

# ANALYSIS OF SMK3 IMPLEMENTATION AND CAUSES OF WORK ACCIDENTS AT PT. BUMI DUTA PERSADA (BDP) IN TANGERANG REGENCY

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## ARTICLE INFO

## ABSTRACT

### Keywords:

Analysis, Implementation, SMK3, Causes of accidents, PT. Bumi Duta Persada (BDP).

This study was conducted with the aim of analyzing the implementation of SMK3 and the causes of work accidents at PT. Bumi Duta Persada (BDP) in Tangerang regency when carrying out work there are many risks that can occur, namely work accidents are very risky to occur, Factors causing work accidents can occur due to 2 conditions, namely unsafe project locations or unsafe labor behavior, unsafe labor behavior has a higher influence than unsafe project locations, Unsafe worker behavior occurs due to several things, namely lack of awareness of wearing Personal Protective Equipment (PPE), joking with friends while working, procedural errors and not using assistive equipment while working, work accidents are due to the low implementation of Occupational Safety and Health (K3). To minimize the level of risk of work accidents, it is necessary to implement an Occupational Safety and Health Management System (SMK3). One of the causes of the increasing number of work accidents is the absence of optimization of supervision and implementation of K3 and K3 behavior in the workplace. This research method is qualitative descriptive research Data analysis is by Preliminary Hazard Analysis (PHA) method and 5W - 1H method. Bumi Duta Persada (BDP) in Tangerang regency. The results of the study were the lack of use of Personal Protective Equipment (PPE) when doing work, causing small category accidents and medium category accidents. there were accidents during concrete casting work and road paving work with a total number of accidents, 16 accidents with a small accident category, 13 accidents and 3 accidents in the medium category, lack of awareness from workers in complying with regulations set by the company such as working in accordance with standard operating procedures (SOP) and using PPE while working, factors causing non-fulfillment of the implementation of the health management system and work safety (SMK3), namely the lack of awareness of workers about work safety and also the limited budget of funds in the implementation of SMK3, the level of work risk is included in the small risk level of the value range (1 - 4) where the level of danger is small with a small hazard classification, this happens because the level of work falls into the category of small level risk.

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## 1. INTRODUCTION

Based on observations and literature, researchers obtained data and information about work accidents in the 2019-2021 period, the majority of accidents, namely 64.4% occurred at work, then 27% on the road, 8.2% outside the workplace and 0.3% elsewhere. In 2019-2021, the most work accidents occurred in various industrial sectors (22.3%), trade and services (21.4%), agriculture and fisheries, plantations and forestry (17.3%) and the consumer goods industry (15.5%). registered). and the chemical industry (12.1%).

The number of work accidents in construction may be higher, while the need for worker safety becomes an increasing demand along with the increasing fulfillment of basic needs. Occupational health and safety management plays a very important role in preventing accidents in construction projects. (Khairil, 2022).

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Construction accidents remain an important issue that requires the attention of project stakeholders, as the high number of accidents requires a comprehensive construction safety management approach Total Safety Management. (Wijaya, R., & Paing, J. 2018).

In the view and principle of K3 all accidents can be prevented (all injuries are preventable), All accidents can be prevented because all accidents have a cause if we know the cause of work accidents, the possibility of accidents can be avoided, this principle will give birth and the beginning of the development of K3, types of work accidents, human behavior, unsafe conditions and actions, occupational diseases, occupational health and industrial hygiene. (Soebroto, G., & Suwitho, B. 2022).

PT Bumi Duta Persada is a manufacturing and service company that produces Asphalt used for road work, manufacturing at the company is the hotmix production process from raw materials processed into finished raw materials, while for the type of service, namely by making roads or abandoning roads, both national roads and regional roads, for *asphalt* delivery or its production, usually every time there is an order or tender project, either with the government or SOEs, it will carry out production and delivery according to the order and needs ordered.

