify such policies is flawed and could be counterproductive because it ignores the possible calamities those very policies might simultaneously create or prolong.

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ABOVE GROUND STORAGE TANKS
Practical Guide to Construction, Inspection, and Testing

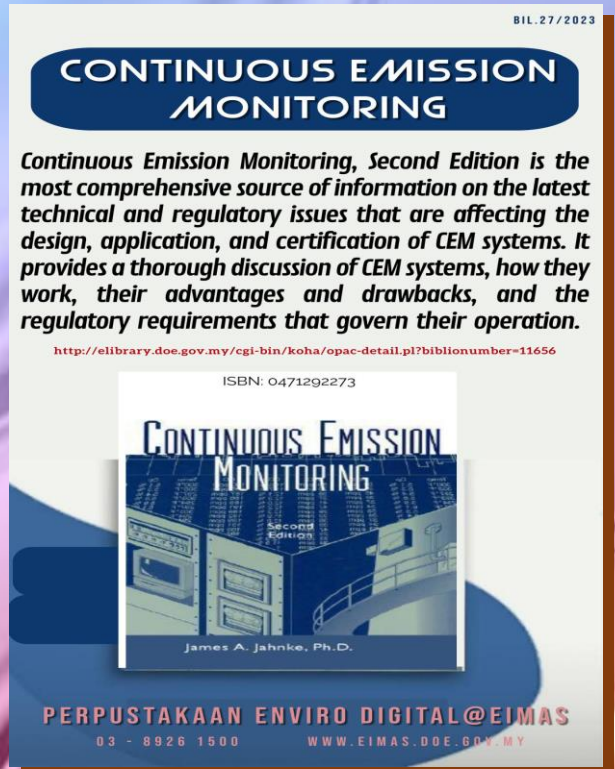
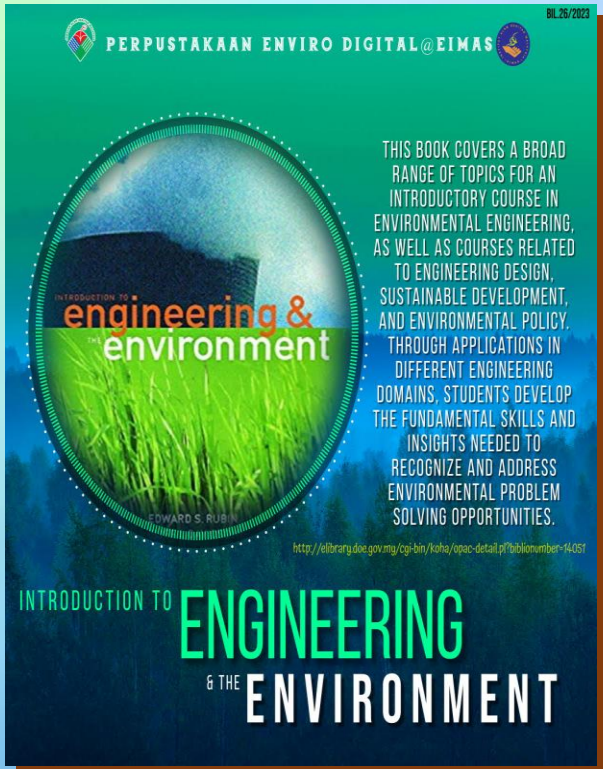
Practical Guide to Construction, Inspection, and Testing

Ideal guide for engineers involved in the mechanical construction of above ground storage tanks. This text details the construction of storage tanks in accordance with the American Petroleum Institute requirements for API 650, and is the first book to cover every stage subsequent to the design of storage tanks. The author focuses on the mechanical construction, inspection, and testing of storage tanks and all aspects on-site after design, and explains the relevance of code requirements. In addition, he incorporates real-world applications based on his own experience, and provides a host of practical tips, useful in avoiding repair and reworks during construction of storage tanks.

