



SAFETY, HEALTH & ENVIRONMENT

MAGAZINE

SAFETY



COLUMN

Harnessing Nickel Sustainably
for a Brighter Future

Hopes for The New President:
Disaster-free Country

PRIORITIZE OSHA FOR SAFE SMELTERS

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PRAISE be to God Almighty, we finally have successfully published the first English edition of iSafety Magazine! This is a new journey for our team to remain dedicated in providing the readers with a wide range of insightful yet informative safety and security content.

iSafety Magazine aims to be the main source of various information about OSHA in Indonesia. It continues to require adaptation to ever-changing world conditions. We commit to excellence and have passion for increasing safety awareness in the country. Thus, we hope the English edition of iSafety Magazine serves as a medium to understand the various issues in OSHA Indonesia better. In this edition, for example, we discuss government policies and the latest information related to the complexities of safety and security that are currently occurring in Indonesia.





We really strive to continue improving the quality of this magazine, as a trusted source of information for all of us. Thus, we welcome any suggestion from our esteemed readers. Thank you for supporting us on the journey of iSafety Magazine. Stay safe, stay informed, and enjoy reading.

Warm regards,
iSafety Magazine Editorial Team

SAFETY, HEALTH & ENVIRONMENT

iSAFETY

MAGAZINE

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iSafety Magazine Editor
Arrangement Advisor • Soehatman Ramli • Pit Tioanda • Andy Gunawan **Chief Executive Officer** • Risa Praptono **Editor in Chief** • Aryani Indrastati **Executive Editor** • Mochamad Ade Maulidin **Editor** • Budiana Indrastuti **Design Editor** • Aditya Nugraha **Head of Business Development** • Heru Indra Prakasa **Editorial and Administration Address PSW Tower**, Jalan Pangeran Antasari Number 75, RT 12 RW 13, Cilandak Barat, South Jakarta 12430, **Email:** redaksi@isafetymagazine.com, **Website:** www.isafetymagazine.com

” Congratulations on the publication of ISafety Magazine in English. Hopefully this magazine can be a means of communication to share knowledge and science in the global field of safety. In addition, it can be a reference for researchers or anyone who wants to study HSE in both theoretical and practical aspects. I suggest that this magazine should also have an index to enhance reputation.



Prof. Dr. Ir. H. Kholil, M.Kom, Sahid University Jakarta

” ISafety Magazine is very important for us who are engaged in the field of oil and gas safety. It becomes an important part to increase safety insight and knowledge. The presence of this English edition of ISafety Magazine will certainly open up wider opportunities for sharing knowledge & learning from OSHA experts around the world. GREETINGS IN SAFETY, make SAFETY a CULTURE.



Elizabeth S. Mulyanto

PT PUM - Served as Safety Induction Instructor at HSSE Demo Room Building RU V Balikpapan

” I welcome and support the publication of the English version of ISafety Magazine. Congratulations! I hope ISafety Magazine broadens our views. It also becomes a forum for sharing knowledge and science for company managers, regarding the latest best practices on OHS (K3L) in the world. OSHA professionals and practitioners, government leaders or managers, and also heads of institutions, can benefit from the magazine as well. I suggest opening a column for OSHA experts and institutions from various countries. In addition, it should have a special and permanent column for INOSHPRO, which is a solid confederation of K3 professionals. This will be an important part of the development of the OSHA world in Indonesia, which is also an integral part of driving Indonesia forward movement. CONGRATULATIONS & GOOD LUCK!



Satrio Pratomo M.App.Sc, QRGP

Wakil Ketua Advisory Board Indonesia Network of Occupational Safety and Health Professionals (Inosphro), General Secretary IAKKI, Board Member ICCOSH, and Permanent Member APOSHO.

” I am proud and happy to see the English version of ISafety Magazine. The previous Indonesian version of ISafety magazine had a special place in the hearts of its readers. However, the launch of this English version broadens the segment. It can be more useful for people who are very concerned about safety issues both locally and internationally. Good luck to ISafety Magazine. Have a good journey on continuing to educate its readers.



Hendra Novan

HSE Practitioner

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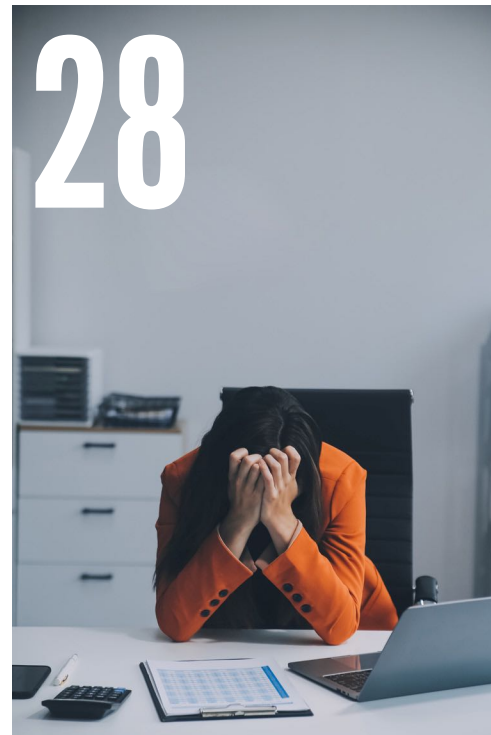
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CHALLENGES AND ASPIRATIONS FOR CREATING OSHA IN INDONESIAN SMELTER INDUSTRY