**Table 1.** of Work Accident Rates at PT. Bumi Duta Persada in 2020-2022

No	Year	Number of Work Accidents	Minor Accidents	Moderate Accident
1	2020	30	25	5
2	2021	26	23	3
3	2022	29	25	4
<b>Sum</b>		85	73	12

To minimize the level of risk of occupational accidents, the introduction of an occupational safety and health management system (SMK3) is necessary. One of the causes of the increasing number of workplace accidents is the lack of monitoring and implementation and optimization of occupational health and safety behaviors in the workplace. Protection of occupational safety and health is important for companies, because the impact of work accidents and occupational diseases can not only harm employees directly or indirectly, but also harm the company. (Ariani & Peli, 2020).

Every company wants its K3 Occupational Safety and Health System to run well because if the safety system is not good, the company's management spends quite a lot of costs, causes unsafe behavior, so it fails to create good work safety conditions. (Sukmana & Wijayanti, 2022). Safety factor as the main need, this shows the need to further improve the priority of safety in the company where management considers worker safety as important as achieving operational targets. (Martviyori et al., 2022).

The high number of occupational accidents in the construction industry and occupational health and safety requirements demand efforts to achieve zero accidents in the construction industry since the promulgation of occupational safety regulations. (Maddeppungeng et al., 2021). To minimize the level of risk of work accidents, it is necessary to implement an Occupational Safety and Health Management System (SMK3).

## 2. METHOD

This research is a qualitative descriptive research. Qualitative descriptive research is a research method that collects and analyzes word forms (spoken or written) and human actions, and researchers do not try to calculate or measure the qualitative information obtained and therefore analyze numbers. This study examines job security (K3). The results to be achieved through this qualitative method are the application of an occupational safety and health management system (SMK3) can solve problems that occur and the application of SMK3 can reduce the rate of work accidents.

### 1. Observation

Observation or observation is a technique used to gather information or facts that are useful for studying a system. With the help of this method obtained information and a clear picture of how to determine the current state of the company and what problems the company is currently facing. Bumi Duta Persada in order to understand more about SMK3.

Observations made by researchers are making observations or to the location of work being carried out by PT. Bumi Duta Persada, this observation only includes observations of any activities or work being carried out by PT. Bumi Duta Persada so that researchers can get data from the activities carried out.

### 2. Interview

In interviews, information is collected and unearthed by someone like a respondent. The use of interview methods in this study aims to provide information about occupational safety and health.

Interviews were conducted by researchers to informants, with 4 informants, namely father Nur munif, ST. Father Novel Ridwan, ST., MT, father Abu Sofyan, ST., MT and Father Muhamad Faruk A, ST. The researcher gave questions to the informant and then the results of the interview were used as material for the dissemination of the research.

### 3. Documentation

Documentation is a way of collecting information from various sources such as reports, records and documents contained in the company as documents, to strengthen the research, researchers take documentation, namely documentation of work activities carried out by PT. Bumi Duta Persda, location of activities, documentation when conducting interviews, and all activities carried out by PT. Bumi Duta Persada is used as documentation to support this research activity.

Qualitative data analysis is carried out if the experimental data obtained is qualitative data in the form of a collection of words instead of numerical series and cannot be classified into taxonomic types/structures. Data can be collected in a variety of ways (observations, interviews, document summaries, tape recordings) and are often processed before they are ready for use (by recording, typing, editing), but qualitative analysis always uses general words arranged as text, expanded, and does not use mathematical or statistical calculations as analytical tools.

#### 1. Conclusion drawing

Draw conclusions continuously throughout the research process, from the beginning of arrival at the research site to the data collection process. The author tries to analyze the collected data looking for patterns, themes, common problem similarities, etc., leading to conclusions that are still tentative but with improved data through a continuous review process, and each conclusion becomes never verified by ongoing research. When testing the validity of the data, researchers used the triangulation technique ie. Confirm through other sources.

#### 2. Triangulation

When testing the validity of the data, researchers used the triangulation technique ie. Confirm through other sources. That is by comparing the data from one informant with another informant.

