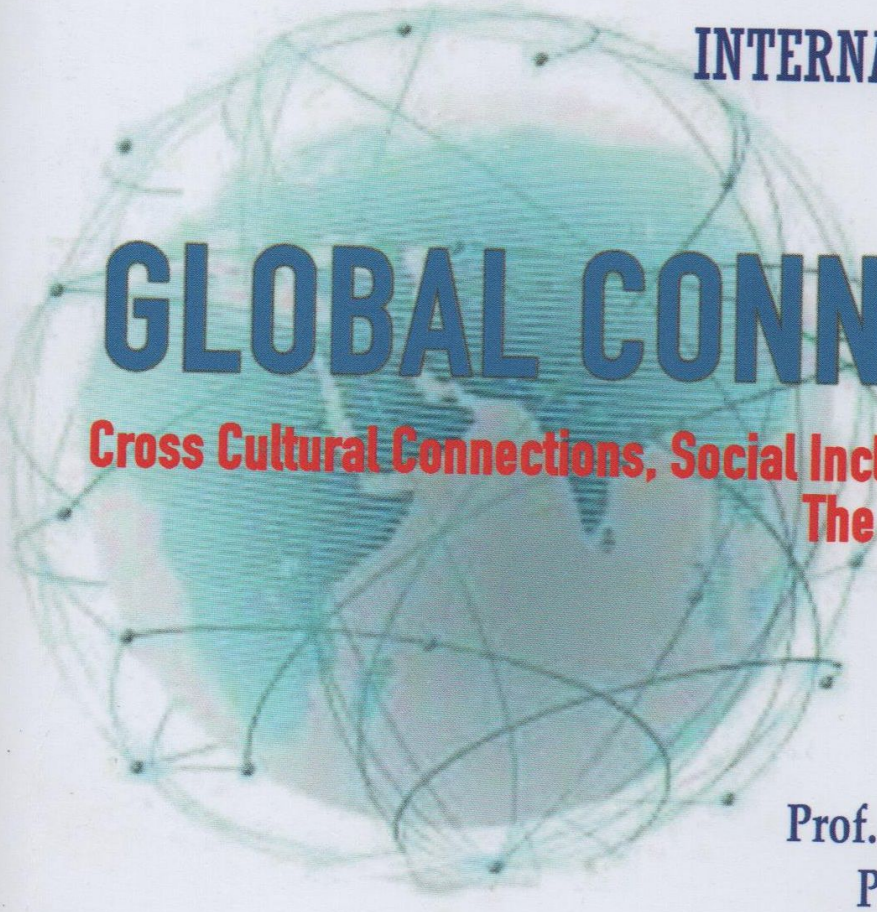
LIPI

IFSSO

Warmadewa University

PROCEEDINGS
INTERNATIONAL CONFERENCE



GLOBAL CONNECTIVITY

Cross Cultural Connections, Social Inclusion, and Recognition: The Role of Social Sciences

Editors:

Prof. Dr.phil. I Ketut Ardhana

Prof. Nestor Castro, Ph. D.

Prof. Dr. Morad Moulai Hadj

Prof. Dr. I Made Suwitra, S.H., M.H.

Dr. Anak Agung Gede Raka, M.Si.

Dr. I Ketut Irianto, M.Si

Proceedings International Conference
Global Connectivity, Cross Cultural Connections, Social Inclusion, and Recognition: The Role of Social Sciences

Editors:
Prof. Dr.phil. I Ketut Ardhana
Prof. Nestor Castro, Ph. D.
Prof. Dr. Morad Moulai Hadj
Prof. Dr. I Made Suwitra, S.H., M.H.
Dr. Anak Agung Gede Raka, M.Si.
Dr. I Ketut Irianto, M.Si

Reviewers:
Prof. Dr.phil. I Ketut Ardhana
Prof. Yekti Maunati, Ph.D. M.A.
Dr. Diane C. Butler
Dr. I Wayan Wesna Astara

Publisher
Warmadewa University Press
Terompong Street 24 Denpasar
Bali, Indonesia

In Collaboration with
Warmadewa University,
International Federation of Social Science Organizations (IFFSO),
Indonesian Institute of Sciences, Jakarta

First Edition: September 2017

ISBN 978-602-1582-21-3

Table of Contents

PROCESSING WASTE MANAGEMENT EFFORTS IN THE VILLAGE OF KUSAMBA PINDANG DAWAN SUBDISTRICT KLUNGKUNG BALI ENVIRONMENT FRIENDLY

By:

I Gde Suranaya Pandit*)

POST GRADUADE WARMADEWA UNIVERSITY*)
suranaya_pandit@yahoo.com

Pindang processing centers in Village Kusamba leaving by product waste in the form of liquid wastes such as blood and from the washing process and boiling fish. This waste is discharged into the sewer line to the pool in the form of disposal. This often creates pollution and the smell of sea water. Various techniques of waste handling and processing has been done. Each type of waste requires special handling, differ between the types of waste to one another. However, generally speaking, waste handling and processing techniques can be divided into handling technigues and processing waste treatment physical, chemical, and biological. Altough there are sanction improsed when not doing waste treatment is not carried out properly, as it reguires additional financing.

