



ENVIRONMENTAL CONSERVATION THROUGH WASTE MANAGEMENT OF CAR REPAIR SHOP IN MAKASSAR CITY

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ABSTRACT

This study aimed to determine: (1) description of car repair shop waste management at Makassar city, (2) barriers or constraints faced by the manager of the car repair shop in waste management, (3) waste management efforts made by the manager of auto repair shop, (4) the efforts made by the government in preserving the clean environment. The population is all auto repair shops in Makassar (112 units). Data collection techniques using documentation, observation, and interviews. The results showed that (1) most of the auto repair shop in Makassar not properly manage their waste (solid waste, liquid waste and waste gas or smoke), (2) the constraints faced by the manager of a car repair shop in managing and treating waste, include: knowledge, education and training on how to manage and treat waste auto repair, and the low awareness of people around the workshop on the importance of cleanliness of the environment, (3) the efforts made by the manager of a car repair shop in the management and processing of their waste include: providing a solid waste containment, making septic tanks to treat wastewater, drain waste water through pipe line, chimney installing, and maintain the cleanliness of the water or drainage channels, (4) the efforts made by the government in preserving the clean environment in form of: surveillance, monitoring, coaching, education, training, managing and treating waste, and threatened to shut down for a car repair shop manager who do not care about the cleanliness of the environment.

Keywords: *Car Repair, Waste Management, Environmental Preservation.*

INTRODUCTION.

Development is fundamentally change the circumstances that are considered unfavorable for the better. Balance environmental change towards a new equilibrium. The new equilibrium was intended as an attempt to achieve social justice on the one hand, and also to increase production on the other side. Development is absolutely necessary, but the environment must also be maintained as specified in the regulation No. 5 (1984). In fact, the goal of development in relation to the environment is to improve the environmental benefits and minimize risks to the environment, so there is a rising standard of living, and humans can live healthy, safe and humane.

Good and healthy environment is a right of every citizen of Indonesia as stated in Constitution of the Republic of Indonesia, that every person has an equal right to a better environment and healthier. Environmental aspects are soil, water and

air, is an important component of human life and other living things. The efforts made by the government in terms of waste management, especially in industry is to conduct operational control of the industries that produce hazardous waste.

The urban environment is an ecosystem, which is formed from the various communities. One indicator of the current development is the number of motor vehicles increased sharply. Motor vehicle at the time of disorder or damage, requires a skilled mechanic. Car repair shop in the city of Makassar in general an individual business and are included in the category of small and medium enterprises as set out in the Act. RI. No. 9 / 1995. According to Marbun (2005: 25), clearly states that the auto repair activities include maintenance and repair of vehicles, welding and painting, and washing cars. This car repair potential to pollute the environment, because of the

waste generated in the form of solid waste (garbage), liquid, and waste vehicle exhaust.

According to Tamrin, (1997: 67), said that the level of awareness of the environmental of auto shop mechanic is in the low category. Other studies claim that a car repair shop in the city of Makassar is potentially detrimental to the environment such as pollution of noise, temperature, exhaust gas, waste water, and trash (Chaeruddin, 1993: 72), further confirmed by research (Hashim, 2004: 59) which confirms that the waste management workshop in the city of Makassar in general are not yet qualified, especially in the handling of the waste exhaust gases. Another study states that waste management workshop in the city of Makassar is not maximized (Anwar, 2003: 86). The main problem faced by the motor vehicle car shop include: (1) the workshop does not have waste storage, (2) lack of knowledge about waste management, and (3) the lack of supervision of the workshop leaders, governments and communities to manage waste. This condition will cause environmental degradation due to the waste produced can pollute the environment around the car repair shop.

The purpose of this study was to: (1) identify waste management in an auto repair shop, (2) determine the barriers faced by managers workshop in waste management, (3) determine the efforts made by the workshop manager in waste management, and (4) determines the efforts made by the government in maintaining the quality of the environment around the car repair shop in the city of Makassar.

