

## Original Research Article

## Health Profile of Workers at Gas Station X Maulafa District Kupang City

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**Abstract: Background:** Gas stations are areas that operate in the petroleum sector where repeated exposure to the products produced (butane, pentane, isopentane, benzene, alkylbenzene, toluene, and xylene) can have an impact in the form of health problems. The individuals with the greatest exposure to gas station products are the workers. According to data, during the period from 2016 to 2018 there were 120 cases of work accidents around gas stations. The use of Personal Protective Equipment (PPE) and training regarding the prevention for the worker and management of accidents and illnesses resulting from working at gas stations are important in ensuring worker safety. According to research that has been conducted, it was found that the use of Personal Protective Equipment (PPE) is still very low among Gas Station X workers, Maulafa District, Kupang City. Training and equipment that support Occupational Safety and Health programs are also not available to the majority of workers. This is the cause of health problems among Gas Station X workers, Maulafa District, Kupang City. **Method:** This research is a quantitative study with a cross sectional approach and involved 12 respondents. This study data collection techniques by interview dan physical examination directly to the samples at Gas Station X Maulafa District, Kupang City. **Result:** Based on the research results, it was found that the majority of Gas Station The health problems found were Peripheral Vertigo (16%), Tension Type Headache (TTH) (8%), Allergic Rhinitis (8%) and Irritant Contact Dermatitis (8%). **Conclusion:** An occupational risk factor that can affect the occupational safety and health of employees at GAS STATION X is exposure to fuel oil which contains volatile substances. It was found that 4 out of 12 workers at the gas station in Maulafa District, Kupang City experienced health problems, the health problems they experienced were Peripheral Vertigo, Tension Type Headache, Allergic Rhinitis and Irritant Contact Dermatitis.

**Keywords:** Health, Gas Station Workers, Implementation of Occupational Safety and Health.

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## INTRODUCTION

Gas stations are areas that operate in the oil sector where the products being produced may have impacts on one's health. These can cause symptoms of nervous system disorders such as nausea, vomiting, dizziness, and headaches. Exposure to beyond average concentrations can cause symptoms such as palpitations, weakness, blood pressure problems, headaches, sudden dizziness, vertigo, vomiting, dehydration and even death. Acute exposure to benzene can also cause leukemia and cancer in the human hematological system. The chronic

effects of Benzene, Toulene, Xylene (BTX) exposure can damage certain organ systems, for example the respiratory system, nervous system, reproductive and endocrine systems, kidneys, liver and skin [1- 3]. According to data, during the period from 2016 to 2018 there were 120 cases of work accidents around gas stations [1].

In Indonesia, the process of buying and selling fuel at gas stations is served by workers who operate fuel refill equipment. This is one of the government's efforts

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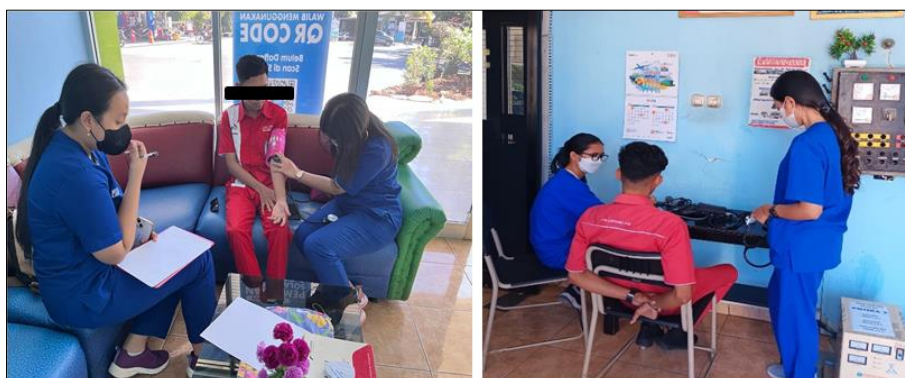
to increase the availability of job opportunities for the community. In its implementation, workers should be required to assess and supervise aspects of Occupational Health and Safety, which are activities that ensure the safe working environment, avoiding physical and mental disfunction through guidance and training, direction, and control over the implementation of the duties of the employees and providing assistance in accordance with applicable regulations, both from government institutions and the companies where they work. The problem of safety and work accidents in Indonesia is still often ignored, this can be seen from the still high number of work accidents [1]. The objectives of implementing Occupational Health and Safety in general are threefold, namely protecting workers and other people in the workplace, ensuring that every source of production can be used safely and efficiently, and ensures production runs smoothly [2]. According to research that has been carried out, it was found that the use of Personal Protective