##### 1. PHA (Preliminary Hazard Analysis) Technique

PHA is a simple inductive analysis method whose goal is to identify potential hazards and potentially hazardous situations and events that can cause damage to an activity, facility or system. Its power can be used in conditions where the organization has limited information. Allows risks to be considered at an early stage of the system or life cycle of a process or activity. The downside is that PHAs only provide preliminary information, nor do they provide detailed information about risks and how they can be properly prevented. PHA relies heavily on the understanding and knowledge of the analysis team.

##### 2. Method 5W – 1H

With the correct application of K3, the company will not experience losses due to problems that come from employees. In this case, the company is fully responsible for what befalls the workforce in their company. Through this responsibility, employees will feel prosperous and loyal to the company, Planning and implementation of K3 must be carried out as well as possible in every job of using Hazardous Chemicals by paying attention to the following PPE (Personal Protective Equipment) in accordance with the risk factors of danger, P3K must be prepared adequately and used as appropriate.

### 3. RESULT AND DISCUSSION

Based on observations, interviews and documentation at the research site, the work carried out by PT. Bumi Duta Persada is concrete casting work and hotmix / road paving work.

#### 1. Concrete Casting Work

The road concrete casting process is carried out from May 28, 2023 to June 11, 2023, this work is carried out during the day. During the implementation of road concrete casting work, there was a minor accident, namely the worker was injured because he was pinched by the begisting during the process, this was caused by workers not using gloves during the process of installing the begisting, When the process of pouring concrete from the molen car there were workers who were exposed to matrial debris because the worker lacked focus.

## 2. Hotmix/Paving Work

The implementation of hotmix / road paving is carried out from June 1, 2023 to June 11, 2023, the work is carried out at night, when doing hotmix work there are minor accidents and moderate accidents caused by work tools, namely when lowering heavy equipment from a trailer car, the worker's foot is pinched by the rail bearing to lower the tool and causes the worker's legs to become swollen, This is because the worker does not use septy shoes.

Accident data of concrete casting work and hotmix / road paving work can be seen in the table as follows:

**Table 2** Work Accident Data Table for the 2023 Period

No	Causes of Accidents	Concrete Works			Asphalt Works		
		Small Accidents	Moderate Accident	Major Accidents	Small Accidents	Moderate Accident	Major Accidents
1	Workers injured by work tools	2	-	-	1	1	-
2	Workers injured by material fragments	3	-	-	2	-	-
3	Slipping / slipping	-	2	-	2	-	-
4	Fatigue / fatigue	-	-	-	3	-	-
Number of Accidents		<b>5</b>	<b>2</b>	-	<b>8</b>	<b>1</b>	-

Data sources at the 2023 research site

Hazard descriptions include job descriptions, hazard and hazard identification or legal requirements to assess the level of risk to workplace safety. Primary risk control, i.e. efforts to eliminate or mitigate risks and increase opportunities have been identified and evaluated based on the results of the assessment. Residual risk assessment is a risk assessment that arises after reviewing controls established to reduce workplace safety risks and risk follow-up controls, for additional efforts made to eliminate or mitigate identified risks and increase opportunities, and evaluated against opportunity outcomes and remaining risk assessments. Specific objectives and programs to describe control objectives and programs based on hazard identification, risk assessment, and priority opportunities.

