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Analysis of Public Perception About Impaired Odor in Center Fishery Processing Industry Tegalsari Tegal City

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Abstract. The Coastal Fishing Port (CFP) Tegalsari is one of the largest center of the fishery industries in Central Java Indonesia. In addition to producing fish-based products such as fish fillets, salted fish and fish meal are distributed to most major cities in Indonesia, but also generate waste and wastewater which potentially disrupt the environment. The purpose of this study describe the perception of the public about the negative impact of the activities in center fishery processing industry. The research method uses qualitative research design with the population living around the center of the fishing industry, with samples taken by purposive sampling numbered 30 people and 3 location sample to know concentration of ammoniac and hydrogen Sulfide. Data research in 2016 was processed using statistical methods. The results of research showed very significant, 80% of respondents who said the fishing activities causing nuisance odor. The remaining 20% stated that the odor nuisance almost imperceptibly. The nuisance of odor are perceived by 53% of respondents for a full day. There are 70% of respondents living around the center of the fishing industry who lived more than seven years, and the remaining 30% of respondents who lived less than 7 years. Conclusion respondent who live more than seven years and said there was no odor nuisance around 57%, are more than 50% of the respondents. The odor of the most influential parameter on the fishing industry is an element of ammoniac (NH₃) instead of Hydrogen Sulfide (H₂S), because the value at these three locations for Hydrogen Sulfide measurement results show the same number that is equal to 0.001 g / m³. While ammoniac levels at most locations smelled according to perceptions of examiners showed the highest scores, while the zone that did not feel the smell indicates a low value, the test results showed a clear level of distinction. So the need to manage the environment at the center of the fishing industry with a approach of clean technology program.

INTRODUCTION

According Wibowo [1], that the fishing effort consists of inland fisheries and marine fisheries. Generally in the North Coast region of Central Java, two fisheries sector is experiencing growth of the number of results. The sea fisheries sector developments much faster than with inland fisheries. The marine fish production is determined by several factors, including the arrest in the form of boats and fishing gear. The fishing effort from year to year will increase. Fishery products has an important role and strategic in the development of national economy, especially in increasing the expansion of employment opportunities, income generation, and improving the living standard of the nation in general, small fishermen, small fish and those businesses in the fishery while maintaining environmental sustainability and the availability of fish resources.

The tendency of increase in fish production in Tegal according to the data from 2010 to 2013 year. In 2013 the results of marine fisheries production amounted to 20,591,607 kg Tegal with a production value of 97.364.289.000,- IDR and in 2013 marine fisheries production amounted to 29,516,013 kg with a production value of 198.911.948.000 IDR. Likewise, the value of Gross Regional Product (GDP) at current prices in 2010-2013 has increased. In 2010 the GDP amounted 1.870.352.725.00 IDR. In 2010 the GDP amounted 1.109.438.214.000 IDR the year 2011 increased to 1.281.528.201 IDR.

One component of the second largest contributor to the GDP Tegal, namely the fisheries sector and the processing industry amounted 278.466.626 IDR or 30%. Contributions fisheries in Tegal supported from the results of three (3) Fish Auction Place (FAC) among other the Port, Tegalsari and Muarareja FAC. Thus contributing to the production of fishery Tegal in Central Java is large enough that in 2011 and accounted is 9.25% after Pati regency are 15.91%, Pekalongan by 16.89% and Rembang amounted to 20.68%, (Document of Tegal Maritim, 2013).

The observations made in the small and medium industrial sector of the fishing industry to describe that most of their activities have not demonstrated good environmental management. Especially in areas where the population do similar activities. The environmental management is not seen as something that is part of the industrial activities. Some industrial centers showed that industrial waste in the form of waste discharged into the environment without treatments. If it continuously, it will result in negative impacts on the surrounding environment due to pollution from activities of small and medium industries. In the long term will be able to cause damage to the environment with recovery costs are quite high. Small and medium industrial fishing sector many argue that environmental management means to process waste which require capital costs of investment and high operating costs. This of course will lead to a reduction in profits, which in turn will reduce the competitiveness of the industry on similar industries.

EXPERIMENTAL METHODS

Research on the analysis of public perceptions of the Center of Fishery Product Processing Industry in CFP Tegalsari include the perception of odor nuisances, and time of live in around the center of the fishing industry in June and July 2016. The design of the study conducted by preparing the materials in the form of questionnaire about public perception as the respondents of this study. Respondents in the sample was taken by purposive sampling. The next interview data were calculated using statistical methods.

The population of this research is the people who live around the center of fishery product processing industry. There are 30 people as sample in Tegal such as community, leaders, and practitioners in Tegal. The research variables consist of the dependent variable is the parameter of the odor nuisances of waste of industrial center in processing of fishery products Tegalsari and the independent variable is the public perception of the impact of of activity in the industrial district fishery processing results in Tegalsari.

