

# Employee Outsourcing in Packing Plant PT Semen Padang can be Incidental Interrupted Disease that Affected by the Performance and Education Level

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## ABSTRACT

Outsourced Worker Packing Plant Indarung PT Semen Padang has the risk of experiencing respiratory symptoms due to continuous inhalation of cement dust. This research was done in Packing Plant Indarung PT Semen Padang, sample of 75 people. Data analysis using Chi-Square statistical test. The results showed that 52% of outsourced workers experienced respiratory problems, 64% younger workers (<40 years), 69.4% higher education (senior high school or college graduation), 64% long service life ( $\geq 5$  years). Statistical test results obtained p value = 0.032, it shows there is a significant relationship between age with respiratory symptoms (p value <0.05). Statistical test results obtained p value = 1.000, meaning there is no significant relationship between education level with respiratory symptoms (**p value<0.05**). Statistical test results obtained p value = 0.029, it shows there is a significant relationship between the working period with respiratory symptoms (p value <0.05). There was a significant relationship between the duration of work with respiratory symptoms. It is expected that the company conducts health checks and health socialization for workers.

**Keywords:** respiratory symptoms, worker, packing plant

## INTRODUCTION

Disturbances in the respiratory system are a major cause of morbidity and mortality. This is reinforced by data from the International Labor Organization (ILO) world body in 2013 that suggests 2.02 million people die every day from occupational diseases. Job-induced deaths are 34% cancer, 25% work accident, 21% respiratory diseases, 15% cardiovascular disease, and 5% caused by other factors. External factors are the dust factor itself as a source of disease, the use of personal protective equipment and health and safety training. Internal factors are individual characteristics consisting of age, education, nutritional status, length of service, occupation, smoking habit (Hermon et al., 2017; Hermon, 2016; Hermon, 2014; Anugrah, 2013; Nofidahanum, 2012; Suma'mur, 2009; Hermon, 2009). Several previous studies have shown that age has a relationship with respiratory symptoms. Result of research of Mengkidi (2006) at worker of PT Semen Tonasa Pangkep South Sulawesi showed there is significant correlation between age with disruption of lung function of worker (p value = 0,015) meaning worker with age > 40 year potency gets lung dysfunction 1.7 times more large compared to workers with age <40 years (Nofidahanum, 2012).

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Education plays an important role in the knowledge and understanding of workers about the prevention of occupational diseases including respiratory disorders. The results of Seno (2001) research on cement industry workers showed that the incidence of respiratory disease symptoms was mostly on workers with primary school education. Working period is important to see how long a person has been exposed to dust. The results of Adha et al.'s study (2012) states that the duration of action affects respiratory distress, this is indicated by the value of  $\rho$  of 0.000 (Hermon et al., 2018a; Hermon et al., 2018b; Anugrah, 2013; Suma'mur, 2009). PT. Semen Padang is a company producing cement with a production amount of approximately 6,000,000 tons / year. The final stage of the cement bagging process is carried out at Packing Plant Indarung (PPI) (International Labour Organization, 2013).

Indarung Packing Plant workers have the potential danger of experiencing respiratory problems. Potential hazard to the process of baggage is that workers are directly exposed to dust, workers are in areas where the dust from cement is scattered, when workers lift sacks of cement into the car the carrier is also exposed to dust because the dust from the cement sack is also scattered and close to the respiratory tract (International Labour Organization, 2013; Association AL, 2010).

Average measurement result of individual respirable dust level of working environment Packing Plant Indarung PT Semen Padang Year 2013 is 1.5748 mg / m<sup>3</sup> (Atmaja & Ardyanto, 2007). The result of the measurement shows the number below the dust quality standard at the working environment is 10 mg / m<sup>3</sup> in accordance with the Regulation of Minister of Manpower and Transmigration No. PER. 13 / Men / X / 2011. Although the dust levels in the working environment are still below the standard score, but continuous inhaled dust can still cause the risk of occupational diseases later in life. The objective of this research is to know the respiratory disturbance in outsourced workers in Packing Plant Indarung PT Semen Padang Special Purpose.

