

# Strategy Management of Hazardous and Toxic Waste Processing by PT Artama Sentosa Indonesia (Study of Transporting and Collecting Hazardous and Toxic Waste)

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# 1 Strategy Management of Hazardous and Toxic Waste Processing by PT Artama Sentosa Indonesia (Study of Transporting and Collecting Hazardous and Toxic Waste)

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**Abstract**—A company does not only produce many products but also produce the waste. The waste itself can be hazardous and toxic or not. Hazardous and toxic waste needs a serious processing. The hazardous and toxic waste which cannot handle properly causes environmental pollution and even environmental damage. The management of hazardous and toxic waste requires its own handling so that it needs waste transportation and collection services. The transportation and collection services must meet the requirements, no exception for Artama Sentosa Indonesia company. The objective of the study is to describe the strategic management of hazardous and toxic waste processing, inside the study of transporting and collecting hazardous and toxic waste by Artama Sentosa Indonesia company. Strategic management of transporting the hazardous and toxic waste is required.

This research used the descriptive approach with a qualitative method. The research's focus used SWOT analysis (Strengths, Weaknesses, Opportunities and Threats). The technique of this research was purposive sampling. Data analysis was done through data collection, data reduction, data presentation and conclusion.

The result showed that the strength of this company is good for communication and cooperation between superiors and subordinates, they have cooperation with almost all waste processing companies in Indonesia, they have complete license from environment minister's recommendation, ISO 14001-2009 certified, clear, basic tasks and functions competent human resources in their field, spacious building which can accommodate vehicles of transporting and collect the hazardous and toxic waste, all of the vehicles have already equipped with GPS. The weakness is only in the number of vehicles that are still lacking. Opportunities lie in many industries and hospitals, government's regulations, many companies that are still not managing their waste properly while threats to emerging freight riders and limited waste managers.

**Keywords**—strategy management, hazardous and toxic waste.

## I. INTRODUCTION

Every activity that is undertaken by the institution, both government and the private institution does not only produce products but also generate waste from the production. Waste means the rest of a business and/or activity [1]. Type of waste products can be changed

hazardous and toxic waste and non-hazardous and toxic waste. Hazardous and toxic waste is the rest of a business and or activity containing hazardous and toxic substances[1]. A hazardous waste is defined as any waste that possesses hazard properties (such as toxic, flammability, carcinogenicity, reactivity, corrosivity, etc) [2]. According to Article 1 Government Ordinance Number 101 Year 2014, hazardous and toxic are substances, energy and/or other components due to their properties, concentrations and/or quantities, either directly or indirectly, may pollute and / or damage the environment and / or endanger the environment life, health and survival of humans and other living beings [1].

As in chapter 1 above, a waste product that is not handled properly will cause environmental pollution and even has an impact on environmental damage. Hazardous waste can not only contaminate the adjoining soil, water and air but also lead to fire and explosions [3]. Environmental pollution is the entry or inclusion of living things, substances, energies, and/or other components into the environment by human activities to exceed the prescribed environmental quality standard [1]. While environmental damage is a direct and/or indirect of changes to the physical, chemical, and/or biological characteristics of the environment beyond the standard criteria of environmental degradation [1]. If the waste causes damage to the environment, then our responsibility to restore environmental function. Researches on the impact of hazardous chemicals and industrial solid waste from specific industrial sites have been conducted in the past, where the emphasis was on waste characterization and identification of treatment methodologies[4]. It is the responsibility of government society and wastes generating companies to manage the waste of production.

The management of hazardous and toxic waste requires transportation and collection waste services. Transportation for the waste is directed to waste generators and waste managers. The waste carrier is a business entity that runs hazardous and toxic waste collection activities. While collecting hazardous and toxic waste is a business entity that conducts waste collection activities before being sent to hazardous and toxic waste treatment plant, utilization of

hazardous and toxic waste and/or landfill waste [1]. Hazardous waste management systems entail collection of HWs their transportation of facilities with proper processing technologies or final disposal [2]. These hazardous wastes are transported to the treatment of storage and disposal facilities within the region [3]. As transportation services and collection of hazardous and toxic waste, they must meet the requirements. This is because the type of hazardous and toxic waste requires its own handling that is different from other waste transporting. No exception for the transportation and collection of hazardous and toxic waste in Artama Sentosa Indonesia company. Artama Sentosa Indonesia company established in 2014 and a subsidiary of Triatama Group, a company which concerns in transporting, collecting and processing of hazardous and toxic waste and non-hazardous and toxic waste. Artama Sentosa Indonesia company serves as a pilot collector of hazardous and toxic waste that obedient to the environmental regulations from Law Enforcement Ministry of Environment in 2018. Along with the regulation of the Ministry of Environment for each institution to manage its waste, that is why many hazardous and toxic waste transportation services company emerged. This makes competition for Artama Sentosa Indonesia company.

