DESCRIPTION OF TRENDS ACUTE RESPIRATORY INFECTIONS (ARI) IN HIGH RISK AREA ZONE EXPOSURE TO COAL SMOKE OF THE ELECTRIC STEAM POWER PLANT (ESPP)/PLTU NAGAN RAYA

by Enda Silvia Putri

Submission date: 29-Nov-2020 10:46PM (UTC+0700)
Submission ID: 1459188985
File name: GAMBARAN_TREN_ISPA_PADA_ZONA_WILAYAH_RISIKO_TINGGI.docx (74.47K)
Word count: 4087
Character count: 20593

DESCRIPTION OF TRENDS ACUTE RESPIRATORY INFECTIONS (ARI) IN HIGH RISK AREA ZONE EXPOSURE TO COAL SMOKE OF THE ELECTRIC STEAM POWER PLANT (ESPP)/PLTU NAGAN RAYA

Enda Silvia Putri[1]*, Susy Sriwahyuni[2] , Azwar Azwar[3], Sukma Elida[4], Marniati Marniati[5]

[1,2,3,4,5] Nutrition Study Program, Public Health Faculty, UniversitasTeuku Umar, Meulaboh, West Aceh, Indonesia

*Author for Correspondence: endasilviaputri@utu.ac.id

Abstract

The ARI data researchers got was from the Padang Rubek Public Health Center, which was a public health center whose working area was the area where this company was founded.The cases of ARI increase every year after the active operation of the industry. **The research purpose** was to explored an description of ARI trends in the high risk zone exposure to coal smoke of ESPP Nagan Raya. **The research method** was a combination of design cross sectional and phenomology, the research sample was 50 people with the criteria for residence 0-40 km from ESPP Nagan Raya with high risk area zone exposure, technical sample was purposive sampling. **The research result** was increasing trend ARI 10%/mounth of 2019-2020, the result from chi square test was P value = 0,000 the intrepretation was relationship suspected smoke exposure with symptoms of ARI, based on in-depth interviews with the community stated that they experienced respiratory complaints due to the smoke from the ESPP during the establishment of the company, they also complained that their polluted soil and plants were not growed well. **The research conclusion** was increasing trend of ARI in the high risk zone of exposure to ESPP smoke, there was relationship between suspected smoke exposure and complaints of ARI, and people experiencing respiratory complaints. **The Suggestions** ware expected that this data can become a reference for the company's evaluation of the smoke they produce so that it can manage the smoke waste so that it doesn't cause respiratory complaints in the community.

Keywords : ESPP, Coal, Smoke, ARI

Introduction

After the tsunami, reconstruction and development of Nagan Raya Regency can be said to be fast including in the industrial sector, for example Nagan Raya District, it can be seen that its active activity was more or less post-tsunami with the establishment of PLTU Nagan Raya as well as PT. PLN (Persero) Nagan Raya sector power plant or PLTU Nagan Raya originated from the forerunner to the construction of the 10,000 MW project assigned by the government to PT. PLN (Persero) in 2006 according to Presidential Decree No. 17 of 2006 dated 05 July 2006, the project was located in the village of Suak Puntong, Kematan Kuala Pesisir, Nagan Raya Regency(1).

The growth of these industries was able to have a positive impact in terms of employment opportunities, it was evident that many local people can work in these two companies (news from local newspaper: serambi news).The positive impact given certainly does not close our eyes to the negative impacts that could be caused by the two industries, as seen from several news published in local newspapers (read: serambi news) related to the waste and smoke produced by this company, even though there was no research. in the areas where these two companies were established, which shows the negative impact of the waste and smoke products of these companies (2–4).

Researches in other areas that ware areas where ESPP ware awarded and coal mining companies have proven that there was a relationship between smoke or dust from coal burning with cases of hoarseness (including ARI). The results of the study (Juniah, et al, 2013) state that coal mining has an impact on public health, especially ARI, (Jie Y, etc, 2014) states that there was a change in lung function due to exposure to coal dust (Sarver, E., etc, 2019) exposure to coal dust causes the lungs to blacken6. The focus of the research that wants to be investigated is about analyzing the trend of increasing cases of ARI in the high risk zone of ESPP Nagan Raya exposure to coal smoke. This case was interesting to study from the ARI data that the researcher got from the Padang Rubek Health Center, which is the health center whose working area is the area where the company was founded. The cases of ARI at the Padang Rubek Health Center tend to increase every year after the active industrial operation in this company(5–7).