## RESEARCH METHODS

According to International Labour Organization (2013), to find a large sample of a population whose numbers are known to use the formula: (33) The population in this study amounted to 252 people, overcoming the Drop Out sample, 10% samples were added from the sample of 7 so the sample to be observed to 75 people.

The sampling technique in this research is using simple random sampling technique, where every worker have equal opportunity to be the respondent (32).

Primary data collected include data on respiratory symptoms symptoms, age, education level and years of service to workers obtained through observation and interviews using questionnaires.

1. Respiratory symptoms are assessed using a questionnaire based on complaints experienced by workers on the respiratory tract at work or after performing their work in the last three months. There are events determined when there are at least 2 main symptoms, namely:
  - a. Hard to breathe
  - b. Dry cough
  - c. Fever
  - d. Weight loss
  - e. Limp
  - f. Losing an appetite
2. Age, education level, work period, smoking habit obtained through questionnaires, observations and interviews directly to the respondents

## RESULT AND DISCUSSION

### Individual Respirable Dust Measurement Results Indarung Packing Plant

The result of measurement of highest dust content at Storage 3 location was 16,683 mg / m<sup>3</sup> and result of lowest measurement at location 0,004 mg / m<sup>3</sup>. The average dust content in the Indarung Packing Plant is 1,574 mg / m<sup>3</sup>. The result of the measurement shows the number below the dust quality standard at work environment that is 10 mg / m<sup>3</sup> in accordance with Regulation of Minister of Manpower and Transmigration No. PER. 13 / Men / X / 2011. The amount of dust present in the working environment is still below the standard grade, but continuous inhaled dust can still cause the risk of occupational diseases later in life.

Respiratory disorders experienced by cement industry workers is caused by the presence of cement dust particles that settle in the lungs of workers. The cement industry produces dust that has a lot of free silica

No	Sampling Location	Analysis (mg/m <sup>3</sup> )		Note
		Semester I	Semester II	
1	Packer 3	0.166	1.193	
2	Packer 4	0.004	1.127	
3	Packer 5	0.04	1.098	
4	Packer 7	0.212	1.115	
5	Packer 6	0.03	1.264	
6	Packer 8	0.242	1.115	
7	Packer 9	0.028	0.913	
8	Packer 10	0.148	1.002	
9	Storage 2	0.015	1.008	
10	Storage 3	16.683	1.176	
11	Storage 4	4.103	1.803	

content in it. Free silica on cement dust that is inhaled while breathing and accumulated in the lungs may result in silicosis of the worker (Utama, 2014).

### Di Frequency Distribution Symptoms Respiratory Disorders in Outsourcing Workers in Packing Plant Indarung PT Semen Padang

Based on the research data, the frequency distribution of respiratory distress symptoms felt by outsourced workers in PT Semen Padang Indarung Packing Plant as seen in the table above. Education is one form of intervention to one's behavior. It can not be denied that the higher a person's education, the easier it is to receive information, and ultimately, the more knowledge it has. Conversely, if a person's education level is low, it will inhibit the development of his behavior towards the acceptance of newly introduced information

Respiratory Illness	F	%
Yes	39	52
No	36	48
Total	75	100

and values (36). The higher a person's education level, the person's mindset will increase so they will understand what can be done in preventing the disease which arise from the work they do.

### Frequency Distribution Symptoms Respiratory Disorders Perceived Outsourcing Workers in Packing Plant Indarung PT Semen Padang

In the table below can be seen that the symptoms that most felt by outsourcing workers in Packing Plant Indarung PT Semen Padang is a dry cough of 61.3%. Other symptoms that are sufficiently felt by workers are shortness of breath as much as 46.7%, fever felt by 24.0% responden, feeling weakness felt by 13.3% responden,

Respiratory Illness	f	%
1. Out of breath	35	46.7
2. Dry cough	46	61.3
3. Fever	18	24.0
4. Loss weigh	3	4
5. Limp	10	13.3
6. Loss of appetite	7	9.3

loss of appetite perceived by 9.3% responden and weight loss experienced by 4% of respondents

### Frequency Distribution of Outsourcing Workers' Workers at PT Semen Padang Indarung Packing Plant

At the age of 20-40 years the human immune system will experience maturity whereas at the age of 40 years and over the decline in immunity such as low antibody production, increased autoantibodies, decreased slow type hypersensitivity, and reduced production of B cells by the bone marrow. Therefore, when an elderly person is potentially impaired in the body (35).