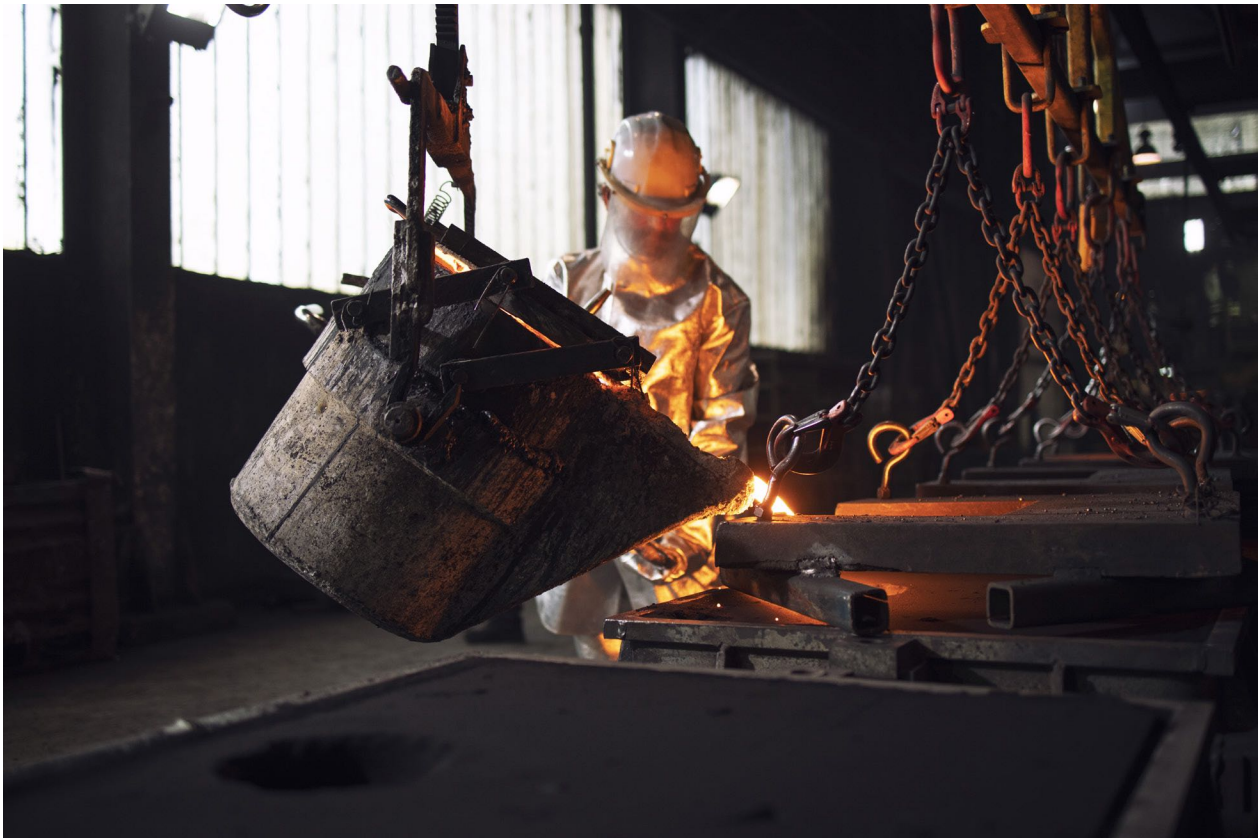
CRITICISM OF LACKLUSTER OSHA IN INDONESIAN SMELTER INDUSTRY

▲▲▲
SMELTER ACCIDENTS RESULTING IN LOSS OF HUMAN LIVES AT THE END OF 2023 HAVE COLORED THE RECORD OF INDONESIA'S OSHA WORLD. THE INCIDENT HAS BEEN A STRONG WARNING THAT OSHA HAS NOT YET BEEN IMPLEMENTED WELL.

ENTHUSIASM for mineral purification industry such as nickel smelter in Indonesia cannot be separated from Indonesian President Joko Widodo's decree towards industrial downstreaming (*hilirisasi*). The goal of downstreaming is to increase value proposition of domestic mineral products. Since January 1, 2020, the government has ceased all exports of nickel ore. Then on June 10, 2023, the government applied a ban on exporting bauxite ore. Not only that, the government also stopped the export of raw copper. All must be processed first domestically before being sent out as export products, in accordance to National Law Number 3 year 2020. This law is an improvement update from the previous National Law No. 4 year 2009, which covers various improvements starting from mining management practices, alignment with national interests, legal certainty, ease of investment, and environmental management.

The President of Indonesia stated that these cessation of raw material exports has significantly increased our exports. Downstreaming has also triggered an increases in national income, starting from the taxation sector such as value-added task (PPN, *pajak pertambahan nilai*), income tax (PPh, *pajak penghasilan*), and also non-tax national income (PNBP, *penerimaan nasional bukan pajak*).

In a recent webinar, *Mineral Downstreaming Industry Process in Indonesia* held by APKPI (Asosiasi Profesi Keselamatan Pertambangan Indonesia, the Mining Safety Professional Association of Indonesia), Sunindyo Suryo Herdadi, ST, MT, Technical and Environmental Director / Head of Mining Inspectorate, Directorate General of Mineral and Coal, Ministry of Energy and Mineral Resources, explained that bureaucratically his office carries the burden of executing the above law concerning mineral mining purification.



Operational Challenges in Mineral Processing

The operational activities processes of processing and or purifying minerals in Indonesia still faces many challenges. One aspect being highlighted is the aspect of risk management of occupational safety and health, as well as safety in mining operations. This aspect is important in securing worker protection to keep workers safe & healthy, as well as creating safe, efficient, and productive operations.

Another challenge is implementing adequate safety standards amidst the rapid investment and construction of processing and/or refining plants in the country. In operating smelter facilities, work safety regulations must be implemented in accordance with the rules set by the government, namely Law (UU) No. 1 of 1970 concerning Work Safety and its derivative regulations.

Sunindyo explained that his party had regulated occupational safety and health as well as carried out guidance and supervision of processing and/or refining business activities, in accordance with the authority of Law No. 3 of 2020

“Companies that carry out stand-alone processing will need an industrial business permit. And separately from that, companies that carry out processing and/or refining processes whose locations and activities are integrated with mines, require a Mining Business Permit (IUP),” continued Sunindyo. Industrial Business Permits are issued by the Ministry of Industry, while IUPs are managed by the Ministry of Energy and Mineral Resources through the Inspector General of Mineral and Coal.

Meanwhile, the business supervision side is carried out by the Directorate of Business. And as for the safety aspects, technical aspects and environmental aspects, these are supervised by mining inspectors.

One of the derivative regulations of Law No. 3 of 2020 is Ministerial Regulation (Permen) of the Ministry of Energy and Mineral Resources Number 26 of 2018 concerning the Implementation of Good Mining

Principles and Supervision of Mineral and Coal Mining. For the mineral refining industry, OSHA regulations are contained in Article 16 paragraphs (1) to paragraphs (6) and Article 17.

In Article 16 paragraph (4), the safety aspects of processing and/or refining work include risk management, as well as work prevention programs which include preventing accidents, fires and other dangerous incidents. Then, occupational safety education and training, occupational safety administration, emergency management, occupational safety inspections, as well as accident prevention and investigation. Furthermore, the occupational health aspect includes worker health programs, hygiene and sanitation, ergonomics, food processing, beverages and worker nutrition, and/or diagnosis and examination of work-related diseases.

The technical instructions for this Ministerial Regulation have been contained in the Decree of the Minister of Energy and Mineral Resources Number 1827 K/30/MEM/2018 concerning Guidelines for Implementing Good Mining Engineering Principles as well as the Decree of the Director General of Mineral and Coal of the Ministry of Energy and Mineral Resources Number 185 K/37.04/DJB/2019 concerning Technical Instructions for Mining Safety and Implementation, Assessment and Reporting of Mineral and Coal Mining Safety Management Systems.

Strong Reprimand for Injury Incident

Sunindyo emphasized that his party was paying attention and was quite concerned about several incidents that occurred last year and this year. He referred to the incident at the Indonesia Morowali Industrial Park (IMIP) and previous incidents, including at the GNI nickel smelter. These incidents became the subject of discussion and of course the main point of discussion was determining steps that should be recommended to the smelter industry to prevent similar work accidents from occurring in the future.





“We continue to fight, together with all stakeholders, to create better OSHA conditions in the mineral processing industry in the future. Downstreaming is encouraged for the sake of the nation’s prosperity. For this reason, we as a society are obliged to make efforts to develop mandatory protective procedures, so that the mining and refining industry can be carried out well,” he said.

At the end of last year, in accordance with the direction of the Ministry of Energy and Mineral Resources, the Mineral and Coal Engineering and Environmental Directorate conducted learning through circulars for mining stakeholders regarding incidents

that occurred at IMIP.

The Circular Letter of the Chief Mining Inspector dated December 28, 2023, includes several lessons learned and anticipation of further possible furnace explosion incidents at IMIP. One thing that is emphasized is that operational activities must be in accordance with operational or safe work procedures that have been determined by the Head of Mining Engineering (KTT, *Kepala Teknik Tambang*).

The circular also pays special attention to mining facilities, infrastructure, installations, and equipment. Everything must be in operational condition, based on the results of inspection and testing. Regular



maintenance of all facilities and infrastructure in accordance with safety procedures and provisions by competent mining technical personnel must also be carried out.

Furthermore, regarding electrical systems and main instrumentation, fuel storage areas, gas cylinders and flammable or explosive materials and chemicals, the circular requires their placement in locations that meet safety and security requirements.

Discussing worker conditions, the circular stipulates that the KTT is tasked with determining the qualifications and competencies of all workers, in addition to drawing up, establishing and implementing

special work permit procedures. All workers must be fit to work before and during work, based on valid and reliable assessment results. Workers must always comply with work procedures. KTT must be responsible for ensuring that operational activities can be carried out safely and securely. The KTT must also ensure that only mining operational activities that can be carried out are those supervised by supervisors. Only people and vehicles authorized by KTT can access restricted areas of processing and refining activities.

Several points in the circular specifically discuss the work environment. Working environment conditions must be declared to meet safety requirements based on the results of measurements and assessments. If based on the results of measurements and assessments there are conditions that do not meet the standards, then operational activities must be stopped. This includes ensuring that the condition of the furnace is monitored and supervised continuously. If risks exist, they must be controlled adequately. Furthermore, each area and work is supervised with full responsibility by a competent Operational Supervisor. Supervisors have the authority to stop activities if unsafe actions or conditions are found.