NO	DESKRIPSI RESIKO			PERSYARATAN PEMENUHAN PERATURAN	PENGENDALIAN AWAL	DESKRIPSI RESIKO					PENGENDALIAN LANJUTAN	DESKRIPSI RESIKO				KE T
	URAIAN PEKERJAN	IDENTIFIKASI BAHAYA (Skenario Bahaya)	JENIS BAHAYA (Tipe Kecelakaan)			KEMUNGKINAN	KEPARAHAN	NILAI	TINGKAT RESIKO (TR)	KEMUNGKINAN		KEPARAHAN	NILAI	TINGKAT RESIKO		
1	Pengecoran Jalan Beton	Terjadi Kecelakaan Pada Saat Pengecoran	Pekerja Terluka Karena Alat Kerja Pekerja Terluka Akibat Terkena Material Terpeleset / tergelincir	UU 1/1970 tentang keselamatan Kerja UU 11/2021 Tentang Cipta Kerja UU 2/2017 Jasa Konstruksi Peraturan Menteri PUPR No. 10/PRT/M/2021 Spesifikasi Umum Bidang Konstruksi Jalan dan Jembatan	Pemasangan rambu lalu lintas dan rambu peringatan pekerjaan Memastikan operator kompeten dan paham prosedur operasi/ manual alat kerja Pemakaian APD Lengkap	3	4	1	2	SEDANG	Pemasangan Barikade Area Pekerjaan Pemasangan Lampu Penerangan Tambahan dan Lampu Isyarat pekerjaan Penggunaan Alat Komunikasi	1	1	1	Kecil	
2	Perkerasan / Hotmix Jalan Aspal (ACWC)	Terjadi Kecelakaan Pada Saat Pengaspalan	Pekerja Terluka Karena Alat Kerja Pekerja Terluka Akibat Terkena Material Terpeleset / tergelincir Kecapean / kelelahan	UU 1/1970 tentang keselamatan Kerja UU 11/2021 Tentang Cipta Kerja UU 2/2017 Jasa Konstruksi Peraturan Menteri PUPR No. 10/PRT/M/2021 Spesifikasi Umum Bidang Konstruksi Jalan dan Jembatan	Pemasangan rambu lalu lintas dan rambu peringatan pekerjaan Memastikan operator kompeten dan paham prosedur operasi/ manual alat kerja Pemakaian APD Lengkap	3	4	1	2	SEDANG	Pemasangan Barikade Area Pekerjaan Pemasangan Lampu Penerangan Tambahan dan Lampu Isyarat pekerjaan Penggunaan Alat Komunikasi	1	1	1	Kecil	