Age	f	%
Elder	27	36
Younger	48	64
Total	75	100

Based on research conducted on outsourcing in Packing Plant Indarung PT Semen Padang found that workers aged  $\geq 40$  years as much as 36%. Outsourced workers in Indarung Packing Plant of PT Semen Padang aged more than or equal to 40 years have the potential to decrease lung capacity which can increase risk factor for respiratory disturbance.

### Distribution of Frequency of Outsourced Workers Education at PT Semen Padang Indarung Packing Plant

Education is one form of intervention to one's behavior. It can not be denied that the higher a person's education, the easier it is to receive information, and ultimately, the more knowledge it has. Conversely, if a person's education level is low, it will inhibit the development of his behavior towards the acceptance of newly introduced information and values (36). The higher a person's education level, the person's mindset will increase so they will understand what can be done in preventing the disease which arise from the work they do (Health NifOSa, 2013; Florencia, 2013; Fitriani & Widya, 2010).

Based on research conducted on outsourcing at Packing Plant Indarung PT Semen Padang found that workers with low education level as much as 23%. Outsourced workers in Indarung Packing Plant PT Semen Padang who has a grade of primary or junior high school has the opportunity to experience respiratory symptoms due to the limited ability of the mindset in understanding prevention of occupational diseases.

Education Level	f	%
<b>Low Education</b>	<b>23</b>	<b>30.6</b>
- Elementary School	10	13.3
- Junior High School	13	17.3
<b>High Education</b>	<b>52</b>	<b>69.4</b>
- Senior High School	47	62.7
- University	5	6.7
<b>Total</b>	<b>75</b>	<b>100</b>

### Frequency Distribution of Workers Working Outsourcing at Packing Plant Indarung PT Semen Padang

Based on research conducted on outsourcing at PT Semen Padang Indarung Packing Plant it is known that most workers with long working period so that workers have the potential to experience respiratory symptoms.

Workers Working	f	%
Long	48	64
New	27	36
Total	75	100

## CONCLUSION

1. More than half of outsourced workers in Packing Plant Indarung PT Semen Padang experience respiratory symptoms.
2. More than half of outsourced workers in Packing Plant Indarung PT Semen Padang are young (<40 years).
3. More than half of outsourced workers in Packing Plant Indarung PT Semen Padang have higher education level
4. More than half are outsourced workers in Packing Plant Indarung PT Semen Padang with long working period ( $\geq 5$  years).

5. More than half of outsourced workers in Indarung Packing Plant of PT Semen Padang are smokers.
6. There is a significant relationship between age with respiratory symptoms whereas workers who are categorized as old age have a risk of 1.689 times experiencing respiratory symptoms compared with workers with young age group.
7. There is no significant relationship between education level with respiratory distress symptoms in outsourced workers in Packing Plant Indarung PT Semen Padang

## SUGGESTION

1. It is desirable for the company to undertake preventive efforts so that workers do not suffer from respiratory diseases such as providing health and safety training on good working procedures, lowering free silica dust levels in the workplace air by regulating workplace ventilation.
2. It is expected that the company conducts periodic health checks as well as special checks on workers to monitor worker health. Healthy workers can certainly improve performance and productivity in work.
3. It is expected that the company oversees the use of personal protective equipment in accordance with the work environment for workers and provides strict sanctions for workers who do not use personal protective equipment at work
4. It is desirable for workers to comply with and implement the existing Standard Operating Procedures (SOP) guidelines relating to the use of personal protective equipment to prevent workers from the dangers and risks that exist while working.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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