RESEARCH METHODOLOGY

This research was conducted in the city of Makassar, South Sulawesi Province, in April-July 2009, the number of car repair shop in the sample as many as 112 units spread over 14 districts and 142 villages. This study uses a survey approach to describe the condition of the car repair shop. Methods of data collection research using interviews and questionnaires giving

workers and workshop leaders, governments, and communities around the car shop repair. The number of respondents each car shop repair are 2 employees and 1 of car shop repair manager. The data obtained (secondary and primary data) will be analyzed descriptively to obtain answers to the questions proposed research.

RESULT AND DISCUSSION

Motor vehicles (cars) in the city of Makassar for the last 3 years on average grew 13.87 percent, this is due to several factors, among others: (1) an increase in population, (2) improvement in economic conditions, and (3) the increased mobility society. This growth provides business opportunities in the field of auto repair shops, although the rate of growth of only (4.81 percent) per year. Conditions that must be met in order to open the workshop, among others: (1) have a place and adequate working space, (2) not be in residential areas, (3) have the expertise and skills, and (4) have adequate working equipment. The fact that the location of the deployment of a car repair shop (56.25 percent) are located in residential areas and also on major roads. it is a form of strategy to get customers. In general, the workshop activities include: (1) service and repair (59.82 percent), (2) welding and painting, and (3) washing the car. The percentage of service and repair is very dominant as car maintenance should be done regularly.

Education level of carshop managers (93.75 percent) are high school, while the education level of mechanical (82.50 percent) are also high school. They should have adequate knowledge and understanding of hygiene and environmental management. The level of education can make a significant function in maintaining the surrounding environment. Waste car workshop activities are grouped into three types, namely (1) solid waste, (2) liquid waste, and (3) exhaust gas fumes, these three types of waste if not managed properly can be adverse the environment. Total percentage of each waste are: solid waste

(31, 25 percent), liquid (100.00 percent), and waste gas / fumes (6.25 percent). Construction of solid waste storage is done by: (a) store in the open space (68.75 percent) for large quantities, (b) a shelter made of walls, (c) a shelter made of wood. Construction waste storage for used oil was: (1) applies in the drum (90.63 percent), and (2) buckets (9,37 percent). The oil used to be accommodated with a good container. For this type of waste gas / fumes result from burning fossil fuels, both gasoline (petrol cars), and diesel-fueled cars can have consequences such as eye irritation and shortness of breath. To avoid the impact of waste gas / fumes, only 6.25 percent of a car repair shop has a chimney construction permanently stationed on the roof of the building. The presence of the chimney to help release the gas / fumes into the air. Other results showed that only 2 of auto car shop (6.25 percent) that provides a vehicle for the transport of waste.

Barriers of car repair shop manager in waste management

Some of the factors causing the car repair shop manager who has not made waste management because:

1. Knowledge of waste management

Knowledge of waste management, with regard to the level of education that can affect someone in the ability to think, understand the importance of cleanliness of the environment, its role in environmental management, and serious attention so that the workshop manager not adversely affect the environment around the location of the workshop, but the workshop manager expressed lack of knowledge about solid waste management as much (40.62 percent), for liquid waste, (66.63 percent), and waste gas / fumes, by (93.75 percent).

2. Guidance on the preservation of the environment

The government's efforts in preserving the environment has been done for example by coaching workshop workers working with several agencies, such as the Department of Health, and environmental services. However, (81.25 percent), the

workshop manager admitted that he never received counseling and the rest have been getting counseling.

3. Guidance on waste management

The government has sought to improve the quality of the environment around the car repair shop through training of employees. Form of counseling is done by giving a boost to perform sorting of waste, provision of bins, waste transportation, waste disposal and recovery. However, as much as 75 percent said not receive the counseling.