Sunindyo added that mineral and coal downstreaming is expected to be a main driver of national development. Downstreaming efforts are expected to increase state revenue, starting from the tax sector to non-tax state revenue. Downstreaming will also trigger other multiplier effects, including the number of workforce absorption.

To achieve these goals, Sunindyo emphasized the need to increase processing and refining operational activities which must be balanced with increased operational safety standards. "The implementation of OSHA in the smelter industry is in order to guarantee and protect workers while creating safe and efficient operations," said Sunindyo.

OSHA MUST BE APPLIED WITH THE INITIAL INVESTMENT

▲▲▲
INCIDENTS HAPPENING IN THE NICKEL MINERAL PURIFYING INDUSTRY ARE A STRONG WARNING THAT OSHA IN INDONESIA HAS NOT BEEN IMPLEMENTED WELL. IT HAS NOW BECOME VERY URGENT TO REEVALUATE OSHA IMPLEMENTATION FOR MINERAL DOWNSTREAMING WORK PROCESSES.

REPEATED incidents, according to Prof. dra. Fatma Lestari, MSi, PhD., professor at the Department of Work Safety and Health (K3), Faculty of Public Health, University of Indonesia, is a strong criticism for OSHA implementation, specifically within the mineral downstreaming process. Therefore OSHA must continue to be pushed to further improve in the future.

"The metal industry is a potentially dangerous and crisis-prone industry," continued Fatma, who is also Deputy Chair of the National Occupational Safety and Health Council (DK3N). Almost all the danger risks exist in the metal processing process. The occurrence of accidents, fires, explosions, medical emergencies with the risk of many casualties, and environmental pollution are examples of risks that must be faced by metal industry players.

Cooperation from all parties is needed to encourage stricter implementation of K3. The government as regulator, society and the environment, as well as technological support, and the economic side of business, all must be interconnected. "Everyone must work under the main umbrella of implementing operational safety management," he said.

According to Fatma, when companies or investors want to invest in Indonesia, they need to consider prioritizing OSHA in terms of regulations, public interests, environmental safety, as well as economic and business interests. "It is important that this OSHA is not carried out or attempted before the investment process. But in fact, OSHA's commitment has been there since the beginning of the process, right up to



the operations of a company," said Fatma. "So OSHA is not at the end of the process but at the forefront, at the investment part. When investors want to invest, OSHA considerations must be emphasized at the start. We have to confirm whether it's there or not," she added.

According to Fatma, managing OSHA from the early stages, starting from initial design to operations, will avoid negative impacts that might occur. After all, no investment wants victims. Therefore, everything must be managed from the start. Not only OSHA,

investors also need to have environmental insight (K3L, *Keamanan, Keselamatan, dan Kesehatan Lingkungan Hidup*).

After the obligation to include K3L during investment, what is no less important is monitoring, evaluation, coaching, implementation and evaluation of K3L implementation. "This is not uncommon in other countries," said Fatma.

Some countries do include elements of K3L or HSE when considering choosing a product. "Perhaps we



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have heard that many Indonesian products cannot be accepted in a country because they do not meet the required OSHA requirements. Well, I think the same thing can be applied to countries that want to invest in Indonesia," she added.

The occurrence of an accident in a company will have a big impact. Company losses that are relatively light are asset damage. However, if there are human injuries, even fatalities, of course the implications will be wider reaching. The company may face legal action, which could result in fines or even factory closure. If that happens, it could affect the reputation of the organization, even the good name of the country.

"A smelter accident will be detrimental to business, which could lead to the threat of factory closure.

Additionally to that, the company will have a bad track record in Indonesia. Investors will have a dark record (of us)," said Fatma.

An accident in an industry that is on the rise will be reported internationally, that's when Indonesia's good name will be threatened. "There will be a spotlight regarding the implementation of OSHA in Indonesia in this industry," added Fatma.

Of course, no investor wants to experience business interruption, much less for their company to have a bad record. Therefore, OSHA must be implemented by companies. "If we talk about the metal refining industry, implementing safety management can reduce the risk of accidents, risks to the community, and reduce environmental pollution."



Learning from the incident at the smelter, Fatma emphasized the need to build a superior downstream operations safety culture. According to her, there are three things that must be paid attention to, namely excellent behavior in accordance to rules and regulations. Nothing is left to chance. Then the condition of the facilities, equipment, processes, work environment and materials must be excellent according to professional standards. The last is the operation of the management system to ensure that equipment is used according to applicable procedures

In her book, *Operational Safety Management Building Operational Excellence in the Process Industry*, Fatma and her colleagues explain that there are 13 Operational Safety Management Factors.

“These 13 factors must be applied to the mineral refining industry such as nickel smelters,” said Fatma. Implementation can start from process safety information. This information must be known to workers before starting exploration. Fatma reminds us that workers should never be informed to the risk of danger only after work has started.

Then, work safety information can start from the equipment, materials to be managed, installation, maintenance and reliability inspections, all of which have been communicated to workers from the start. “For example, one of the important things that workers must understand is that this molten metal is extremely dangerous, the temperature is above 600-700 degrees Celsius, even thousands of degrees Celsius. Workers must know the risks. Meanwhile, companies must determine dangerous areas and who can be in those areas,” added Fatma.

Process hazard analysis must also be part of what workers are aware of from the start. What are the dangers or risks faced at the smelter? Likewise, there are process risks that have not been identified. Fatma sees the importance of reviewing the dangers of possible risks and then learning how to manage them.



PROCESS SAFETY & MINERAL DOWNSTREAMING INDUSTRY PROCESSES

- 1 Process Safety Information
- 2 Process Hazard Analysis
- 3 Operating Procedures
- 4 Safe Work Practices
- 5 Training
- 6 Worker Participation
- 7 Pre-Startup Review (TUPS; Telaah Ulang Pra-Startup)
- 8 Mechanical Integration
- 9 Contractor Management
- 10 Change Management
- 11 Emergency Response
- 12 Incident Investigation
- 13 Compliance Audit

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In her book, Fatma emphasizes the importance of reviewing national strategy programs. Projects that are about to enter investment must have Process Safety Information explained and have been reviewed from the start. Furthermore, if changes to the design are required, they need to be done at this early stage to avoid accidents. This includes explaining the various equipments that will be used.

Furthermore, evaluating operational procedures is an important thing to do. If an incident occurs, operating procedures must be reviewed. Don't hesitate to correct or add things that were not included in the original work processes. Companies must pay acute attention to the possibility of still exposing workers to existing dangers.

Fatma said that one of the incidents occurred during the maintenance process. "Maybe this needs to be reviewed, were there any procedures that were missed? What should have been avoided? Were there still water elements there? Is it possible that there were side reactions that formed dangerous gasses?" Fatma said. She reminded us that when molten metal meets water, it will produce new hydrogen gas which was not there before. This was what caused one of the fatal incidents at the smelter.

Safe work practices and worker participation must be carried out in process operations. "Pay attention to whether workers are directly exposed to danger. For example, if you have to deal with molten metal. It is important to set the stage for key safe work practices in the area. That's the kind of thing that needs to be known and socialized to all parties," she added. "If you look at the large number of victims, it is quite possible that workers did not know, or that socialization about safe work practices had not been carried out."

Safe work practice training needs to engage workers and equip them with appropriate steps when an operational failure occurs. Workers must understand, for example, evacuation routes in the event of an incident. So that there is no confusion among workers if operational process failure occurs. It is also necessary to consider so that workers remain safe even when they are in a dangerous area. Considerations could include the use of tools or even robots so that workers are not directly exposed to danger.

Worker participation is a step that must not be skipped. Workers must be involved from the start in OSHA implementation. When an OSHA incident occurs, workers must be involved to provide input that is used as material for the company's evaluation.



The seventh factor is the pre-startup review (TUPS, *Telaah Ulang Pra-Startup*) also during the pre-start review. TUPS is very useful if you find a design that is not suitable early on, so that it can be adjusted immediately.