Data on ARI Cases in 2019: 803, 2020 / August: 507. In 2020 it was lower than 2019 because it was still a total of eight months, it can be predicted to increase when viewed from the 2019 data. Data on ARI cases can be more than the real there was separation of ARI in children or cases of common cold. Common cold is mostly affected in high-risk groups, especially children. Case data were collected based on patients who were residents of the work area of the puskesmas whose settlements were in the two industrial areas7. This research is expected to be able to provide evaluation material for this company to be able to control the industrial waste produced if it was suspected of having an influence on the ARI

cases that occur. For the community, they are able to take precautions as early as possible against the impact of the industrial waste(8).

Method

The research method in this research was to combine qualitative and quantitative research methods. Qualitative methods used with a phenomenological approach design, and quantitative methods with a cross sectional approach design. The phenomenological design used to capture problems through in-depth interviews using interview guides to community groups (zone 0-20 Km from industry), and (zone area> 20-40 Km from industry) assuming a high risk of exposure to ESPP Nagan Raya smoke. The cross-sectional design was used to capture problems through interviews using a questionnaire to groups of people suspected of being a high-risk group for ARI cases in (zone 0-20 Km from industry), and (zone area> 20-40 Km from industry) with high risk assumptions exposure to smoke from ESPP Nagan Raya. The sample size (50 people), the sample was taken by non-random sampling technique, namely purposive random sampling. Phenomological analysis was tested by problem triangulation and cross sectional analysis with univariate and bivariate analysis with Chi Square test(9,10).

Result

Results of the research at the initial stage, namely looking at the description of ARI cases based on secondary data obtained from the Padang Rubek Health Center, Kuala Pesisir District, Nagan Raya District, which was in the area of the PLTU establishment zone. The ESPP was in the Padang Rubek Health Center area.

1. Secondary Data

1.1 Data on cases of ARI at Padang Rubek Public Health Center

The results of the secondary data that the researchers obtained from the ARI case data at the Padang Rubek Health Center, which was in the zone of the PLTU establishment, can be shown by researchers in Figures 1 and 2.