4. Training in waste management

The training given to managers in the form of waste management practices include: solid waste, liquid waste, and gas pollution, although the training is not periodic. Car repair shop that states do not receive training as much as 90.63 percent. This is due, among others, because: (1) the absence of allocation of time for that activity, (2) the lack of a budget to implement the training.

5. Manager's efforts in waste management

Waste generated by the car repair shop, both solid waste, liquid, or gas/ fumes can not be thrown away without receiving treatment in advance so not to cause bad influence to the environment around the shop. It required effort of workshop manager in managing waste. The results of the interview respondents described that waste management efforts that have been made have not been optimally integrated. Waste management businesses include:

a. Waste sorting workshop

One of the efforts on waste management is waste sorting of classification and dimensions (size) of waste such as municipal solid waste iron/plate, wood, tires, rubber, broken glass, plastic, cardboard, asbestos, seal, sawdust scars and used cloth. Liquid waste such as engine oil, steering oil, gears oil, oil transmission, grease, water batteries, and brake fluid. Car repair shop has made efforts sorting of solid waste, liquid, or gas / fumes which all respondents were 64 people (100 percent) said do sorting.

b. Provision of waste disposal site

Efforts have been made of car repair shop manager (93.75 percent) said it had provided shelter solid waste in various forms, in the form of open, made of walls and materials of wood, then used oil wastewater (100.00 percent) has been accommodated by the container drums, buckets and jerry cans, so that does not seep into the ground and contaminate the water, then waste gas/fumes (100.00 percent) said they did not provide. This place is a temporary shelter, then transported to the waste disposal industry for further processing.

There are several factors that led to the car repair shop manager is not doing the processing, among others: (1) the cost, (2) the lack of the government and other parties to provide education and training on waste management workshop (3) lack of managers awareness due to poor pollution caused by car repair waste, (4) lack of guidance, monitoring and supervision of the government, community and non-governmental organizations and other (5) the absence of sanction given to the managers of the car repair shop when not treat waste.

c. Car repair shop Waste transportation

Not one of the 64 people management of car repair shop (100.00 percent) said they did not provide a vehicle to transport the waste of car repair shop.

d. Waste collection

Solid waste (garbage) that has no economic value was collected at a temporary shelter in front of the car repair shop. A total of 81.25 percent stated to sell waste car repair shop that still has economic value, such as iron, waste oil used. Sales of iron waste, distributed to employees to improve their well-being and as a work incentive, although respondents said sales to raise capital (investment).

e. Waste disposal

The volume of residual waste strewn around the shop though most workshops not provide trash. Garbage disposal a means of someone directing to not throw trash at any place. but the fact is, there was still some trash scattered on shop locations and dumped on the roadside. Still as much

(28.13 percent) said sometimes there is still garbage strewn, for liquid waste (37.50 percent) said throw in the drains or drainage, this condition describes the level of awareness of each manager workshop and employees, because cleanliness around the shop to the expectations of government and the public in order to avoid contamination of the waste generated from the shop. Waste gas/fumes (93.75 percent) disposing of waste at the curb.

There is a tendency and habit liquid waste directly disposed into the sewers, ditches assuming it is a proper means of waste disposal, while the solid trash, also not optimally provided for waste generated from shop activities only slightly, although the form of cans, bottles, cardboard, plastic and paper, the existence of such facts lead to solid and liquid waste can disrupt the environment.

Several factors led to, among others: (1) lack of awareness workshop managers and employees of the bad consequences that can be caused by sewage pollution, (2) lack of guidance, monitoring and supervision of the government, the public and other non-governmental organizations, (3) the absence of sanctions given to the manager of the garage when litter the place, and (4) the manager of the garage had always assumed that good environmental hygiene problems of liquid and solid waste responsibilities of government, because the managers pay the fees cleanliness.

f. Waste recovery

Waste recovery efforts inadequate because only 21.87 percent to re-use iron/plate, and wires are still in good condition. Some of the reasons (1) does not reduce power if installed, (2) reduce the volume of waste, (3) reduce the cost of production, means increasing profits. Wastewater, and gas/fumes (100.00 percent) did not recover.