Mechanical integration includes process analysis, materials to be used, fabrication, installation, including maintenance procedures, inspections, reliability engineering, and upkeep. This factor has been implemented from the start, and must even become the core foundation.

The next factor is contractor management and change management. "When selecting contractors, our focus should not only be on costs. We have to look at the OSHA assessment scores. We are implementing a pattern with investors who also prioritize HSE as a part of the assessment," added Fatma. In the change management factor, it can be checked whether anything has been changed, and whether the changes are in accordance with procedures. The same is true for equipment. It is also necessary to pay attention to whether there are operational safety processes that need to be improved.

After that, the emergency response factor is also crucial. "In a previous case, a victim died as a result of jumping from a high place during an emergency due to an accident at a mineral refining site. In my opinion, the emergency management plan needs to be improved," she added. Mineral downstreaming involves high temperatures and dangerous chemicals. Fatma emphasized that the downstream mineral processing industry is "One of the most complex operations. In the work area there are chemical hazards, high temperatures, working at heights, heat energy, pressure, confined space. Almost all of the OSHA hazards are there," she said.

Therefore, emergency management needs to be implemented and prepared from a prevention perspective. Fatma explained that preparedness needs to include all potential accident scenarios that

occur, including mass injuries cases. A company may not be ready when a mass accident occurs, therefore it needs to be planned and contingenced for, for example, in collaboration with the nearest Community Health Center or Health Office. You can also map other resources to help when an incident occurs.

Currently, incident investigations and compliance audits are factors that must be carried out at all smelters throughout Indonesia. Investigating incidents, added Fatma, is part of learning so that Indonesia can progress further.

The final factor, compliance audits, is especially important to prevent a repeat of the same incident. This factor is a right that must be exercised. "We need to build the right standards for smelters. I propose to re-audit all smelters in Indonesia and we must set smelter standards," she said.

Fatma highlighted the importance of involving workers in every aspect of process safety, the DNA improvement review process, then during hard work, up to the operations development process. Workers must participate because they are the ones carrying out the procedural work.

Emergency Response & Crisis Management (ERCM)

Of the various existing processes, what must be prioritized is preparedness to face crises on-location. What mitigation plans need to be implemented? How will victims recover? How will business activities continue? These things fall under ERCM.

There are emergency risks in the mineral downstream industry that can be projected, for example fires and others. But don't forget the natural disasters factor. "43 percent of exploration areas in Indonesia are in locations prone to natural disasters. Then, there are 57 percent of city districts that are at risk. Then, around 75 percent of infrastructures are in zones vulnerable to natural disasters," explained Fatma.

Emergency response is something that should not

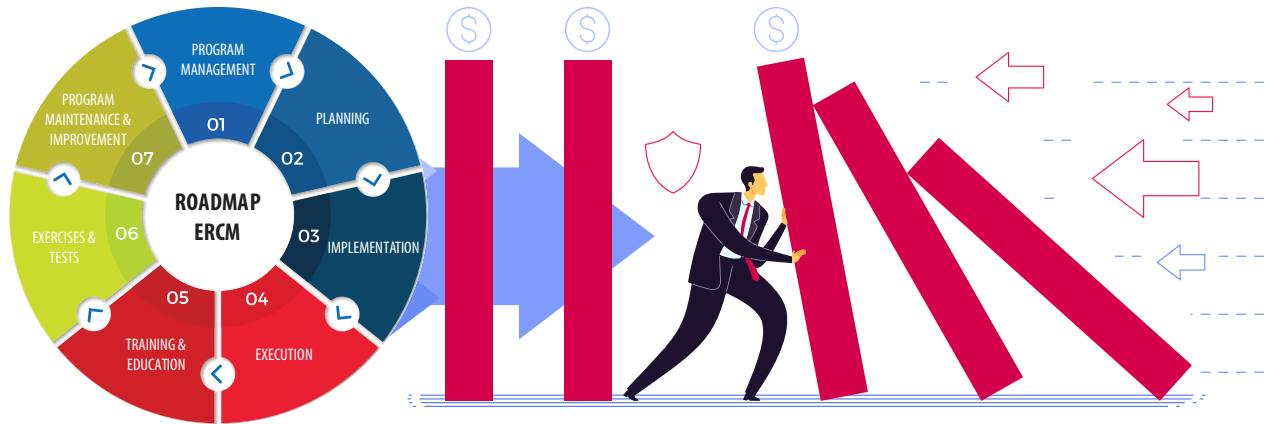
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be ignored. Fatma highlighted that not all mineral industry processing locations have burn units nearby to help burn victims. This equipment is crucial. Again, looking at the Moworali case, there were victims who had to be evacuated to Makassar. The long evacuation distance made the victims' conditions much worse.

In crisis management, there must be prevention efforts as well as efforts to reduce risks. Then emergency

and crisis management must be established, in the form of mitigation and prevention plans, preparedness, response, recovery and business continuity. Fatma recommends creating scenarios regarding all potential emergency conditions. What needs to be considered are medical risks, fires and explosions, the release of dangerous and toxic chemicals, natural disasters, and industrial disasters.

NFPA 1600. Standard on Continuity, Emergency & Crisis Management. 2019



1. PROGRAM MANAGEMENT

- Leadership & Commitment
- Program Coordinator
- Performance Objectives
- Program Committee
- Program Administration
- Compliance & Evaluation with Regulation, Regulatory, & Standards
- Finance & Administration
- Records Management

2. PLANNING

- Planning & Design Process
- Risk Assessment
- Business Impact Analysis
- Resource Needs Assessment

4. EXECUTION

- Incident Recognition
- Initial Reporting/Notification
- Plan Activation & Incident Action Plan
- Activate Incident Management System
- Ongoing Incident Management & Communications
- Documenting Incident Information, Decisions & Actions
- Incident Stabilization
- Demobilize Resources & Termination

6. EXERCISES & TESTS

- Program Evaluation
- Exercise & Test Methodology
- Design of Exercises & Tests
- Exercise & Test Evaluation
- Frequency

3. IMPLEMENTATION

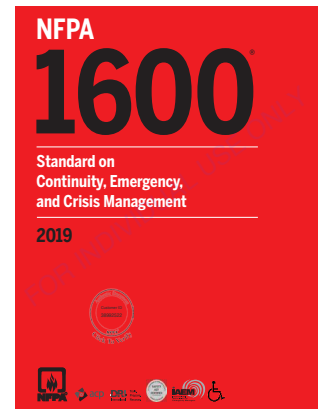
- Common Plan Requirements
- Prevention
- Mitigation
- Crisis Management
- Crisis Communication & Public Information
- Warning, Notification, & Communications
- Operational Procedures
- Incident Management
- Emergency Operations/Response Plan
- Continuity & Recovery
- Employee Assistance & Support

5. TRAINING & EDUCATION

- Curriculum
- Goal of Curriculum
- Scope & Frequency of Instruction
- Incident Management System
- Training
- Record Keeping
- Regulatory & Program Requirements
- Public Education

7. PROGRAM MAINTENANCE & IMPROVEMENT

- Program Reviews
- Corrective Action
- Continuous Improvement





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To present day, there are many international standards that can be used in efforts to implement OSHA. These include Emergency Management International Standards such as NFPA 1600. Standard on Continuity, Emergency & Crisis Management 2019, ISO 21110: 2019. Information & documentation - Emergency preparedness & response, ISO 22320: 2018. Societal security - Emergency management - Requirements for Incident response, and ISO 22325 - Security & resilience - Emergency management - Guidelines for capability assessment.

Fatma recommends NFPA 1600, which she says is a great one to implement. In NFPA 1600, leadership aspects have been included. This means that if the company is committed to emergency management, there must be a program coordinator for emergency management.

BCMS (Business Continuity Management System)

Business Continuity Management System (BCMS) is a system for increasing the business continuity management capacity of an organization.