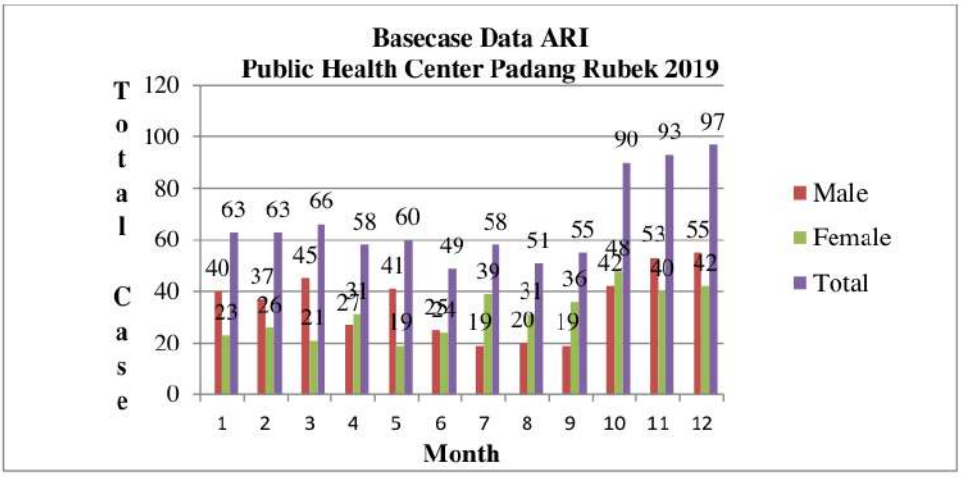

Figure 1. Graph Basecase Data ARI at Public Health Center Padang Rubek 2019

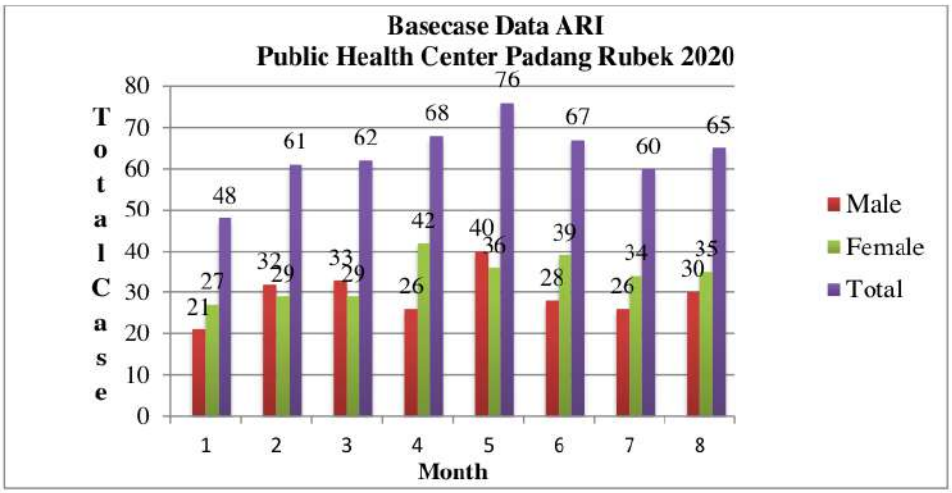

Figure 2. Graph Basecase Data ARI at Public Health Center Padang Rubek 2020

In Figures 1 and 2, it can be seen that the data on ARI cases in 2019 totaled 803 cases and 2020 in total of 507 cases. This data was very volatile, seen from the average case data in 2019 and 2020 with an average case value of 50 cases per month. Researchers only obtained case data for 2019 and 2020, the reason for the insufficient data obtained at the Padang Rubek Health Center was almost the same reason as the Meureubo Health Center. The case data that has been obtained are unable to actually describe the existing case data. In the ARI case data at Puskesmas Padang Rubek, the researcher was only able to see the distribution of case data by sex at two years and was unable to see other characteristics and their causes. Researchers cannot provide an overview based on the case data whether ESPP smoke causes ARI.

2. Primary Data

The primary data in the initial plan was actually data on ARI cases in each public health center which then based on this data we conducted questionnaires, but because the complete data from the public health center researchers did not get such as residence data so it was difficult for researchers to take samples from this data, the researchers took The research sample was based on the distance of the house in the village which was very close to the ESPP area and we interviewed the family head.

The results of primary data collection were obtained from 50 samples who were respondents (residents of the village of Suak Puntong: 25 people were the first village closest to the PLTU, residents of Kuala Baroe village: 25 were the second closest village to the PLTU which was also the village in the working area of the Padang Rubek Community Health Center).

2.1 Univariate Analysis

Following are the results of the univariate analysis based on questionnaire questions interviewed by field officers.

Table 1. Frequency Distribution of Questionnaire Questions

Variabel	Frequensy	Percen
Variabel		
15	1	2
17	1	2
18	2	4
20	1	2
22	2	4
25	2	4
26	1	2
27	1	2
28	3	6
29	1	2
30	3	6
31	2	4
34	1	2
36	2	4
38	1	2
39	1	2
40	4	8
45	3	6

46	1	2
47	1	2
49	1	2
50	3	6
53	2	4
57	1	2
58	1	2
60	3	6
63	1	2
64	1	2
69	1	2
78	1	2
80	1	2
Total	**50**	**100**
Sex		
Male	17	34
Female	33	66
Total	**50**	**100**
Symptoms ARI		
Yes	31	62
No	19	38
Total	**50**	**100**
Use of Masks Before Symptoms ARI		
Yes	0	0
No	50	100
Total	**50**	**100**
Use of Masks After Symptoms ARI		
Yes	3	6
No	47	94
Total	**50**	**100**
Suspicion of ARI Due to Exposure to Smoke PLTU Nagan Raya		
Yes	**31**	**62**