Data processing from the interviews with the respondent for get perceptions about the CFP Tegalsari, district Tegal west Tegal are nuisance odor as a result of waste management fillet of fish, fish meal, and drying of fish in environmental management.

CONCEPTS AND DEFINITIONS

According to Minister of Environment Indonesia number 50 of 1996 year regarding odor standard, sense of smell is a stimulus and substance acceptable to the sense of smell. While the odor is unwanted odors within the levels and specific time that can interfere with human health and environmental comfort. So the odor standard is defined as the maximum limit allowed odor in the air that do not interfere with human health and environmental comfort. The Minister's decision is intended to ensure the preservation of the environment in order to be useful for human life and other living beings, any business or activity need to make efforts to control pollution and or destruction of the environment. Because one of the effects of a business or activity that may interfere with human health, living organisms and the environment is caused by waste discharged into the environment without any treatment which causes rancidity.

According Visser (1986), the smell is also a chemical substance mixed in the air, generally with very low concentrations of man is capable of receiving sense of smell. The smell can be pleasant or unpleasant odors. The smell is a property that attaches to an object due to some organic or inorganic substances mixed in the water, generally at very low concentrations, where the man received it with the sense of smell. Terminology smell is a sensation because the chemical stimulus of chemical receptors in the olfactory epithelium in the nose. A chemical that stimulates called odorants.

The smell is defined as a result of receiving stimulus sensation on the olfactory sensor system. The response depends on the property of measurable sensor, the detection rate, character and hedonic tone. Human response to odors following the normal curve. Repeated exposure to an odor can produce tolerance or be sensitive. If sensitive then easily occur complaint, if tolerance means there will unawareness continuous exposure.

Government. The development of micro-enterprises fish processing provide a sizeable multiplier effects for improving the local economy around. However, because most of the household scale industries in Block J of CFP Tegalsari is executed with little capital and limited knowledge about the environment. The negative impact of this fishery product processing industry to cause disruption to the surrounding environment. Especially when the waste is not treated and managed properly. Weak control of the city government also cause environmental problems, especially the problem of the odor nuisance. The type and number of industries located in the Port Tegalsari as shown in Table 1.

TABLE 1. The Type and Number of Industries In CFP Tegalsari

No.	Item	Located	Total SME	Capacity of Fish/Waste (Ton/day/SME)	Capacity of Fresh Fish (Ton/day)	Capacity of Waste (Ton/day)
1.	Curing Fish	Block A	-		-	-
		Block J	40	0,5 - 1	40	-
		Setlement	20	0,5 - 1	20	-
2.	Fish Fillet	Block A	6	1 - 1,5	9	
		Block D	4	1 - 1,5	8	
		Block J	12	1 - 1,5	18	
3.	Fish Flour	Block B	1	5 - 10	-	8
		Block J	6	1 - 1,5	-	9
Total			89		95	17

Source : Primary Data, 2016.

Response of Public

Response of despondence especially those located around the fishing port Tegalsari on the northern coast of Java Sea. The data samples taken as many as 30 residents stated that they have lived more than 7 years are 70% and about 30% population lived approximately between 1 year to 5 years. From the interviews conducted in this study, 20% of respondents stated that in everyday conditions never feel the smell of fishing industry sewage, 33% of respondents feel the smell of the weak from fishing industry waste, 3% of respondents said there was a smell of fishing industry, 7% of respondents said they had no strong smell of fishing industry sewage, and 37% of respondents said there was a strong smell of sewage dross of the fishing industry in Tegalsari fishing port as shown in Fig. 2.

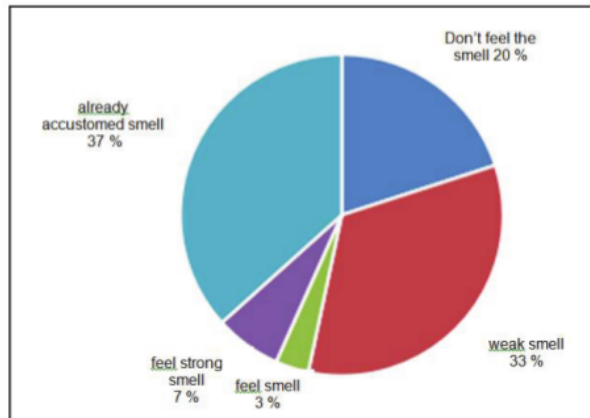


FIGURE 2. Results of the interview about perception impaired odor

Then, when interviewed about whether previously have felt the odor nuisance from the process waste disposal fillet fish from the fishing industry at the fishery Tegalsari Port , 10% of respondents did not feel any disturbance sewage smell, 3% of respondents stated once every week to feel no disturbance of the odor from waste fish fillets, 57% of respondents said every afternoon felt a disturbance odor of waste fish fillets, 3% of respondents stated that every hour to feel no disturbance of the odor of sewage fillet of fish, and 27% of respondents said they are already accustomed to feel the smell of sewage fillet fish from the fishing industry at the fishery Port Tegalsari as presented in Fig. 3.