Table Potential scenarios for medical emergency planning for platforms

TYPE OF HAZARD	POSSIBLE SOURCES	REMARKS
Fire and explosion	Inflammable gases	Blast wave injuries, burns, heat stress, intoxication e.g. smoke, structural collapse
	Inflammable liquids and dusts	
	Pressurized substances	
	Chemical reactions	
Substance spill	Gaseous	Intoxication, e.g. smoke, H2S
	Liquid	Contamination
		Percutaneous absorption
Heat	Hot substances	Burns
	Hot surfaces	
Cold	Cold substances	Frost bite, hypothermia
	Cold surfaces	
Injury	Cutting/machines	Wounds, fractures
	Slip, trips, and fall	
Confined spaces	Oxygen depletion substances	Suffocation, loss of consciousness
Electricity	Electrical equipment	Electrical burns
Internal medicine problems	Heart attack	Personal medical problem surfacing during the assignment
	Stroke	
	Dysrhythmia	
Infectious diseases	Food-waterborne diseases	Severe individual case multiple cases threatening business continuity
	Malaria	
Psychological aspects	Depression, suicide attempts,	Due to stigma difficult to detect. A culture of trust and care for each other could help identify and mitigate
Transportation Incident	Helicopter crash on landing pad	Multiple injuries (max number determined by helicopter capacity)
		Medevac complicated due to landing pad damage
		Consider alternate evacuation pathways (e.g. crane to nearby vessel)

Implementation is in accordance with the level and type of impact of the disturbance or threat that is acceptable or unacceptable.

An effective BCMS enables an organization to ensure its operations continue; the products and services it offers can be produced at a predetermined level; and value creation activities can be protected; the reputation and interests of the stakeholders can be maintained even when disruptive events occur.

Business Continuity Management System based is on ISO 22301:2019, it provides a framework for developing a process for identifying and evaluating risks that have the potential to hinder an organization's business continuity. The BCMS framework is also intended to help organizations build resilience by being able to

respond to a catastrophic event in a timely, effective and structured manner.

Without a BCMS, an organization may experience failure in continuing its activities. Without BCMS, organizations require a long recovery time and have a significant impact on business activities.

Fatma gave an example of good BCP regulations in the upstream oil and gas industry. BCP implementation in the Indonesian oil and gas industry had been carried out since 2015, because SKKMigas have required companies to include an Emergency Response Plan (ERP), Crisis Management Plant (CMP), and Business Continuity Plan. Companies must also carry out drills so that BCP is implemented and integrated with ERP and CMP.



Harnessing Nickel Sustainably for a Brighter Future

By : Maria R Nindita Radyati, PhD *)

INDONESIA leads global nickel production, contributing over 30% of the supply in 2022 (Statista, 2023). Nickel is essential in various applications, with more than 12% used in major home appliances, mostly in stainless steel, and another 5% in alloys for electronic components and mobile phone parts. Crucially, nickel is pivotal for a low-carbon economy, being integral to electric vehicle (EV) batteries and renewable energy systems. As clean energy demand rises, so does the need for nickel. However, irresponsible mining can lead to deforestation, habitat loss, pollution, and social conflicts (Sebrell & Ivanov, 2023).

Sustainable nickel mining aims to mitigate these adverse effects while meeting global demand. Sustainable methods are vital for balancing economic benefits with environmental and community protection.

Consumer demand is a significant driver for sustainable practices in nickel mining. Companies like Apple, Volvo, Ford, and VW require sustainably sourced materials. Additionally, ESG rating agencies scrutinize public sustainability data, motivating companies to

adhere to good ESG practices. The ESG risk ratings from Sustainalytics and MSCI are widely referenced in Indonesia. High ESG risk ratings deter investors and leaders, prompting companies to identify and address gaps according to the rating agencies requirements.

Government regulations and community pressure also drive companies towards sustainable mining. Adhering to global standards and independent audits of ESG practices is essential. Two prominent global standards guiding sustainable nickel mining are the International Council on Mining and Metals (ICMM) Mining Principles and the Initiative for Responsible Mining Assurance (IRMA).

Nickel production is energy-intensive, generating significant carbon emissions. Key environmental issues include reducing emissions, waste, pollution, conserving water, and protecting biodiversity. Practices such as water recycling, renewable energy use, and land rehabilitation are critical. Social aspects focus on fair labour practices, worker safety, respecting indigenous and local communities, and supporting community

development. Governance aspects emphasize transparency, ethical practices, anti-corruption measures, and strong stakeholder engagement.



Companies like Vale SA, Anglo American, BHP Group, Glencore, and Jinchuan Group International Resources invest significantly in sustainability initiatives. These include environmental initiatives to reduce carbon footprints, reduce water usage, renewable energy projects, developing nickel sulphate plants for EV batteries, and setting targets for net-zero emissions by 2050 (Mining and Minerals Today, 2023).

In Indonesia, PT Vale Indonesia, a subsidiary of Vale SA, exemplifies sustainable mining practices. PT Vale Indonesia identified gaps in its ESG performance, conducted risk analysis, prioritized risks, formed a Sustainability Committee, established a sustainability department, set targets, monitored progress, and evaluated performance through an ESG Dashboard. These efforts led to a significant reduction in the company's ESG risk rating. Vale's commitment to transparency includes maintaining a comprehensive collection of ESG documents available to stakeholders (Vale, 2023).

Effective ESG implementation requires commitment from top leadership and engagement across all departments. Transparent disclosure of ESG performance is essential, particularly for publicly listed companies. Achieving good ESG performance is challenging but crucial for the earth's sustainability and societal welfare.

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*)Maria R Nindita Radyati is the Chairperson of ESG Taskforce at the Indonesia Chamber of Commerce

Hopes for The New President: Disaster-free Country

by : Soehatman Ramli *)

WITH THE UPCOMING 2024 Indonesian elections, the public's hopes towards presidential candidates would focus on safety, overcoming threats of accidents, natural disasters, and pandemics.

Indonesia will have its new president next year. Of course, there are many programs and work plans that will be put forward by each presidential candidate, hoping to earn the public's trust and win the election. The new government will definitely continue to build the nation towards a better Indonesia.

Those of us who are involved in the world of safety, especially the Occupational Safety and Health Administration (OSHA) also have high hope that the safety conditions in our country will improve. Accidents and disasters, to this day, still haunt the people. Every year, hundreds of thousands of people suffer from accidents and disasters. It may vary, such as accidents at work, public places, recreation areas, on the roads, schools, and even at home. More than 30 thousand died on the roads and another 3,000 died at work.

Accident in public space is no less. Several cases were involving students. They became victims of accidents at school, fires in residential areas, and many more. Some disasters befall communities due to nature crises, such as floods, landslides, earthquakes,

droughts, and even forest fires. The last that just happened was the Covid-19 pandemic, which occurred throughout the world and not only caused the death of around 16 million people but also paralyzed the world economy.

THE ROLE OF SAFETY

Every living creature needs safety, including humans. According to Maslow's theory, safety is part of "human needs", and it is our primary needs, potitioning right after fundamental physical needs to be able to live normally. Even religion also teaches us to maintain safety live, both in this world and later in the hereafter. For the Indonesian people, the Preamble to the 1945 Constitution also clearly implies the State's aim to protect the safety of all the Indonesian people and nation. The government is obliged to protect all Indonesian people, including protecting their safety.

Has this hope been achieved after 78 years of Indonesian independence? We are forced to answer that this is still far from expectations. The number of accidents and disasters is still high. Indonesia is located in the Ring of Fire. Various natural disasters befall the Indonesian people, such as volcanic eruptions, tsunamis, earthquakes, and landslides. On the other

*) Soehatman Ramli, Chairman WSO Indonesia

hand, the national development process also creates negative impacts, such as pollution, apart from having positive impacts. Forest fires in Riau and Kalimantan, tank explosions, and several traffic accidents to name a few.

Unfortunately, safety has not become our common attention and concern, nor has it become an integral part of Government policy. Many incidents such as environmental damage, disasters, accidents, and forest fires are basically rooted in low safety culture and awareness among Indonesian people.