<http://elibrary.doe.gov.my/cgi-bin/koha/opac-detail.pl?biblionumber=12957>

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**Perpustakaan
Institut Malaysia Alam Sekitar (EiMAS)
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Tel: 03-8926 1500/ 03-89262005/
03-89261368/ 03-89250873/ 03-89261369
Faks: 03-8926 1700**



EARTH DAY

C X K R E P A P U M Z E A R T H G P
 F N I Q L E L B A S O P S I D Y L J
 W T Z A M G R W C N E V U H K A E X
 A J N P Y B A E M I Z L W Q S O L F
 S E Y C O T E X H D R E C T A N B K
 T B R V E L G N I P A J I Y O R A S
 E P E R M F L S E G S C N I C P D H
 K G U Z B V P U H R E O T J X E A L
 A C S E H O N D T W G A M Q F U R B
 Y N A J S X A L Z I V Y K T P O G I
 G E B A O D E M U R O C I F A H E W
 O P L X L A L Z E Q R N Y S J M D K
 L R E W A H C S S A L G U S B E O F
 O O D V R E N V I R O N M E N T I A
 C T G L A O Y T P M E S F C K A B U
 E E N I C S H M Q A J D Z O W L F C
 J C E V K X E T U L L O P R G I M E
 Q T Z R E D U C E N F B S P A H Y T

ATMOSPHERE

BIODEGRADABLE

CLEAN

CONSERVATION

DISPOSABLE

DISPOSAL

EARTH

ECOLOGY

EMPTY

ENERGY

ENVIRONMENT

FAUCET

GLASS

METAL

PAPER

PLANET

PLASTIC

POLLUTE

POLLUTION

PROCESS

PROTECT

SAVE

SOLAR

RECYCLE

REDUCE

REUSABLE

WASTE

WATER



ANSWER

C	X	K	R	E	P	A	P	U	M	Z	E	A	R	T	H	G	P
F	N	I	Q	L	E	L	B	A	S	O	P	S	I	D	Y	L	J
W	T	Z	A	M	G	R	W	C	N	E	V	U	H	K	A	E	X
A	J	N	P	Y	B	A	E	M	I	Z	L	W	Q	S	O	L	F
S	E	Y	C	O	T	E	X	H	D	R	E	C	T	A	N	B	K
T	B	R	V	E	L	G	N	I	P	A	J	I	Y	O	R	A	S
E	P	E	R	M	F	L	S	E	G	S	C	N	I	C	P	D	H
K	G	U	Z	B	V	P	U	H	R	E	O	T	J	X	E	A	L
A	C	S	E	H	O	N	D	T	W	G	A	M	Q	F	U	R	B
Y	N	A	J	S	X	A	L	Z	I	V	Y	K	T	P	O	G	I
G	E	B	A	O	D	E	M	U	R	O	C	I	F	A	H	E	W
O	P	L	X	L	A	L	Z	E	Q	R	N	Y	S	J	M	D	K
O	L	R	E	W	A	H	C	S	S	A	L	G	U	S	B	E	O
O	O	D	V	R	E	N	V	I	R	O	N	M	E	N	T	I	A
C	T	G	L	A	O	Y	T	P	M	E	S	F	C	K	A	B	U
E	E	N	I	C	S	H	M	Q	A	J	D	Z	O	W	L	F	C
J	C	E	V	K	X	E	T	U	L	L	O	P	R	G	I	M	E
Q	T	Z	R	E	D	U	C	E	N	F	B	S	P	A	H	Y	T

ATMOSPHERE	ECOLOGY	PAPER	SAVE
BIODEGRADABLE	EMPTY	PLANET	SOLAR
CLEAN	ENERGY	PLASTIC	RECYCLE
CONSERVATION	ENVIRONMENT	POLLUTE	REDUCE
DISPOSABLE	FAUCET	POLLUTION	REUSABLE
DISPOSAL	GLASS	PROCESS	WASTE
EARTH	METAL	PROTECT	WATER





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62574 Putrajaya
Telefon : 03 – 8871 2000
Faks : 03 – 8888 9987
Hotline : 1-800-88-2727**

www.doe.gov.my

“ALAM SEKITAR TANGGUNGJAWAB BERSAMA”