The number of competitions that happened, then Artama Sentosa Indonesia company needs to do the right strategy management. One of the right strategy management is SWOT analysis (Strengths, Weaknesses, Opportunities, Threats). SWOT analysis is done to win the business competition. According to Gitosudarmo, we must be able to win and then master the market well to occupy a strategic position [5].

## II RESEARCH METHODS

The type of this research is descriptive research through a qualitative approach. According to Sukandarrumidi and Haryanto, a qualitative approach is a qualitative research which is called an interpretative method because the data from research result is more related to the interpretation of data found in the field [6].

This research was conducted at Artama Sentosa Indonesia company, which is located in Meiko Abadi Warehousing and Industrial Area VI block G-01 Sumpat Driyorejo Gresik, East Java. Reasons to choose this place because of Artama Sentosa Indonesia company is a subsidiary of Triatama Group which is one of the largest companies in Indonesia that concerns in transporting, collecting and processing waste both hazardous and toxic waste.

The focus of this research is the SWOT approach consisting of Strengths, Weaknesses, Opportunities, and Threats. There are two types of data sources, primary data and secondary data. Primary data is data that obtained directly from related parties studied. Primary data obtained through interview and observation. Researcher uses purposive sampling technique. Subjects in this study:

- a. Buwono Himawan as President Director of Artama Sentosa Indonesia company
- b. Tefa Marhaendra Djaja as Marketing Manager of Artama Sentosa Indonesia company

- c. Achmad Hasyim as Transport Manager of Artama Sentosa Indonesia company
- d. Edy as a waste producer

Secondary data is data that obtained indirectly through notes, documentation, data reports, journals and books.

## III. RESULT AND DISCUSSION

### A.Result

#### 1. General Description

Artama Sentosa Indonesia company established in 2014. This company is located in Sumpat Gresik, East Java.

The vision of this company is to be a trusted transporter & waste collector company. The mission is always on time and on quantity in the process of taking hazardous and toxic waste, as well as the process of collecting hazardous and toxic waste according to its type.

Quality policy: Artama Sentosa Indonesia company, as a company that concern in both hazardous and toxic waste and non-hazardous and toxic waste collection services are committed and determined to be an excellent company in its field, fulfilling customer's expectation and obeying the rules especially on the environment.

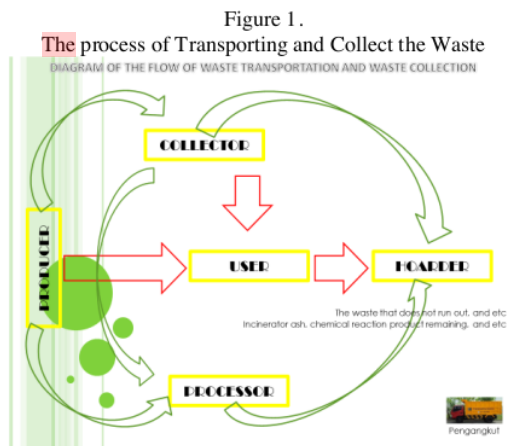
To comply with the above policy, what this company does is:

- a. Providing the best and consistent service to the customer.
- b. Perform continuous improvement process in every aspect of business activity.
- c. Comply with all applicable environmental regulations.
- d. Increase awareness and participation of all employees about quality and Occupational Health and Safety
- e. This policy will be communicated to all employees to be applied in daily work

Artama Sentosa Indonesia company provides services in terms of:

- a. Hazardous and toxic waste and non-hazardous and toxic waste transport services
- b. Hazardous and toxic waste collection services
- c. Hazardous and toxic waste management services
- d. Environmental consultant services
- e. Hazardous and toxic waste disposal/packaging service

Artama Sentosa Indonesia company also supports Indonesia's National Development Program with a sustainable development strategy, by running environmentally friendly programs, through the concept of zero waste and 3 R (Reuse, Reduce, Recycle). Next below is a picture of the flow process of transporting and the collect hazardous and toxic waste:



Source: Company Profile of Artama Sentosa Indonesia Company (2018) [7]



Source : Company Profile of Artama Sentosa Indonesia Company (2018)[7]

2. Processing Management of Hazardous and Toxic Waste

Hazardous and Toxic are substances, energies, and/or other components due to their nature, concentrations and/or quantities, either directly or indirectly, to pollute and/or damage the environment, and/or harm the environment life, health, and survival of humans and other living beings[1]. Hazardous waste has a chemical composition or other properties that have to be managed in order to prevent its release into the environment that can result in illness, death or other harm to living organisms including humans. The word “waste” means that the substances of concern have no apparent value. And a “hazard” is expressed as the potential for an unacceptable outcome. The identification of a waste as hazardous waste is the process to determine whether a waste poses a sufficient chemical or physical hazard to merit regulation[8].