Kekerapan	Keparahan				
	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

**Keterangan**

1-4: Tingkat risiko kecil

5- 12: Tingkat risiko sedang

15- 25: Tingkat risiko besar

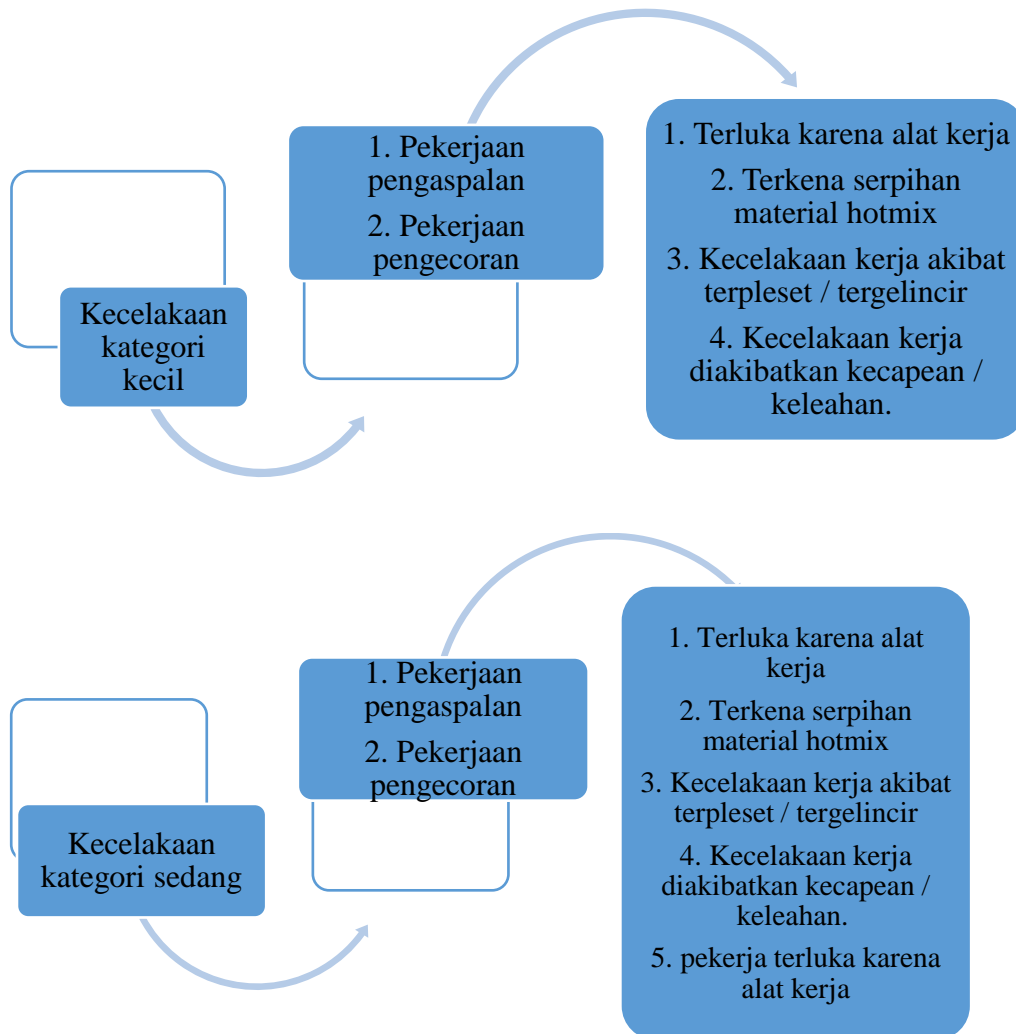
Jenis	5W 1H	Uraian	Penanganan
Kecelakaan sedang	<i>What</i> (apa)	Pekerja sedang melakukan pengecekan suhu hotmix di atas mobil dumtruck sebelum di tuangkan ke alat finiser.	P3K dan untuk penanganan selanjutnya di bawa ke rumah sakit / klinik
	<i>Why</i> (Mengapa)	Dikarenakan kelalaian sepatu pekerja li cin dan kurang septy.	
	<i>Where</i> (Di mana)	Pekerja terjadi kecelakaan di lokasi yang akan di hotmix / diaspal di ruas jalan batas kota serang – batas kab tangerang	
	<i>When</i> (Kapan)	Kejadiannya pada 4-Juni-2023 pada pukul 23.30	
	<i>Who</i> (Siapa)	Korban bernama muhamad anwar, dia adalah pegawai harian di perusahaan PT. Bumi Duta Persada.	
	<i>How</i> (Bagaimana)	Pekerja sedang ingin melakukan pengecekan suhu hotmix / aspal di atas mobil dumtruck.	

Jenis	5W 1H	Uraian	Penanganan
Kecelakaan kecil	<i>What</i> (apa)	Pekerja sedang melakukan pemasangan begisting	P3K
	<i>Why</i> (Mengapa)	Dikarenakan kelalaian pekerja tidak focus pada saat melakukan pemasangan begisting.	
	<i>Where</i> (Di mana)	Pekerja terjadi kecelakaan di lokasi pengecoran jalan cikande – rangkasbitung.	
	<i>When</i> (Kapan)	Kejadiannya pada 30-mei-2023 pada pukul 13.30	
	<i>Who</i> (Siapa)	Korban bernama rohmat, dia adalah pegawai harian di perusahaan PT. Bumi Duta Persada.	
	<i>How</i> (Bagaimana)	Pekerja sedang ingin melakukan pemasangan begisting untuk pengecora beton, tetapi pekerja tersebut tidak focus.	

Based on the results of data analysis with PHA and 5W – 1H, concrete casting work and hotmix / road paving work for the work period, namely from May 28, 2023 to June 11, 2023, there are accidents in the work process, namely the category of small accidents and moderate accidents, this is because there can be a risk of work accidents, namely, due to the negligence of workers who when doing work are not focused, the use of personal protective equipment (PPE) that is not optimal, fatigue or fatigue of workers is due to workers doing work beyond working hours, workers who should only participate in concrete casting work during the day but these workers also participate in hotmix / paving work at night, this is the cause of accidents due to fatigue or fatigue factors, this makes during the period of work implementation there were accidents of small and medium categories, this is in line with the words of the informant who handled K3, namely.