Equipment (PPE) is still very low among Gas Station X workers, Maulafa District, Kupang City. Training and equipment that support Occupational Safety and Health programs are also not available to most workers. This could be the cause of health problems among Gas Station X workers, Maulafa District, Kupang City.

## METHODS

This research uses observational research with a descriptive research design. The research was conducted with a direct visit to Gas Station X Maulafa District, Kupang City on July 16 2023. The aim of this research was to identify the health status of Gas Station X, we involved all workers at Gas Station X which consists of 12 workers.

## DOCUMENTATION



History taking and physical examination were conducted to evaluate the health status of workers in Gas Station X



Picture with the on-duty workers, showed they were not wearing the required Personal Protective Equipment

## RESULT AND DISCUSSION

Gas Station X is located in Maulafa District, Kupang City. Gas Station X is in the form of CODO (Company Owned Dealer Operated). Gas Station X has also received Pertamina Way certification. Pertamina Way requires the use of service standards consisting of five components: value-added goods and services, well-

maintained facilities and equipment, guaranteed quality and quantity, qualified and motivated service staff, and well-maintained facilities and equipment. As well as greetings, smiles and greetings that are always applied by the operators [5].

Based on the research results, it was found that the majority of Gas Station worker were in a good health

condition, however there were several health problems found including Tension Type Headache (TTH), Peripheral Vertigo, Allergic Rhinitis and Irritant Contact Dermatitis.

**Table 1: Characteristics of Gas Station X Workers, Maulafa District, Kupang City**

No	Characteristics	n	%
1	Gender		
	Male	8	66%
	Female	4	34%
2	Duration of work		
	< 1 year	1	8%
	1-3 years	10	84%
	>3 years	1	8%
3	Average Age	24	
4	Ownership of health insurance		
	Yes	12	100%
	No	0	0
5	Received Occupational Health and Safety training		
	Yes	1	8%
	No	11	92%

Occupational Safety and Health is an effort of cooperation, mutual understanding and participation of employers and employees in the company to carry out joint duties and obligations in the field of occupational safety, health and security in order to increase productivity. Through the implementation of Occupational Safety and Health, it is hoped that a safe and healthy workplace will be created for employees, customers and visitors to a work location so that they can reduce or be free from work accidents and work-related diseases [7].

Based on table 1, regarding gender characteristics, it is found that the prevalence of male workers is more than the female worker with a ratio of 1:2. The average age of workers is 24 years, which shows that workers are still young and early workers. This is in accordance with company regulations which stipulate that workers must be a maximum of 28 years old considering productivity and good health conditions.

In terms of length of work, it was found that there was 1 (8%) worker who had worked for <1 year, 10 workers (84%) had worked for 1-3 years and 1 worker (8%) had worked for more than 3 years.

Ownership of insurance was found in 12 workers (100%) because insurance is a condition for workers to be permitted to start work by the company as a form of maintaining the safety of each worker.

Regarding the characteristics of receiving training regarding Occupational Health and Safety, only 1 worker (8%) received training while 11 other workers

(92%) had not received training. Training is an important aspect in efforts to improve occupational health and safety.

The requirements for work safety according to UU No. 1 tahun 1970 regarding occupational safety, namely [6].