No	**19**	**38**
	50	**100**
Promotion About Preventif ARI Impact Smoke PLTU Nagan Raya		
Yes	0	0
No	50	100
Total	**50**	**100**

Based on Table 1, it can be seen that the percentage for the highest age was at 40 years old, namely 8%, the highest gender was in the female gender, namely 66%, the status has experienced the highest symptoms of ARI, namely 62%, did not use a mask by the community before experiencing the highest ARI symptoms that was 100%, after experiencing symptoms of ARI, namely 94%, the public suspicion of the incidence of ARI symptoms they suffered from the smoke of ESPP was the highest, namely 62%, counseling by ESPP was also the highest at the point of not doing preventive counseling, namely 100%.

Based on Table 1. It can be seen that of the 50 people interviewed it was known that 62% of them have symptoms of ARI. Researchers did not get the complete address from the Puskesmas to get positive cases of ARI based on doctor's diagnosis and caused by PLTU smoke. But with no counseling from the PLTU, this is not very good with many people experiencing symptoms that can be suspected due to inhalation of PLTU smoke because people rarely use masks while they are continuously exposed to dust and smoke. It was also necessary to carry out further research by carrying out lung examinations using special equipment in high-risk communities so that they can confirm whether the ARI was due to smoke or not.

2.2 Bivariate Analysis and In-depth Interview Results

In the bivariate analysis, the researchers saw the relationship between ARI symptoms and the public's suspicion of exposure to coal dust and ESPP smoke that caused the symptoms of ARI they experienced.

Table 2. Relationship between ARI Symptoms and Suspected Exposure to Coal Dust and Smoke from the ESPP

Suspicion of ARI Due to Exposure	Symptoms ARI				Total		P Value
	Yes		No				
	n	%	n	%	N	%	0.000

to Smoke PLTU Nagan Raya						
Yes	31	100	0	0	31	100
No	0	0	19	100	19	100
Total	31	100	19	100	50	100

Based on Table 2. It can be seen that there was a relationship between exposure to PLTU smoke and symptoms of ARI by looking at the P value = 0.000 <α = 0.05. These results can make us a temporary suspicion that the smoke from the ESPP that someone inhales can indicate that someone is experiencing symptoms of ARI. This suspicion cannot be too strong as evidence before an examination of the lungs by looking at the coal dust residue and ESPP smoke.

The results of the in-depth interviews conducted showed that the community began to experience complaints about the symptoms of ARI since the company was established in their village, previously they rarely experienced such complaints. They stated that when they experienced complaints that were difficult to handle they would go to the public health center, the doctor's diagnosis was unable to state that the cause was due to the smoke from the ESPP because they did not have adequate tools to test this. The environmental conditions are very apprehensive such as the soil, the plants are not as fertile as it used to be because of the effect of the company waste based on complaints from residents in the area. Residents stated that it was very rare for the company to provide direction and preventive efforts towards the impact of the waste they produced, even though many residents had experienced complaints when they were often exposed to the waste, plus a lack of understanding of the used of masks as a preventive measure. Masks ware now often used because of the incessant promotion of COVID19 prevention, not because of preventing the effects of company's waste.

Discussion

Based on the results of our research, we see that there was an increasing trend of ARI cases by 1% every year from 2012 to 2020 in the working area of the Puskesmas which is close to the area where the two universities were established. Based on the univariate results of 100 residents who are villages located 0-50 km from company, 63% have symptoms of ARI. The bivariate results stated that there was a significant relationship (P value = 0.000) between exposure and symptoms of ARI although this statement should be strengthened by examining the residual respiratory exposure, but this result can be a strong

presumption for us to do this test. The residents stated that they often experienced complaints about the symptoms of ARI after the establishment of the company in their village. The residents also stated that the environmental conditions around their village were getting worse, such as air pollution due to the company's activities.