ROLE IN SAFETY

Singapore PM Lee Kuan Yew, at one of the APOSHO events in Singapore, stated that, "I am a Safety Officer



for Singapore". This commitment shows that the Singapore Government cares about, and is responsible for, the safety of its citizens. This is what drives the implementation of safety in all sectors. We see how disciplined Singaporeans are in implementing safety in their daily lives. Let us hope that the safety aspect can become priority of our future leaders.

BENEFITS OF IMPLEMENTING SAFETY

The reason behind implementing safety in development can be examined from various aspects, such as moral, humanitarian, economic, productivity, welfare, or other. The ILO once released a data on the correlation between safety and national competitiveness. Countries with low accident rates have high competitiveness while, on the other hand, countries with high accident rates have low competitiveness.

It is indeed worrying that Indonesia is ranked at the bottom with the highest accident rate in the world (40 deaths per 100,000 workers), so Indonesia has the lowest competitiveness. The ILO also revealed that losses due to accidents and disasters can cause losses of 4-5% of a country's GNP. This means that by implementing safety, the Government can increase national productivity. It is exactly the theme of the Indonesian National OSHA movement, "Advanced OSHA for Advanced Indonesia." ("*K3 Unggul Indonesia Maju.*")



The Importance of Work Stress Management

Author : Syed Tayyeb Hussain

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EVERYONE CAN
EXPERIENCE
STRESS AT
WORK. IT IS VERY
IMPORTANT TO
MANAGE STRESS
SO THAT WORK
ACTIVITIES AND
PROCESSES
CONTINUE TO
RUN WELL.



WHAT IS MEANT by stress? Stress is a word that is rarely understood with certainty and there is no single definition of the term. Stress can mean different things to different people.

Stress can be defined in many ways. For example, “is any influence that disturbs the natural balance of the body of living creatures”. It can also be defined as “a psychological response that occurs after failure to overcome a problem”. Some call it “a prolonged feeling of anxiety, which over a certain period of time can cause illness.” Some even define it as “a nonspecific response of the body to any demands made on it”.

Job stress can be defined as a psychological state that can cause a person to behave abnormally at work. The cause is people’s response to an imbalance between job demands and their ability to cope.

There are three main types of stress experienced by humans. The first is psychosocial. The causes of this stress are a function of the complex interaction between social behavior and the way a person’s senses and mind interpret that behavior. For example, overload, underload, frustration, and adaptation.

Second, bioecological. Bioecological causes of stress are biologically related, and arise from a person’s relationship with their environment. Examples include discomfort regarding noise, nutrition, hot or cold conditions, biorhythms (circadian rhythms), muscle overload or static position tension, and body trauma caused physically or chemically.

Third is personality. The triggers are self-perception, behavior patterns, anxiety, and control. This reflects the dynamics of individual self-perceptions, attitudinal characteristics, and behaviors that may contribute to excessive stress.

The environment in which people work, with certain noise levels, affects the human body’s systems which can ultimately impact performance. In some cases, decreased performance also damages the work system.

For someone to perform well, they need interesting work, good working conditions, the opportunity to take part in a social environment at work, and a feeling of being valued. Stress will disrupt this dynamic.

The impact on jobs is varied. Missed deadlines, poor productivity, ineffective decision making, and, in many cases, poor punctuality and absenteeism, are just a few examples.

Not all negative

In truth, not all stress is bad for humans. On the one hand, most people need a certain level of stress or positive pressure in order to perform well the tasks assigned to them.

On the other hand, some people are able to deal with higher levels of positive stress. This is a form of the classic fight response or ‘butterfly feeling’. Much



like what someone experiences before taking an exam, taking part in a competition, or attending a job interview.

However, there are still people who cannot accept too much pressure. Negative stress or difficulties, such as those arising from having to meet set deadlines or delegating responsibilities, usually cause poor health. How well or poorly a person adapts to changes in life is an important factor in stress considerations. This is where employers need to consider implementing stress management strategies.

Stress signs

Stress can have a significant impact for individuals and organizations. No two people show the same stress response. However, many signs of stress are easy to recognize.

The first thing that can be easy to see is emotional disturbance. This is usually characterized by prolonged fatigue, anxiety, and lack of motivation.

The second is cognitive signs that can result in an increased potential for errors at work. In some cases, stressed workers can cause accidents because the worker makes mistakes.

The third sign is a change in behavior that causes relationships with coworkers to worsen. If a worker becomes irritable, is often indecisive, begins to be absent a lot, suddenly becomes a smoker, eats too much, or consumes alcohol, then it is reasonable to suspect that he is under stress.

The last is psychological signs. Stress is characterized by individual complaints related to worsening health. Generally, workers complain of headaches, general aches and pains, and dizziness. This is influenced by increased blood pressure, heart disease, decreased resistance to infection, as well as changing skin conditions and digestive disorders.

Causes of stress

Poor working conditions are a frequent source of stress in the workplace. What constitutes a bad condition?

Inadequate space, office layouts that are too open (or too closed), inhumane workplace layouts, inappropriate temperature and humidity controls, lighting levels, excessive noise levels and poor ventilation.

Company policies and procedures, culture and operational procedures can also trigger stress. Culture is defined as 'a state or set of behavior within a particular organization'. All organizations incorporate one or more cultures, which are generally described as friendly, hostile, disrespectful, or family style.



Stress can be linked to organizational culture and style. For example, if the number of staff is insufficient for the size of the workload. There are not enough workers, resulting in excessive overtime work, which ultimately triggers stress. Then: poor coordination between departments, lack of training to do the job well, lack of information for workers, no control over heavy workloads, rigid work procedures, no time given to adapt to changes, all these can also cause workers to become stressed.

Connecting with other workers within the framework and structure of an organization can trigger stress if the relationship is poor. For example, when the relationship with your superior is not good, this may arise due to a lack of understanding of each other's roles and responsibilities. There can also be differences of opinion regarding attitudes held, or other human emotional problems, such as greed, envy, and lack of respect. On the other hand, workers need input from co-workers or management, so as not to cause feelings of isolation and hopelessness which will lead to stress.

Difficulty in delegating responsibilities, perhaps due to insufficient management training, can also trigger stress. Every worker has a need to "get the job done right." When there is a feeling of distrust of subordinates, or there is no clear dividing line regarding the respective functions of management and employees, a person can become stressed.

Personality conflicts that arise, for example due to differences in language, regional accent, race, gender, temperament, level of education and knowledge can also trigger stress.

The relationships that form between people personally and socially often trigger stress. For example, when workers lack the opportunity to have social contact while working due to the high-level nature of the tasks. Other examples are sexism and sexual harassment, racism and racial harassment, conflict with family demands, divided loyalties between

personal needs and organizational demands.

Inadequate, outdated and unreliable work equipment is often associated with stressful conditions among workers. This can happen because equipment that is not suitable for the environment will make the work situation uncomfortable. Equipment is not maintained and often breaks down; placement that is too far between departments, which increases discomfort and reduces effective verbal communication between employees, also makes workers vulnerable to stress.

Dealing with stress

From an individual perspective, it is recommended to balance life in the social and work environments. Arrange your work schedule carefully so that you still have time to socialize. Workers are also encouraged to have hobbies or do something fun in their spare time. Regular physical activity can help reduce stress. A healthy lifestyle such as getting enough sleep and eating nutritious food also really helps reduce stress levels.

Meanwhile, from the employer's side, it is recommended to implement an open management system. Workers can discuss complaints regarding the work environment or work equipment, which require advice and input from the employer.

All people are different in terms of their attitudes, personalities, motivations and ability to deal with stress. In this case, employers must be able to identify the causes of stress in employees, so they can find solutions. If workers lack confidence in completing work, for example, employers can provide appropriate training. Likewise, if it is discovered that a system or equipment is not functioning optimally, the employer can improve conditions so that workers do not become immersed in prolonged stress.

In order to survive stressful events in their lives, people need to be more aware of stress, especially regarding coping strategies.