The processing is physically performed on each sewer installation iron wire sieve, so that the solid material, as well as large ingredients can be separated. Further processing is done by the chemical deposition as well as the addition of a chemical liquid that is clorin. The next stage tank flowed into the final form of biological treatment with aeration additions. Thus it would be a waste water that is ready to be distributed for watering plants or discharged into public waters.

Keywords ; Processing of pindang waste.

1. INTRODUCTION

Pindang is one form of processed fish that is widely consumed by the public and one of its raw material is a tuna that belongs to family scromboidae. Sea fishery production is increasing every year, where for Bali according to data of Bali Fishery and Maritime Office 2014, marine fishery production increased by 15.97% compared to the previous year with 9,191.30 tons of tuna fish catch. Most of the tuna fish catch is processed by the process of shoots 7,365.10 tons. Pemindangan is one way of preservation and fish processing which is a combination of salting and boiling. This enclosure will produce special products that are directly traded and consumed by the community, (Pandit *et al*, 2016).

The process of making pindang is first, wash the fish with clean water. After washing, arrange the fish in a bamboo baskets containing 8-10 tuna fish and a basket containing boiled

fish with boiling water which has been added 10% salt for 30 minutes at 100^0C, then cooled and sliced (Nilawati *et al*, 2014). From the results of this shoveling, not only produce pindang as the expected end product, but also waste as a waste product.

Waste is discharged from a production process both industrial and domestic (house hold), whose presence at a certain time and place is not desired by the environment because it has no economic value. Waste as a waste product is grouped into two kinds based on the form of solid waste and liquid waste. Solid waste can be shrimp or fish head, shell or shrimp shell, fish bone, and others. Liquid waste can be sourced from blood, washing water, equipment cleaning water, boiled water remaining, melt ice from the production room and so forth. This liquid waste contains organic ingredients and has the potential to cause negative effects on the environment (Sjafei, 2002). Pindang boiled water is one of the waste that is potentially polluting the environment, especially odor resulting from the decay of protein and fats (Ibrahim, 2005).

The village of Kusamba is the largest fish-breeding center in Bali Province, consisting of 70 fish catching blocks with pemindangan process from 11.00 wita to 17.00 wita depending on the number of catches of tuna or fish stock available in cold storage. Fish Tongkol are caught by means of purse seine fishing gear and tonda fishing line. The village of Kusamba conducts the process of pemindangan with very simple facilities and infrastructure. Pemindangan in the village of Kusamba by using bamboo basket identical to the process of salt water conservation where the fish are arranged in a container baskets sprinkled with salt, then put in a boiler container made of drums or panic steenless that already contains water so that the tuna is sub merged Then given a weight and boiling until the process is maturely marked with fish eyes have erupted (Pandit et al, 2016). Through this boiling process, fish farmers in Kusamba village are able to produce fish pindang as much as 20 tons per day (anonymous, 2012).

The purpose of this research is to know and evaluate the effort of handling processing of pindang waste at Pindang processing centers at Kusamba Village. The results of this study are expected to provide benefits not only for fishermen or fish farmers in Kusamba Village, and Local Government to take policy and community around Kusamba village in general.

2. METHODOLOGY

The methodology of this research is through several stages:

1. Survey phase
   This activity begins with a survey of the local location to take care of the permit and ensure the location of the activity and make observations about the disposal of waste processing pindang done.
2. Stage of observation and data collection
   At this stage, the activity undertaken is to observe the efforts made on the process of handling waste processing of pindang.
3. Evaluate the quality of waste
   The waste produced after disposal to the environment is taken 1,000 ml for laboratory analysis such as pH, BOD-iodometry/titration, COD-titrimetry and permanganate values. The

collected data is then analyzed by using the standard guidance of fishery waste water quality Regulation of the Minister of Environment No. 5 of 2014

4. Data reporting phase
   The data that have been collected, tabulated and analyzed, to be drawn conclusions.

3. RESULTS AND DISCUSSION

3.1 Efforts to Handling Waste processing of pindang in the fish farming center of Kusamba Village

Waste water treatment aims to eliminate pollutant parameters present in the waste water to the extent allowed to be discharged into water bodies in accordance with the terms of the permitted quality standard or to meet certain qualities for reuse. Waste water treatment processes include physical, chemical and biological processing (Setiyono and Satmoko, 2010). Waste from fish processing can be solid, liquid or gas. Solid waste such as cuts of fish meat, scales, fins, gills or digestive tract. Waste liquid such as blood, mucus, laundry water and the rest of boiling water fish. The resulting liquid waste contains a high organic material with a load of 20 kg BOD / ton (Ibrahim, 2005). While fish waste in the form of gas is the odor caused by the ammonia, hydrogen sulfide or ketone. This waste is channeled into the sewer to the storage basin.