*"At the time of casting, workers slipped and were exposed to splashes from the casting material, but we can still handle this by giving directions before working".*

This foundry and road paving work at the time of the implementation of the work is very important in the occurrence of accidents apart from factors of worker negligence, lack of use of personal protective equipment (PPE), fatigue factors and others. Apart from these factors, traffic congestion that occurs on the road can cause work accidents as well, but this is outside the risk management process that is handled.



Occupational Health and Safety (K3) management system at PT. Bumi Duta Persada (BDP) they still do not have a good system because it is not perfect, because there are problems in employment, such as lack of discipline in using K3 equipment and lack of training or knowledge about K3, requiring companies to act decisively when establishing regulations or K3 systems. have conducted and conducted occupational safety and health training or education to reduce or prevent accidents and diseases as a result of work. In this case, the company is forced to do this so that employees can work with discipline and avoid work accidents.

Implementing an Occupational Health and Safety Management System (K3) i.e. Lack of Occupational Health and Safety Training, No budget related to K3 in construction projects, Personal Protective Equipment (PPE) Equipment for workers is limited, Workers do not care about the correct use of PPE, K3 is not implemented according to current standards. (Princess & Assidiq, 2022).

The occurrence of work accidents, be it minor work accidents, moderate work accidents and heavy work accidents is caused by human factors / mistakes or human negligence that does not comply with the use of personal protective equipment (PPE) so that it can cause the risk of work accidents. To minimize the risk of work accidents, workers must comply with the rules / standard operating procedures (SOP) imposed during the process or work implementation so that the risk of work accidents can be minimized. Every time there is an incident of negligence in working on work safety for both the company and workers. The company provides work equipment and facilities that support construction safety certification. (Indah et al., 2021).

In addition, to increase the risk of work accidents apart from providing worker training, completing PPE is planning about costs related to K3 or what if a work accident occurs so that if there is a clear plan if there is a risk of accidents can be maximized. A detailed calculation of K3 cost planning is required during the development process to understand the impact of K3 costs on the overall project cost when using K3. (Ariani & Peli, 2020).

The occupational safety and health protection system is an integrated management system for the implementation and further development of occupational safety guidelines set by the company and for the management of potential risks in the company. The purpose of an occupational health and safety management system is to prevent and reduce occupational accidents and diseases and create a safe, efficient and productive workplace. (Setyoko, 2017). The process of setting and reviewing targets, and implementing programs to achieve them, provides a mechanism for the organization to continuously improve its SMK3 and to improve its K3 performance. (Masjuli et al., 2019).

#### 4. CONCLUSION

Based on the results of the research that has been done, the author can conclude the results of the analysis of the implementation of SMK3 and the causes of work accidents at PT. Bumi Duta Persada (BDP) in Tangerang regency as follows: Lack of use of Personal Protective Equipment (PPE) when doing work causes small category accidents and medium category accidents. In the process of paving the road, there were 8 accidents, which were included in the category of small accidents, the cause of which was workers injured by work tools, workers injured due to material fragments, workers slipping / slipping, workers exhausted / exhausted. In the road concrete casting process, there were 5 accidents and included in the category of small accidents, the factors causing the accident were because workers were injured by work tools, workers were injured due to fragments of cast material and 2 work accidents were included in the category of moderate fatigue caused by workers slipping / slipping while doing concrete casting work. Lack of awareness from workers in complying with regulations set by the company such as working in accordance with standard operating procedures (SOPs) and using PPE while working. Factors for the failure of the implementation of the occupational safety and health management system (SMK3), namely the lack of job certainty for employees and also limited budget for the implementation of SMK3. The level of occupational risk is included in the small risk level of the value range (1 - 4) where the level of danger is small with a small hazard classification, this happens because the level of work falls into the category of small level of risk..

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