1. Prevent and reduce accidents;
2. Prevent, reduce and extinguish fires;
3. Prevent and reduce the danger of explosions;
4. Provide an opportunity or way to escape during a fire or other dangerous incidents;
5. Provide assistance in accidents;
6. Providing workers with personal protective equipment;
7. Prevent and control the emergence or spread of temperature, humidity, dust, dirt, smoke, steam, gas, gusts of wind, weather, light or radiation, sound and vibration;
8. Prevent and control the emergence of work-related diseases, both physical and psychological, poisoning, infection and contagion;
9. Obtain sufficient and appropriate lighting;
10. Maintain good air temperature and humidity;
11. Provide sufficient air freshening;
12. Maintain cleanliness, health and order;
13. Obtain harmony between workforce, work tools, environment, methods and work processes;
14. Secure and facilitate the transportation of people, animals, plants or goods;
15. Secure and maintain all types of buildings;
16. Secure and expedite loading and unloading work, handling and storing goods;
17. Prevent exposure to dangerous electrical currents;
18. Adjust and improve safety measures for work where the danger of accidents increases.

At gas stations there are also health risk factors that can arise based on the exposure materials found in workers. a) Chemical factors in the form of chemicals that enter the body through inhalation, digestion, absorption into the skin, fire. b) Physical factors, namely noise, work climate based on temperature and humidity, danger. c) Ergonomic factors, namely repetitive tasks cause non-neutral postures. d) Psychological hazards, namely work design and management where the general response to psychosocial hazards is stress [8].

The use of Personal Protective Equipment (PPE) is also something that can affect workers' health status. Personal Protective Equipment (PPE) according to *Peraturan Menteri Tenaga Kerja dan Transmigrasi Republik Indonesia No. PER.08/MEN/VII/2010* is a tool that has the ability to protect a person whose function is to isolate part or all of the body from potential dangers in the workplace [9, 10].

**Table 2: Worker Identification and Health Status**

Name/Age/Job	Complaints	Vital Signs	Physical Examination	Working Diagnose
Worker 1 /23yr /Operator	Headaches that felt like a tension to the head and may present unexpectedly	BP:120/80 mmHg HR: 106x/m RR: 20 x/m T: 36.6°C SpO2: 97%	Head to toe: within normal limit	Tension Type Headache
Worker 2 /20yr /Operator	head feels dizzy when smell gasoline without wearing a PPE mask, hearing decreases.	BP: 120/80 mmHg HR: 98x/m RR: 18 x/m T: 36.5°C SpO2: 99%	Head to toe: within normal limit	Suspect Peripheral Vertigo
Worker 3 /29yr /Operator	Sneezing, coughing, nausea and dizziness when inhale petrol without wearing a mask for a long time.	BP: 120/70 mmHg HR: 94x/m RR: 18 x/m T: 36.9°C SpO2: 99%	ENT: Rhinorrhea (+), faring hyperemic (+)	- Suspect Allergic Rhinitis - Suspect Peripheral Vertigo
Worker 4 /25yr /Operator	(-)	BP: 110/70 mmHg HR: 60x/m RR: 18 x/m T: 36.9°C SpO2: 99%	Head to toe: within normal limit	
Worker 5 /23yr /Operator	(-)	BP: 110/80 mmHg HR: 96x/m RR: 20x/m T: 36.5°C SpO2: 99%	Head to toe: within normal limit	
Worker 6 /24yr /Operator	Cough	BP: 110/80 mmHg HR: 90x/m RR: 20x/m T: 36.7°C SpO2: 99%	Head to toe: within normal limit	History of irritant contact dermatitis
Worker 7 /25yr /Operator	(-)	BP: 100/70 mmHg HR: 80x/m RR: 18x/m T: 36.8°C SpO2: 99%	Head to toe: within normal limit	
Worker 8 /23yr /Operator	(-)	BP: 120/80 mmHg HR: 100x/m RR: 18x/m T: 36.9°C SpO2: 99%	Head to toe: within normal limit	
Worker 9 /24yr /Operator	(-)	BP: 120/80 mmHg HR: 67x/m RR: 18x/m T: 36.5°C SpO2: 99%	Head to toe: within normal limit	
Worker 10/ 26yr /Admin	(-)  Past Medical History: Asthma	BP: 120/70 mmHg HR: 81x/m RR: 20x/m T: 36.5°C SpO2: 97%	Head to toe: within normal limit	History of Asthma
Worker 11/ 26yr /Operator	(-)	BP: 100/70 mmHg HR: 77x/m RR: 18x/m T: 36.5°C SpO2: 98%	Head to toe: within normal limit	
Worker 12/ 25yr /Operator	(-)	BP: 110/70 mmHg HR: 83x/m RR: 20x/m T: 36.7°C SpO2: 98%	Head to toe: within normal limit	