There are several different techniques of fishing waste handling between one and the other. Fishing center in Kusamba village is a traditional center of shelter using simple facilities and infrastructure. The residual waste management techniques in Kusamba village are done physically, chemically, and biologically.

1. Physically

Physical waste handling and processing is performed to separate solid waste, liquid and gas. Physical waste handling and processing are capable of separating solid waste from other wastes. Solid waste will be handled or processed further so as not to be a contaminant material, while liquid and gas wastes will be handled or processed using chemical and biological techniques. Solid waste in the form of cuts of fish meat, scales, gills or digestive tract. Physically, the handling of waste that is discharged into the sewer is done using a filter (filter) made of iron wire. The shape of the iron wire sieve in pairs between channels is adjusted to the conduit conditions so that solid waste can be filtered for disposal or planting. The filter used can be iron or filter shaped and routinely monitored and filtered solids are taken.

2. Chemically

Chemical handling and processing of waste is done by using a chemical compound of clorin (cl2). This handling is done through a storage basin, so that the waste water from the physical conduit is channeled to the storage basin for some time to settle. At this time the solids granules will settle in the bottom of the reservoir and the clearest part of the waste water is at the top. Chemical compounds were added as needed. The upper waste water will flow to the

next reservoir. In solid waste as separate deposits, it is drained regularly so as not to pollute the environment.

3. Biologically

The purpose of biological waste treatment is to reduce the dissolved components, especially organic compounds to the safe boundary to the environment by utilizing microbes and / or plants (Ibrahim, 2005). Biological waste treatment is carried out in the next reservoir by aerator, so there is an aeration process and it is expected that some microbes can grow and develop. Or it could be added various types of microbes that are used depending on the type of waste (Syamsir, 2016).

Future; **1a.Physically., 1b. Result physically., 1c. Chemically., 1d.Biologically**

Kusamba village fish farming center performs a physical process by installing iron wire mesh on each sewer conduit, so that solid materials, as well as large materials can be separated. Further more, chemically treated by precipitation and addition of chemical fluid that is clorin. The next stage is channeled into the final reservoir of biological treatment with the addition of aeration. Thus it will be waste water that is ready to be distributed to water the plants or disposed of into the public waters.

3.2 Characteristics of Waste at Pindang Processing Center in Kusamba Village

After the aeration, several samples of waste water in the storage basin were taken for analysis in the laboratory. Observation of quality of waste is done qualitatively and quantitatively to assess the quality of processing waste in village Kusamba. The results of qualitative analysis meet the criteria quite well. The waste water that is ready to be discharged into the waters in the clear colorless Kusamba village is almost water-like in general, odorless, but slightly smelly, and no sediment appears. Changes in water color, odor, and sediment can be an indicator of waste decay. The odor arising from the aquatic wastes is caused by the decomposition of organic materials that produce volatile amine, diamine and ammonia compounds. The liquid waste of the fishery industry has high nutrient, oil, and fat contents which leads to high COD values, mainly from blood in the intestine and intestinal weeding process and during cooking. The result of solid waste that passes from the filter can be a sediment in the bottom of the water. Solid waste can be organic and inorganic waste. If not handled properly, solid waste will settle at the bottom of the water (Wardani, 2014).

The result of quantity analysis is pH test using pH meter. The presence of waste in water can cause changes in pH that occur due to changes in the concentration of hydrogen ions in water. The water neutral criterion for life is having a neutral pH between 6.5 - 7.5. Water with bad waste will have an acidic pH (pH <7) and an alkaline pH (pH> 8). Usually the liquid waste produced by the fish processing industry has a pH close to 7 (neutral), caused by the decomposition of materials containing proteins and the number of ammonia compounds. The liquid waste content of the fishery industry depends on the degree of contamination and also the quality of water used for the processing (Heriyanto, 2006). The pH measurement is related to the biological processing because the small pH will be difficult, in addition to disrupting the life of the water if discharged into the open water. The temperature of the waste water is generally not much different from the air temperature but higher than the drinking water temperature. Temperature can affect life in water (Wardani, 2014).