The above statement was also supported based on several research results showing that the activities of PLTU and coal entry plants have a negative impact on the environment and the health conditions of the surrounding community. Bahri's (2018) research results related to the health and environmental impacts of dust emissions from the activities of the Karangkandri Cilacap PLTU stated that from the results of the impact assessment, it was known that the loading and unloading route through Tanjung Intan Port was more dominant (both for health and environmental impacts) when compared to the loading and unloading route. load through the PLTU Pier, with the difference between the two impacts as follows: (1) Non-carcinogenic impact of 2.28.10-05 DALY, (2) carcinogenic impact of 2.13.10-06 DALY, (3) impact on respiratory disorders of 3,67.10-03 DALY, (4) impact on aquatic ecotoxicity of 4,1.10-01 PDF * m2 * year, (5) impact on terrestrial ecotoxicity of 123.5 PDF * m2 * year (11).

Although this study has not been able to confirm the relationship between smoke exposure from coal combustion in ESPP Nagan Raya with the incidence of ARI, many studies have stated that it is closely related to exposure to inhaled coal smoke with lung function failure and the cause of ARI. Simanjuntak's research, 2013, Wahyuni, 2019, Hafsari 2015, Sholihah, 2015, the results of their research state that there was a relationship between coal dust / smoke exposure and the incidence of ARI in a person(12–15).

Based on research from various countries, it founded that it was very closely related to exposure to coal smoke, especially those who are often exposed, so a person will be susceptible to ARIs as research by Noemi, 2019 in the US, Laney 2012 in the US, Report on the causes of ARI in the US 2013, Suarthana, 2019 in the US, Cohen, 2008, in US, Perret in UK, 2017, Robert 2018 Virgina, Grove 2014 in Africa, Abraham in Australia 2016, Cui 2015 in China, Graber 2018 in China, Linus 2011 in USA, Pang 2019 in China. Dean 2013 in China even stated that exposure to smoke from continuous burning of coal can cause lung cancer, similar to the Jinhui 2019 research in China, Rahul 2012 in India, Joseph 2010 in Mexico, Ruoding 2019 in Virginia, Prakash 2012, Prabjit 2019(16,17,26–34,18–25).

Conclusion

Based on the research results, it can be concluded that:

1. There was an increase in the trend of ARI cases every month by 10% based on data from the public health center located in the area where the PLTU Nagan Raya was established.

2. There was a connection between the suspected smoke exposure of ESPP Nagan Raya and the symptoms of ARI with a P value = 0.000
3. Based on the results of in-depth interviews, the community claims to have experienced health complaints (such as respiratory problems and eye irritation) or complaints about poor environmental conditions (air, soil) due to the smoke from ESPP Nagan Raya, lack of preventive counseling from the company, people do not dare to submit complaints to the company, health workers, and local leaders.

Suggestion

Based on the research results, the researcher can suggest that:

1. There needs to be further research related to lung examinations in the community in the area around the company so that it was clear whether there is a relationship between the smoke of ESPP Nagan Raya and the trend of ARI incidence in the community.
2. There was a need for efforts to prevent the effects of smoke from ESPP Nagan Raya on the community by the company, although the results of research by researchers in this area have not been able to confirm a positive and strong relationship to the incidence of ARI but many research results reveal smoke from burning coal that is inhaled or exposed. persistently by someone can cause ARI.
3. It was necessary to control waste such as smoke from ESPP Nagan Raya by the local government to be able to prevent bigger negative effects.
4. There was a need for cooperation between the company, local government, health offices, local health centers and the community to prevent the negative impact of smoke from ESPP Nagan Raya.

References

1. Anonim. Sejarah PLTU Nagan Raya. 2014;
2. Anonim. PLTU Nagan Raya Pekerjakan 236 Putra Aceh. Serambinews.com [Internet]. 2013; Available from: PLTU Nagan Raya Pekerjakan 236 Putra Aceh
3. Anonim. Limbah PLTU Nagan Diduga Cemari Saluran Air Warga. Serambinews.com [Internet]. 2019; Available from: https://aceh.tribunnews.com/2019/04/06/limbah-pltu-nagan-diduga-cemari-saluran-air-warga-begini-kondisinya.
4. Bahri S. Limbah PLTU Diduga Cemari Saluran Air. Serambinews.com [Internet]. 2019; Available from: https://aceh.tribunnews.com/2019/04/08/limbah-pltu-diduga-cemari-saluran.
5. Juniah R, Dalimi R, Suparmoko M, Moersidik SS. Public health impact of coal mining among community living in coal mining area (review on environmental benefits to absorb carbon). J Ekol Kesehat. 2013;12(01):252–8.