Hazardous and toxic waste has many types, some are liquid or solid. Of course, this requires different handling of waste processing management. The European Directive 2008/98/EC establishes that the priorities for waste management are prevention, re-use, and recycling. If none of these options are feasible, the following step in the prioritization ranking is incineration with energy recovery (waste-to-energy)[9]. Even the process of transporting and storing waste also received different treatment.

Type of waste according to Government Regulation number 101 Year 2014 can be divided as a) hazardous and toxic waste category 1; b) hazardous and toxic waste category 2; c) Non-hazardous and toxic waste [1]. For hazardous and toxic waste itself, based on hazard category there is acute hazardous and toxic waste category 1 and category 2 is chronic. This is as shown in the picture below:

Meanwhile, according to the source, hazardous and toxic waste can be differentiated into a) hazardous and toxic waste from non-specific sources; b) hazardous and toxic waste from expired hazardous and toxic substances, spilled hazardous and toxic substances, hazardous and toxic substances that are not meeting product specifications to be discarded and hazardous and toxic substances used packaging; c) hazardous and toxic waste from specific sources (general and distinctive specific)[1]. Characteristics of hazardous and toxic waste include explosiv, flammable, reactive, infectious, corrosive and/or toxic [1]. The "hazard" or toxicity (hazards to human health) of the waste is the most important factor in determining how a waste should be managed. Hazardous waste is required to undergo a proper treatment to destroy or render them environmentally acceptable. Handling and disposal of hazardous waste and attending requirements have been substantially expanded and subject not only to technology needs but to the hazardous waste regulatory environment[8].

Hazardous waste has dangerous properties and exerts a harmful effect on human health or the environment. Management of hazardous wastes is one of the major environmental issues[10]. With the classification of hazardous and toxic waste based on the hazard of waste, of course, the risks or impact that is faced is also different. The impacts are generated for humans as well as for the environment. This is not certainly the same in the management of hazardous and toxic waste. This is like in the picture below:



Figure 3.  
Risk-based of processing management hazardous and toxic waste



Source: Company Profile of Artama Sentosa Indonesia Company (2018) [7]

### 3. Strategy Management of Hazardous and Toxic Waste Processing by Artama Sentosa Indonesia company (Study of Transporting and Collecting Hazardous and Toxic Waste)

Strategic management has become an important part of the company in today's dynamic and competitive environment [11]. If a company wants to be an excellent competitor in the competition, would requires an appropriate strategy. According to Hariadi, basically any competitive strategy that is run by a company in winning a business can do not be separated from the main strategy that is usually practiced, namely a) as a cost leader, b) emphasizing ways to differentiate its products from competitors, c) a combination of both in presenting something worth in the eyes of the customers[12]. Strategic management consists of three separate processes which are interconnected together and influence each other. These processes are strategic planning, strategic implementation and strategic control [11]. According to Hariadi, management strategy is a systematical process designed by management to formulate strategy, execute strategy and evaluate strategy in order to provide the best values for all customers to realize the vision of organization [12].

In the opinion of Niswah, there are two important things in strategic management, that is: 1) Strategic management consists of three processes, namely a) strategy development includes the development of mission and long-term goals, identification of opportunities and threats from outside and organizational strengths and weaknesses, strategic alternatives and determining appropriate strategies for adoption; b) implementation of the strategy, including annual operational objectives, organizational policies, motivating members and allocating resources so that the established strategies can be implemented; c) evaluation, including attempts to monitor all outcomes of strategy creation and implementation. 2) Strategic management focuses on

incorporating the marketing, research and development, finance and production aspects of a business [13].

Another opinion explains the strategic management process includes four basic elements namely: 1) environmental observation; 2) strategic formulation; 3) strategic implementation; 4) evaluation and control [14]. Still, according to Hunger (2003) At the corporate level, the strategic management process includes activities ranging from environmental observations to performance evaluations. Management observes the external environment to see opportunities and threats and observes the internal environment to see the strengths and weaknesses. The most important factors for the future of a firm are called strategic factors and are summarized with the abbreviation S.W.O.T which means strengths, weaknesses, opportunities and threats [14].