**Note:** BP= blood pressure, HR= Heart Rate, RR= Respiration Rate, T= Temperature, ENT= Ear, Nose, Throat

During a visit to Gas Station X it was found that the business owner provided personal protective

equipment in the form of gloves and masks. Most workers choose to use personal protective equipment in

the form of masks. Work accidents that are often experienced by workers at Gas Station However, the components of PPE according to the standard should be divided in more detail, namely head protective equipment, eye protective equipment, ear protective equipment, respiratory protective equipment, hand

protective equipment, foot protective equipment and body protective equipment where these various materials are an effective effort to protect workers from accidents or illnesses caused by work resulting from repeated exposure to high risk substances [11, 12].

**Table 3: Types of Health Problems in Gas Station X Workers, Maulafa District, Kupang City**

No	Type of Health Problem experienced	n	%
1	Susp. Peripheral Vertigo	2	16%
2	Tension Type Headache	1	8%
3	Susp. Allergic Rhinitis	1	8%
4	History of Irritant Contact Dermatitis	1	8%
5	No complaint	8	67%

Peripheral vertigo is the most common type of vertigo and is caused by disorders of the inner ear which functions to maintain body balance. Apart from the inner ear, disorders can also occur in the vestibular nerve, namely the nerve that is located between the inner ear and the brain stem. 2 of the 12 workers interviewed complained of dizziness and dizziness when they smelled gasoline without using PPE masks with decreased hearing, this can be caused by the hydrocarbons contained in gasoline, namely Benzene, Toulene, Xylene (BTX), which can trigger symptoms of vertigo on workers [13].

Tension type headaches are recurring headache episodes that last from minutes to weeks. The pain usually feels tight or pressing, mild to moderate intensity, and bilateral, and is not worsened by physical activity. The causes are divided into organic and functional disorders. Functional disorders, namely fatigue, working without time, intoxication, reflected pain, and so on. TTH can also be triggered by hunger, dehydration, work/workload that is too heavy, changes in sleep patterns, and is most often triggered by stress. 1 out of 12 workers at gas stations who were interviewed complained of headaches that felt like pressure that came and went, this could be caused by fatigue or stress due to work, where these workers are operators who serve customers every day in a hot outdoor work environment.

Allergic rhinitis is caused by an allergic reaction which is triggered by the entry of allergens into the nasal cavity and causes reactions such as sneezing, runny nose, coughing and itching of the nose. There are various types of allergens that can trigger an immune system reaction if inhaled. 1 in 12 workers complained of sneezing and coughing when inhaling gasoline vapor without wearing a mask, so the worker was suspected of having an allergy to gasoline vapor or the substances contained therein, which was exacerbated by the worker's history of illness, namely sinusitis [14].

In the field of public health in this study, patients with complaints were given IEC to check themselves at the nearest community health center and if there was an emergency they immediately checked

themselves through the Emergency Department. Meanwhile, all workers are given IEC on how to maintain a healthy lifestyle and always use PPE when working and in the work environment. Companies have been advised to hold training regarding the prevention and handling of work-related accidents to ensure the safety of their workers.

## SUMMARY

1. An occupational risk factor that can affect the occupational safety and health of employees at Gas Station X is exposure to fuel oil which contains volatile substances.
2. Potential of occupational diseases identified among Gas Station X employees were Tension Type Headache (TTH), Peripheral Vertigo, Irritant Contact Dermatitis and Allergic Rhinitis.
3. Based on the history taking and examination of 12 Gas Station the most frequent complaints were Peripheral Vertigo as many as 2 people.
4. Need more investigation to clear the diagnose however requires immediate treatment to eliminate the symptoms and signs.

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