PROFESSIONAL AND COMPREHENSIVE SOLUTION FOR LOCKOUT TAG OUT (LOTO) PROCEDURE



LOCKOUT-TAG OUT (LOTO) IS A CRUCIAL SAFETY SYSTEM USED TO EFFECTIVELY ISOLATE HAZARDOUS ENERGY DURING MAINTENANCE OR REPAIR OF MACHINES AND EQUIPMENT. THIS ENERGY CONTROL METHOD PLAYS A VITAL ROLE IN PROTECTING WORKERS BY PREVENTING THE UNEXPECTED RELEASE OF DANGEROUS ENERGY FROM MACHINERY, ELECTRICAL INSTALLATIONS, OR OTHER EQUIPMENT UNDERGOING MAINTENANCE. IMPLEMENTATION OF LOTO PROCEDURES IS A FUNDAMENTAL SAFETY MEASURE, CONTRIBUTING TO A SECURE WORKING ENVIRONMENT AND MINIMIZING THE RISKS ASSOCIATED WITH ENERGY-RELATED INCIDENTS.

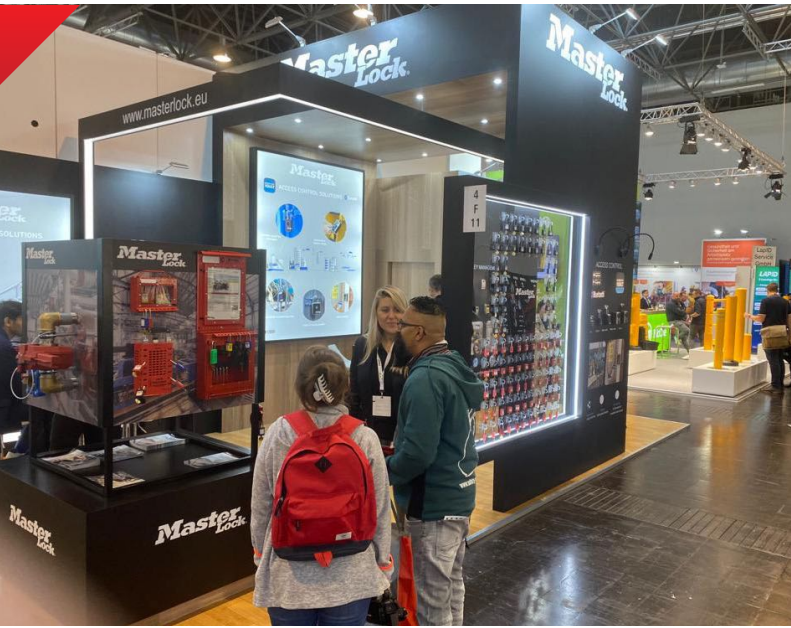


THE INDUSTRIAL sector in Indonesia is experiencing rapid development, resulting in a diverse array of machines being utilized. The escalating demand for increased efficiency has led to the widespread use of various machinery and equipment.

However, this surge in technological complexity poses significant challenges to workplace safety. Operating sophisticated machinery need heightened concentration and focus from workers. Particularly during repair or maintenance activities, the implementation of lockout-tag out procedures, involving the proper locking and tagging of machines, has been crucial. This is essential for preventing work-related accidents caused by accidental or uninformed activation.

Looking back, in 1989, the Occupational Safety and Health Administration (OSHA) introduced standard 29 CFR 1910.147, titled "The Control of Hazardous Energy," establishing Lockout Tag out compliance standards for the industrial sector. This standard highlights the ten most frequently cited standards by OSHA related to hazardous energy control activities. Significant emphasis is placed on the potential risks and the negative impact on worker safety if these standards are not adhered to.

According to OSHA statistics over the last decade in America, the fourth most common accidents are attributed to the danger of being trapped, squashed, or crushed between two or more objects. Such incidents can be mitigated by understanding the associated risks,



donning appropriate personal protective equipment (PPE), implementing a Lockout Tag out system, securing moving or rotating parts, and maintaining a safe distance from equipment. Adhering to these measures not only aligns with OSHA standards but also significantly contributes to the prevention of accidents and the overall enhancement of worker safety.

Samuel Chu as Sales Director Greater Asia from The Master Lock Company said that Lockout Tag out is an important step that must be taken by every company that operates dangerous machinery and equipment. This is not only the company's responsibility, but also the worker's right to work in a safe environment. Implementing a good LOTO process, we can prevent accidents and keep safety a top priority in the workplace.

Samuel Chu emphasized the critical importance of implementing Lockout Tag out (LOTO) for any company operating dangerous machinery and equipment. He stated that this responsibility extends beyond the company itself; it is also the right of workers to operate in a secure environment. A well-executed LOTO process, according to Chu, is instrumental in accident prevention and underscores the paramount importance of safety in the workplace.

OSHA STANDARD

OSHA standards for the requirements of all locks and safety devices have been met by Master Lock Company. The five requirements of this specification are:



Durable

Made with materials that can withstand repeated use.

Substantial

Cannot be opened except by authorized persons.

Standardized

It can easily be differentiated from other products based on color.

Identifiable

Able to identify workers who are responsible for using tools/devices.

Exclusive for Safety

Specifically, for safety and as a tool to control dangerous energy and not for other uses.

Chu continued to highlight that the application of the LOTO system is not exclusive to the manufacturing industry. It is equally imperative in sectors such as hospitals, hotels, resorts, and other industries where the need arises. He underscores the necessity for a customized LOTO system tailored to the unique requirements of each industry.

The Master Lock Company, as noted by Samuel Chu, is dedicated to ensuring innovation and quality to uphold work safety. He states, "Strength, reliability, and ease of use define our extensive selection of proven products." Chu quoted The Master Lock Company's official statement, affirming their commitment to providing the security and confidence required in various industries.

Efficient Implementation of LOTO

The effectiveness of Lockout Tag out (LOTO) implementation in a company becomes immediately evident during a visit. A key indicator is the swift and decisive execution of the LOTO procedure when a machine requires repair. Workers demonstrate a proactive approach by promptly initiating the LOTO process, notifying relevant personnel about the machine, identifying necessary shutdowns, specifying control measures, and locating nearby lockout equipment.

A notable aspect is the regular integration of this procedure into normal and routine duties, showcasing a commitment to safety as an integral part of daily operations. This proactive stance ensures that workers are well-versed in LOTO protocols, and the procedure is seamlessly incorporated into their work routine.

Highlighting the significance of maintaining a safe work environment and complying with standards, Samuel Chu from The Master Lock Company emphasized the role of their products in prioritizing worker safety and business security. He concludes the interview with ISafety by underlining The Master Lock Company's commitment to providing comprehensive services to support Indonesia in fostering a safe and secure work environment.



It is important to maintain a safe work environment and comply with OSHA Lockout/Tag out Standards. Master Lock is a reliable partner in meeting these strict requirements. Master Lock products are designed to assist you in prioritizing the safety and security of both your workers and your business. As emphasized, Master Lock's commitment is to provide reliable solutions that contribute to the overall well-being and compliance of your workplace.

• Samuel Chu •

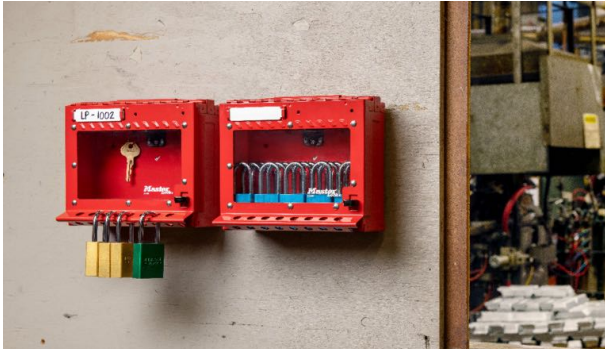
THE ORIGINS OF THE MASTER LOCK DATE BACK TO WORLD WAR I WHEN, IN 1919, RUSSIAN IMMIGRANT HARRY SOREF, THEN AN ITINERANT LOCKSMITH WORKING AS A MILITARY CONSULTANT, WAS INSPIRED BY A TYPE OF LAMINATED STEEL USED IN BANK VAULTS AND THE CONSTRUCTION OF WARSHIP HULLS FOR MAKE A PADLOCK USING A PADLOCK



1921 MASTER LOCK FOUNDER
HARRY SOREF



COMPREHENSIVE SYSTEM



The Master Lock Company has trusted a comprehensive process in providing safety products. Starting from assessments to periodic audits. The comprehensive process has been carried out by The Master Lock Company team in providing suitable safety products for the needs of different industries, including:

- Assessment is the first step to identify potential weaknesses and unique needs of customers. This information is very important for adjusting product needs, both in industry and institutions.