According to Chermack, SWOT analysis is commonly used in foresight studies as an instrument for categorizing significant factors that determine the development of a particular phenomenon or an organization. In its classical form, the SWOT analysis is based on the development of the organization and is located within the organization as well as the opportunities and threats located outside the organization [15]. SWOT analysis can be applied by analyzing and sorting various things that affect the four factors, its application according to Gaspersz is:

How can the existing forces be used to create opportunities?

- a. How to overcome the weaknesses in order to improve or create opportunities that exist?
- b. How are the forces able to deal with or prevent threats that exist?
- c. How to overcome the weaknesses that are able to avoid the possible threats? [16]

In this research will be seen SWOT analysis on Artama Sentosa Indonesia company in the management of hazardous and toxic waste through transportation and waste collection. the safety level was always the central priority for the transportation area[17].

### B. Discussion

Strategic Management of hazardous and toxic waste processing in the process of transporting and collecting the waste by Artama Sentosa Indonesia company uses SWOT analysis. SWOT analysis is used both for determining the strategic position of the company and getting the real picture in deciding which strategy suits the company better. It is also used in realizing whether the generated strategies (business scenarios) would enable the company to apply it appropriately[18]. According to Sanejima, Shimizu, Akiyoshi, & Komoda, SWOT analysis is a commonly used method for analyzing and positioning an organization's resources and the environment in four regions: Strengths, Weaknesses, Opportunities and Threats [19]. SWOT analysis in transportation process and collection of hazardous and toxic waste at Artama Sentosa Indonesia company can be explained as follows:

### 1. Strength

The variables of strengths and weaknesses are internal scope within the organization, but it is not usually in short-term management control. Strengths and weaknesses are internal (controllable) factors that support and obstruct the organization to achieve their mission respectively [19]. According to Hanger, these variables form the atmosphere in which work is performed. These variables include structure, culture and human resources. The structure is the way how companies are organized in terms of communication, authority and workflow. Culture is a belief, hope, and values given by members of the organization. While resources are an asset of raw materials for the production of goods and services organization [14].

Based on interviews conducted, if the researcher looks at Hunger's opinion about the structure of the existence of good communication between superiors and subordinates, and vice versa between subordinates and leaders, those are the strength of Artama Sentosa Indonesia company. The boss sometimes asks for feedback or opinions from his employees. For example, input on the process of transporting waste that will be sent to waste processors.

In addition, there is good cooperation in almost all waste managers in Indonesia. Not all transporters have the cooperation. Besides have a cooperation in almost all waste managers in Indonesia, it also has a complete license recommendation from the Ministry of Environment. In addition, Artama Sentosa Indonesia company also has ISO 14001 certificate [1] 2009, that is ISO waste management system. From all hazardous and toxic waste transporters in Indonesia, **Artama Sentosa Indonesia company** is the one and only that has ISO certified.

Speaking about authority, each employee has a fundamental task in accordance with the organizational structure, so clearly, the authority of each part is no exception for truckers. The existence of the rules that all waste drivers must keep meeting the standards of waste collection requirements, for example, must wear uniforms, wear safety shoes, also wear gloves. All those requirements for the security of the driver. If safety shoes are damaged, then the driver can ask for new safety shoes.

The current working flow that usually every company does is every waste producer contact Artama Sentosa Indonesia company to dispose of its waste. After the price agreement, the MOU between waste producers and waste processors is taken. Then the administration makes an order to fit the waste, then the transport section creates a schedule of waste collection and the type of vehicle that will transport the waste.

While the culture in that company, there is no difference between employees or staff with the driver. Periodically every twice in a year, this company does the family gathering. The first family gathering included all the families (wife and children) participation, while the second was for all employees without family. That routine gathering is done to create a sense of belonging and togetherness among all employees in the company. In addition, once every semester or 6 (six) months dispatching employees as many as 3 (three) people to go to Umrah. The three people consist of

managers, administrators (staff) and drivers based on years of service.

Resources in this company in the form of supporting facilities such as buildings, there are 3 (three) buildings that are very spacious for the parking lot so it can accommodate all vehicles transporting hazardous and toxic waste. Besides a large parking lot, it can also accommodate temporary waste to be transported to waste management. Hazardous and toxic waste transport vehicles may be small trucks to large trucks, box trucks up to wing box trucks, dump trucks and iso trucks (tank trucks) used for liquid waste. Hazardous and toxic waste transporters are also equipped with GPS, so it is easy to be supervised or slaughtered existence of the vehicle. For human resources in the form of employees, all employees work competently in their respective fields.