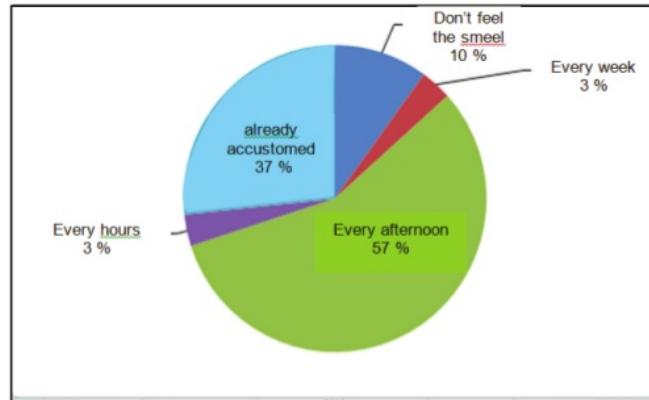


FIGURE 3. Results of the interview about the habits of a smell sewage

Furthermore, a number of respondents give suggestions which are summarized as follows: (1) The Government of Tegal must be firm in the prevention and control of odor nuisance arising from waste disposal fillet fish at the Fishery Port Tegalsari and need to act decisively against employers who pollute the environment prosecuted; (2) Employers fish fillets and fish drying advised to do salting fish properly before drying; (3) Need control from government about the cleanliness of waste production and processing of fish fillet fodder; (4) Advice to entrepreneurs is to frequent sewer cleaning periodic; (5) Need attention of the government to reform the fish processing industry and channel sanitation in the region, especially the CFP Tegalsari Block J.



FIGURE 4. Location of Sampling Test of The Ambient Air Quality in Tegalsari

The impact fish processing activities one is the incidence of the odor nuisance. This impact was brief, but it will have an impact on the environment that interfere with comfort. In addition to measuring the perception of the magnitude of harassment of perceived odor residents around the area of CFP Tegalsari, have been made ambient air quality testing. This is to prove to the public perception of the odor with chemical components that influence it. The smell came from rotting fish that produce hydrogen sulfide gas (H₂S) and ammoniac (NH₃) that cause odor. The benchmarks used is the Minister of Environment Decree number 50 of 1996 regarding odor standard. The ambient air quality test results that the more prominent chemical parameters to prove the existence of an element nuisance odor is ammoniac (NH₃). Due to the location of industries in Block J in CFP Tegalsari felt very smelly shows measurement results NH₃ concentration of 0.54 $\mu\text{g} / \text{m}^3$, while the location of Block A in CFP Tegalsari perceived odor being with a value of 0.41 $\mu\text{g}/\text{m}^3$ and the location on the Layang Road perceived odorless with a value of 0.072 $\mu\text{g}/\text{m}^3$. As for the third location of the sample to the measurement levels of Hydrogen Sulfide are all figures show 0,001 $\mu\text{g}/\text{m}^3$. It concluded that the odor parameters that influence the odor is an element of ammoniac and with evidence that the farther from the source of the odor, the value of NH₃ decreases.

According Purwanto (2005), the paradigm of waste management which is based on final approach was out of date and replaced by a new paradigm of waste management. The new paradigm of looking at waste as a resource that has economic value and can be used, for example, energy, compost, fertilizer and industrial raw materials. Waste management carried out with a comprehensive approach from upstream before it produced a product that could potentially be a waste to downstream, the stage where the products were used to trash, which is then returned to the environment safely. Waste management with the new paradigm implemented with the reduction and waste handling. Waste reduction activities include restriction, reuse, and recycling, while waste management activities include segregation, collection, transportation, processing and final processing.

CONCLUSIONS

- a. Public of Tegalsari stated that during this approximately 37% have impaired odor of sewage from Tegalsari fishing industry and only 20% stated adapting to the odor pollution;
- b. The parameters have noticeable effects impact rotten fish is an element of ammoniac, hydrogen sulfide while there is no appearance of differences in numbers at a location that smelled.;
- c. Community appealed to the Government of Tegal must to have active participation in preventing the generation of the odor pollution;
- d. Paradigm the final processing of waste was worn and replaced with waste management start early with the principles of reduce, reuse, and recycle.

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