The remaining water of fish stew from the process of pemindangan that discharged into waste, will certainly have many organic compounds. The organic substances in its decomposition require oxygen and the aid of microorganisms. One determination of organic matter is by measuring BOD (*Biologycal Oxygen Demand*) from the waste. BOD is the amount of oxygen required by bacteria to decompose aerobic organic materials in solution, under certain time and temperature conditions, usually five days at 20 °C (Wardani, 2014). Conventionally, liquid waste treatment has successfully decreased BOD and COD. Biological treatment of aerobic waste water can be carried out with the following systems: active sludge system, aeration pond, and growth media system (trickling filter and rotating disk contactor), Shipin *et al.* (1999).

To know PH, BOD, and COD as parameter of waste water quality at fish farming center of Kusamba Village, chemical analysis is needed in laboratory. The results of this waste water test will then be compared with the Waste water Quality Standard (BMAL) of Fisheries Minister of Environment Regulation No. 5 of 2014.

Table 1. Result of Wastewater Analysis Center of fish stocking in Kusamba village

Parameter	Units	Analysis Result	BMAL
BOD	ppm	53.80	75
COD	ppm	148	150
PH		6-7	6-9

From the results of waste water analysis in the table above found that by using the parameters BOD, COD, and PH, which is then compared with BMAL, waste water generated from the process of processing pindang fish in the village Kusamba already meet the requirements and in accordance with the Minister of Environment Regulation No 5 Year 2014. So it can be concluded that the waste handling efforts in processing centers in the village Kusamba proved to successfully meet the requirements BMAL and environmentally friendly.

4. CONCLUSION

Based on the results of observation and analysis of the quality of waste water in Pindang Processing Center in Kusamba Village Klungkung Bali can be summarized as follows;

1. The effort of handling waste of pindang fish processing by discharging to special conduit by physical screening in the form of iron wire, then distributed to reservoir for chemical waste water treatment with addition of clorin fluid and third stage in the form of a storage tub for aeration Biologically, so it is expected that waste water can be discharged into water ways and watering plants that are environmentally friendly.
2. The results of the analysis of the quality of waste water discharged into the waters, still below the standards of environmental water quality standards, so still meet the requirements of environmentally friendly.

Bibliography

Anonim. 2012. Pemindang Ikan di Kusamba Bali Mampu Memproduksi Pindang Ikan Sampai 20 Ton per Hari. [cited August 7 2017]. Available from: http://www.trobos.com/detail-berita/2012/03/01/75/3293/sentra-pemindangan-ikan-dikusamba

Heriyanto. 2006. Pengaruh rasio COD/TKN pada proses denitrifikasi limbah cair industry perikanan dengan lumpur aktif [skripsi]. Institut Pertanian Bogor, Bogor.

Ibrahim, B. 2005. Kaji Ulang Sistem Pengolahan Limbah Cair Industri Hasil Perikanan Secara Biologis Dengan Lumpur Aktif. Buletin Teknologi Hasil Perikanan.Vol VIII No. 1.

Nilawati, Marihati, Susdawanita, Setianingsih, N.I, 2014. Kemampuan Bakteri Halofilik untuk Pengolahan Limbah Industri Pemindangan Ikan. Jurnal Riset Teknologi Pencegahan Pencemaran Industri 5(2): 23-28.

Pandit, I.G.S., Parwata, I.W., Sudiarta, I.W.S., 2016. Aplikasi Teknik Penanganan Ikan Segar Yang Berbeda terhadap Mutu Bahan Baku Pembuatan Pindang [Laporan Penelitian Strategis Nasional]. Universitas Warmadewa, Bali.

Permen Lingkungan Hidup 2014. Baku Mutu Air Limbah Bagi Usaha dan/atau Kegiatan Pengolah Hasil Perikanan No 5 Tahun 2014 Lampiran XIV, Jakarta.

Setiyono dan Satmoko Yudo. 2010. Prototipe Instalasi Pengolahan Air Limbah Industri Pengolahan Ikan di Kecamatan Muncar, Kabupaten Banyuwangi. J.Tek.Ling. Vol. 11 No. 1. Hal 7-26

Sjafei A. 2002. Studi Mengenai Karakteristik dan Proses Pengolahan Limbah Cair Industri Hasil Perikanan [thesis]. Institute Pertanian Bogor, Bogor.

Shipin, O V., P G J Meiring, R Phaswana, H Kluever. 1999. integrating ponds and activated sludge process in the petro concept. Wat. Res. 33(8): 1767-1774

Syamsir. 2016. Pemanfaatan Limbah Hasil Perikanan [skripsi]. Universitas Negeri Gorontalo, Gorontalo.

Wardani, A.L.P. 2014. Penanganan Limbah Processing: Pemanfaatan Limbah Fillet Ikan Menjadi Brownies Ikan [Laporan Praktikum]. Universitas Halu Oleo, Sulawesi Tengah.