### 2. Weakness

Weakness variable in this company is in the number of the vehicle that carrying hazardous and toxic waste. The vehicles are still less. The number of existing hazardous and toxic waste transporters currently are 52 (fifty-two) vehicles. This amount is not the entire vehicle from Artama Sentosa Indonesia company but is the total of the hazardous and toxic waste transporter vehicles from Triatama Group. It can be known that the vehicles for hazardous and toxic waste are still less.

### 3. Opportunity

Opportunities and threats are variables of the external environment outside the organization or company that are not specifically present in short-term control of top management [14]. Whereas Opportunities and Threats are the external (uncontrollable) factors that enable and disable organizations from accomplishing their mission (Dyson, 2004) [19]. The existing opportunity is the regulation of government on waste transportation, which gives the opportunity to Artama Sentosa Indonesia company more needed by the producer of hazardous and toxic waste.

In addition, many new industries and new hospitals are emerging, which of course is not only producing many products but also producing waste. Besides that, many companies in Indonesia that have not managed the waste properly and correctly, for example, there are dumped into the river. This will obviously damage the environment. Companies that do not manage the waste properly and correctly will certainly get a warning and even a punishment from the Ministry of the Environment

### 4. Threats

The threat that occurred in Artama Sentosa Indonesia company is the number of competitors that have sprung up in the field of transporter or waste transport. The most important threat is the limited management of hazardous and toxic waste. This is because not all waste managers can manage all types of hazardous and toxic waste. In the sense that only certain types of hazardous and toxic waste are biased by hazardous and toxic waste managers.

Another threat is most hazardous and toxic waste managers in West Java. So, the delivery of hazardous and toxic waste is sent to the manager in West Java.



#### IV. CONCLUSION

Waste production that is not handled properly will cause environmental pollution or even impact on environmental damage. Hazardous wastes can not only contaminate the adjoining soil, water and air but also, lead to fire and explosion. If the waste causes damage to the environment, then our responsibility to restore environmental function. The management of hazardous and toxic waste requires transportation and collection services. Transportation of waste is directed to waste generators and waste managers. Hazardous waste transportation and collection service must meet the requirements. This is because the type of hazardous and toxic waste requires its own handling that is different from another waste haulage. Artama company as hazardous and toxic waste transporter and collector requires the right strategic management to be able to excel and beat the existing competitors. Appropriate strategic management using SWOT analysis. The most important factors for the future of the company are called strategic factors and are summarized with the abbreviation S.W.O.T which means strengths, weaknesses, opportunities and threats.

Variables of strength and weakness include structure, culture and human resources. The structure is the existence of good communication between superiors and subordinates vice versa subordinates and the leaders, they have to have a good cooperation in almost all waste managers in Indonesia. Not all transporters have the cooperation, have complete license recommendation from the Ministry of Environment and has an ISO14001 certificate in 2009 that is ISO waste management system.

Authority, each employee has a fundamental task in accordance with the organizational structure, it is clear that the authority of each section, no exception for truckers. The existence of the rules that all waste drivers must meet the standards of waste collection requirements, for example, must wear uniforms, wear safety shoes, also wear gloves. All those rules are for the drivers' safety.

The current working flow that usually every company does is every waste producer contact Artama Sentosa Indonesia company to dispose of its waste. After the price agreement, the MOU between waste producers and waste processors is taken. Then the administration makes an order to fit the waste, then the transport section creates a schedule of waste collection and the type of vehicle that will transport the waste.

While the culture in that company, there is no difference between employees or staff with the driver. Periodically every twice in a year, this company does the family gathering. Besides that, once every semester or 6 (six) months dispatching employees as many as 3 (three) people to go to Umrah.

Resources in this company in the form of supporting facilities such as buildings, there are 3 (three) buildings that are very spacious for the parking lot so it can accommodate all vehicles transporting hazardous and toxic waste that is also equipped with GPS and accommodate temporary waste to be transported to waste management.

The weaknesses in the number of vehicles carrying hazardous and toxic waste that is still lacking. Opportunities

in the number of new industries and new hospitals are emerging and there are still many companies that have not managed the waste properly and correctly. The threats that exist are in the number of competitors emerging in the field of transporter or waste transport and limited hazardous waste managers that are exist in West Java. So, the delivery of hazardous waste is sent to the manager in West Java.

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