- Following the completion of the assessment process, a written procedure is created, encompassing a comprehensive strategy for safety and security. This documented procedure serves as a blueprint, detailing the necessary Lockout Tag out system implementation.
- Written procedures are a guide for customers and workers, ensuring compliance with standard procedures.
- The Master Lock Company then provides training for workers on how to properly use and maintain safety products. The aim of this training is to strengthen the skills and knowledge of product users to maximize the implementation of their LOTO system.
- Appropriate equipment: The results of the assessment provide data for providing appropriate safety equipment that meets industry needs.
- Access control is an important component of The Master Lock Company products, effectively preventing unauthorized workers from activating machines during maintenance or repair.
- Regular audits to evaluate effectiveness, identify any vulnerabilities, and provide recommendations for improvement. They also ensure that written programs and procedures are consistently followed.

The Master Lock Company's holistic process is aimed at adapting to customer expectations and needs.

THE MASTER LOCK COMPANY

The Master Lock Company, established in 1921 by Harry Soref, originated from a modest shop in Milwaukee, Wisconsin. With a history spanning over 100 years, this company has become renowned for producing high-quality padlocks, security products, and innovative safety solutions. Trusted by millions of businesses worldwide, The Master Lock Company has evolved significantly since its humble beginnings.

The company has maintained a commitment to innovation, continually introducing various types of locks and security solutions. Notably, in the 1930s, The Master Lock Company pioneered the first combination lock, widely used for school lockers and storage boxes. Over time, their product

line expanded to include bicycle locks, door locks, and other high-quality security solutions.

With manufacturing facilities and distribution centers across the globe, The Master Lock Company serves customers in more than 100 countries. The company's commitment to innovation has enabled it to meet the challenges of an ever-changing world. The dedication to quality and safety remains a cornerstone, ensuring that safety and security continue to be the primary foundations for economic development. This commitment is expected to endure through the next generation, solidifying The Master Lock Company's position as a leader in the industry.



Master Lock was born in Milwaukee and still has headquarters and a large factory in the area.

 COLUMN

SELF-FULFILLING PROPHECY VS. SAFETY

By: Syamsul Arifin



SELF-FULFILLING prophecy, or a prediction that will come true by itself, is a concept initiated by American sociologists, William Isaac Thomas and Dorothy Swaine Thomas (1928). This concept was later developed and became famous thanks to Robert King Merton (1948). In short, a self-fulfilling prophecy explains the condition between expectation and future reality. When we believe or have certain expectations, regardless of whether they are right or wrong, then those things will come true.

I first came across this term when I took a course on the basics of psychology, about 20 years ago. The application of this term can cover many aspects. In education, for example. Sometimes a teacher predicts or labels his students as stupid in their first meeting, judging from the stereotype of the student, he or she may be coming from a poor family or a certain ethnic group. That label then, through social interactions between them, will become reality. The student will act according to the teacher's prediction. In the end, the student's condition will confirm something that was initially wrong.

There are two types of self-fulfilling prophecies. The first is prophecies that arise from within oneself. For example, when one's own expectations or judgments influence actions. The second are prophecies that arise due to encouragement from other people. This is a condition when expectations or suspicions, and possibly also things said by other people, influence a person's actions. This is following the case example of teachers and students above. All thoughts or opinions that a person considers meaningful can be the cause of this prediction to come true.

In the world of OSHA, I am reminded of the development of the latest theory put forward by Professor Sidney Dekker from Griffith University in Australia. The concept is 'Safety Differently', or seeing safety in a different way. The term Safety Differently emerged in 2012, when the Professor was asked for his consideration by an organization whose safety

performance remained static. The organization has more and more bureaucracy, documentation, and requirements for complying with work regulations and procedures are also complete.

One of the main ideas of Safety Differently is that frontline workers are the solution - not the cause - of various safety problems in the workplace. This movement of thought is in line with the concepts of 'safety-II' and 'resilience engineering' promoted by professor Erik Hollnagel from Linköping University in Sweden. However, Safety Differently emphasizes organizational governance and innovative leadership.

Blaming workers for causing accidents - one of the dangers that must be controlled - can be traced far back. Starting from the development of scientific management by Frederick Taylor and husband and wife Gilbreths (1910s) who applied scientific methods in determining the most efficient way to do work.

The scientific management credo believes that workers must adhere to the only way to do work to increase efficiency and ensure safety. This is done through control of workers through compliance with procedures, coercion and punishment if they do not comply, and through supervision of the hierarchy, in this case superiors.

This mentality was reinforced by Herbert William Heinrich (1930s) through his domino theory. The insurance company's assistant superintendent made an analogy of dominoes to explain the causes of accidents. Initially, the first dominoes to fall were heredity and social conditions (ancestry and social environment). This factor gives rise to weak characters in workers, such as being easily angry, indifferent, or not caring. These weak characteristics result in unsafe conditions, mechanical hazards, and unsafe actions. This is what then leads to accidents that cause injury and death.

Initially, Heinrich focused on accident prevention interventions by improving physical and protective conditions in the workplace. However, at the end of his

career, he shifted his focus to eliminating unsafe acts committed by workers. Until now, we can see the influence of Heinrich's mindset in the Behavior-Based Safety (BBS) program.

With further development of science, the dominance of the behavioral psychology approach in the BBS program is starting to fade. OSHA thinkers and practitioners recognize that human error is normal. This is supported by the development of human factors science (1940s) which uses a systemic perspective or the interconnections exist in work systems (humans, work, and environmental/organizational conditions).

Especially in this day and age, where the working system is increasingly developing. We should look at the role of humans in complex technological systems from a different perspective. Humans, especially frontline workers, should no longer be seen as the source of problems. In fact, they are the recipients of problems that are initiated due to imperfect design of equipment, work, technology, work environment conditions and organization. It is worsen by limited resources availability and the pressure of focused interests from various socio-technical levels.

Misconceptions about workers need to be corrected. Humans are not the source of problems but the source of solutions to safety problems in the workplace. So the vocabulary or approach used by OSHA practitioners should begin to shift from initially focusing on negative and coercive things. The point of view must be positive, such as humanist empowerment of human diversity.

Albert Einstein is often credited with this quote, "we cannot solve our problems with the same thinking we used when we created them". We have done a lot of damage in the workplace by assuming that workers (humans) are the source of the problem. Distrust, disappointment, loss of initiative to express opinions, reluctance to report, feelings of inferiority, fear, etc.

If we continue to see workers as the source of problems, and we are unable to move on by following the latest scientific developments based on data and facts, then our safety conditions will not ever change. If we continue to try to solve today's problems with solutions from the past, then it is only natural that work accidents will continue to exist.



Author:

Syamsul Arifin, SKM. MKKK.
Cert IOSH.

K3LH Practitioner

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**“For safety is not a gadget
but a state of mind.”**

• ELEANOR EVERET •





BE... **OUR PARTNERS** THE WORLD SAFETY TEAM

"...to protect people, resources, environment, and property"
and the support of the WSO motto
"Making Safety A Way Of Life... Worldwide"



PLEASE CONTACT
WSO NASIONAL OFFICE FOR INDONESIA
FOR FURTHER INFORMATION
(021) 82751883
Soehatman Ramli (Director)
soehatmanramli@yahoo.com

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TO BE OUR MEMBERS**