6. Jie Y, Houjin H, Xun M, Kebin L, Xuesong Y, Jie X. Relationship between pulmonary function and indoor air pollution from coal combustion among adult residents in an inner-city area of southwest China. Brazilian J Med Biol Res. 2014;47(11):982–9.
7. Sarver E, Keles C, Rezaee M. Characteristics of respirable dust in eight appalachian coal mines: A dataset including particle size and mineralogy distributions, and metal and trace element mass concentrations. Data Br [Internet]. 2019;25:104032. Available from: https://doi.org/10.1016/j.dib.2019.104032
8. Rubek PP. Data Kasus ISPA. Nagan Raya; 2019.
9. Sulistyaningsih. Metodologi Penelitian Kebidanan:Kuantitatif-Kualitatif. Metodologi Penelitian Kebidanan:Kuantitif-Kualitatif. 2011.
10. Sugiyono. Metodologi Penelitian Kuantitatif, Kualitatif, dan R&D. CV Alfabeta. 2016.
11. Bahri S. Dampak Kesehatan dan Lingkungan Emisi Debu Dari Aktivitas PLTU Karangkandri Cilacap. J Rekayasa Teknol Ind Hijau. 2018;3(1):1–9.
12. Rahayu Simanjuntak NS, Suwondo A, Wahyuni I. Hubungan antara kadar debu batubara total dan terhirup serta karakteristik individu dengan gangguan fungsi paru pada pekerja di lokasi coal yard pltu x jepara. J Kesehat Masy Univ Diponegoro. 2013;2(2):18705.
13. Wahyuni A, Rahim MR, Arsyad DS, Selomo M, Keselamatan D, Kesehatan F, et al. Hubungan pajanan debu dengan kapasitas paru pada pekerja di area boiler PT. Makassar Tene. 2019;2(1):18–24.
14. Hafsari D, Ramadhian MR, Saftarina F. Debu Batu Bara Dan Kejadian Infeksi Saluran Pernafasan Akut Pada Pekerja Pertambangan Batu Bara. Majority. 2015;4(9):35–41.
15. Sholihah Q, Hanafi AS, Wanti, Bachri AA, Hadi S. Analisis sif kerja , masa kerja , budaya keselamatan dan kesehatan kerja pada tambang batu bara. J Kesehat Masy Nas [Internet]. 2015;10(1):24–6. Available from: http://journal.fkm.ui.ac.id/index.php/kesmas/article/view/812
16. Hall NB, Blackley DJ, Halldin CN, Laney AS. Continued increase in prevalence of r-type opacities among underground coal miners in the USA. Occup Environ Med. 2019;76(7):479–81.
17. Laney AS, Petsonk EL, Hale JM, Wolfe AL, Attfield MD. Potential determinants of coal workers' pneumoconiosis, advanced pneumoconiosis, and progressive massive fibrosis among underground coal miners in the United States, 2005-2009. Am J Public Health. 2012;102(SUPPL. 2):2005–9.
18. Suarthana E, Laney AS, Storey E, Hale JM, Attfield MD. Coal workers' pneumoconiosis in the United States: Regional differences 40 years after implementation of the 1969 Federal Coal Mine Health and Safety Act. Occup Environ Med. 2011;68(12):908–13.

19. Cohen RAC, Patel A, Green FHY. Lung disease caused by exposure to coal mine and silica dust. Semin Respir Crit Care Med. 2008;29(6):651–61.
20. Perret JL, Plush B, Lachapelle P, Hinks TSC, Walter C, Clarke P, et al. Coal mine dust lung disease in the modern era. Respirology. 2017;22(4):662–70.
21. Stansbury RC. Progressive massive fibrosis and coal mine dust lung disease: The continued resurgence of a preventable disease. Ann Am Thorac Soc. 2018;15(12):1394–6.
22. Grové T, Van Dyk T, Franken A, Du Plessis J. The evaluation and quantification of respirable coal and silica dust concentrations: A task-based approach. J Occup Environ Hyg. 2014;11(6):406–14.
23. Cui K, Shen F, Han B, Yuan J, Suo X, Qin T, et al. Comparison of the cumulative incidence rates of coal workers' pneumoconiosis between 1970 and 2013 among four state-owned colliery groups in China. Int J Environ Res Public Health. 2015;12(7):7444–56.
24. Jl A, Churg A, Fh G. Table 1. Thoracic Society of Australia and New Zealand Recommendations for Control of Coal Workers ' Pneumoconiosis Goal: Eliminate CWP in Australia 1. Exposure limits and monitoring protocols. :773–4.
25. Graber JM. Application of the Delphi method to reduce disability and mortality from coal mine dust lung disease in China; a new approach to an old problem. Occup Environ Med. 2018;75(9):615–6.
26. Santo Tomas LH. Emphysema and chronic obstructive pulmonary disease in coal miners. Curr Opin Pulm Med. 2011;17(2):123–5.
27. Pang Y, Zhang B, Xing D, Shang J, Chen F, Kang H, et al. Increased risk of carotid atherosclerosis for long-term exposure to indoor coal-burning pollution in rural area, Hebei Province, China. Environ Pollut [Internet]. 2019;255:113320. Available from: https://doi.org/10.1016/j.envpol.2019.113320
28. Iii HDH, Chapman RS, Wei H, He X, Tian L, Larry Z, et al. NIH Public Access. 2013;55(1):5–10.
29. Li J, Ran J, Chen L chi, Costa M, Huang Y, Chen X, et al. Bituminous coal combustion and Xuan Wei Lung cancer: a review of the epidemiology, intervention, carcinogens, and carcinogenesis. Arch Toxicol [Internet]. 2019;93(3):573–83. Available from: http://dx.doi.org/10.1007/s00204-019-02392-y
30. Kodgule R, Salvi S. Exposure to biomass smoke as a cause for airway disease in women and children. Curr Opin Allergy Clin Immunol. 2012;12(1):82–90.
31. Bunnell JE, Garcia L V., Furst JM, Lerch H, Olea RA, Suitt SE, et al. Navajo coal combustion and respiratory health near shiprock, New Mexico. J Environ Public Health. 2010;2010.

32. Shi R, Meacham S, Davis GC, You W, Sun Y, Goessl C. Factors influencing high respiratory mortality in coal-mining counties: A repeated cross-sectional study. BMC Public Health. 2019;19(1):1–16.
33. Kurmi OP, Arya PH, Lam KBH, Sorahan T, Ayres JG. Lung cancer risk and solid fuel smoke exposure: A systematic review and meta-analysis. Eur Respir J. 2012;40(5):1228–37.
34. Barn P, Gombojav E, Ochir C, Boldbaatar B, Beejin B, Naidan G, et al. Coal smoke, gestational cadmium exposure, and fetal growth. Environ Res [Internet]. 2019;179(May):108830. Available from: https://doi.org/10.1016/j.envres.2019.108830

DESCRIPTION OF TRENDS ACUTE RESPIRATORY INFECTIONS (ARI) IN HIGH RISK AREA ZONE EXPOSURE TO COAL SMOKE OF THE ELECTRIC STEAM POWER PLANT (ESPP)/PLTU NAGAN RAYA

ORIGINALITY REPORT

7%	5%	5%	0%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.aipkind.org Internet Source	2%
2	ejournal.unugha.ac.id Internet Source	2%
3	"1st Annual Conference of Midwifery", Walter de Gruyter GmbH, 2020 Publication	2%
4	"Enhancing Capacity of Healthcare Scholars and professionals in Responding to the Global Health Issues", Walter de Gruyter GmbH, 2019 Publication	1%
5	Submitted to Universitas Airlangga Student Paper	<1%
6	Shuai Han, Hong Chen, Maggie-Anne Harvey, Eric Stemn, David Cliff. "Focusing on Coal Workers' Lung Diseases: A Comparative Analysis of China, Australia, and the United	<1%

States", International Journal of Environmental Research and Public Health, 2018
Publication

7	jurnal.budimulia.ac.id Internet Source	<1%

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	On		