g. Supervision of auto car shop cleanliness

Cleanliness in the work environment became an extremely important because it can: (1) increasing productivity, (2) avoid work accidents, and (3) minimize environmental pollution. Cleanliness can be

maintained if done continuous supervision until a habit to clean behave. Supervision of shop management led to have adequate sanitation, proved 64 people (100 percent), there is a leadership oversight in terms of cleanliness.

h. Provision of sand or sawdust

To maintain the cleanliness of the floor as the activities of service or repair, they clean it with sand or sawdust from a puddle or oil spills. This is the second reason they are doing this type of material has a relatively good absorption of the oil or grease spilled, therefore one of the two types of material should be always available. A total of 93.75 percent has been providing sawdust or sand in storage. Car repair shop has a commitment to maintain cleanliness and avoid contamination of soil and water due to oil impregnation, and the oil in the ground.

i. Ability waste shelters

Ability car shop waste shelter is one of the indicators: (1) high or low commitment of shop manager in maintaining environmental sustainability, (2) a lot or at least the volume of work from their car workshop activities. Adequacy shelters waste becomes very important because the shelter is small, with a high volume of work, the waste generated can not be accommodated within a certain time period, resulting in sewage can overflow and scattered. Adequacy of shelters waste for a period of one month, as many (100 percent) shelters can accommodate waste generated within one month.

j. Provision chimney

Management efforts in providing tools for testing machines (performance) and a tool to measure the levels of exhaust gas and the need to have done, but many companies do not have the tools, several reasons, among others: (1) the expensive machinery and equipment tests to measure levels of exhaust gas, (2) the tool is necessary because it can deliver results in the form of data or evidence that the car is worth or not worth the operation, and (3) lack of demand from customers to check and measure the levels of vehicle exhaust.

So that the car can remain in good condition, then (1) is always in a state of default, (2) running vehicle with no forced, and (3) do service (tune-up) or repairs, so the cause of the gas/fumes sometimes black and smelling can be repaired. Disruption caused by waste gases in the form of smoke include: shortness of breath, and eye irritation. To minimize the waste generated due to gas/smoke just as much (6.25 percent) to install a chimney so the smoke can be blown into the air, the other side (93.75 percent), not put up the chimney on the grounds: (1) require the installation of flue considerable cost, and (2) are considered not disturb the public.

6. Government Efforts in Environmental Care

As well as the efforts that have been made the shop manager in waste management, municipal government of Makassar city, sought to keep the environment well maintained. The efforts made by the Department of Industry, Trade and Investment Cooperation, and the Department of Environmental Management, that the quality of the environment to be maintained as follows:

Results on interview with the Head of Department of Industry, Trade and Investment Cooperation, regarding the efforts that have been made in maintaining the quality of the environment as follows: (1) each of the car repair shops already have a business license (2) counseling, and guidance is given to the manager of the shop to keep referring to the document management environment or Letter Statement of Environmental Management (SPPL), which has been held for the completeness of the files on the processing time of business license, (3) the training given to the shop manager to provide quality service and waste management properly, (4) periodic supervision, and monitoring for waste management.

Some of the requirements for obtaining a business license of car repair shop, among others: (a) has a place and adequate work space, (b) is not in residential areas, (c) have the expertise or staff who are experienced in

their field, and (d) have working and safety equipment, and (5) imposing sanctions for managers to close down if the shop is still violated after being given a coaching, counseling, training, and supervision, and monitoring.

7. The government's efforts in environmental conservation

The government sought to keep the environment well maintained by the development of training of waste management. Supervision and monitoring is done as a priority to prevent the potential for environmental contamination, and to impose sanctions on a car repair shop manager who pollute the environment and do not pay attention to the cleanliness of the workshop environment.

CONCLUSION

Based on the results of research and discussion, it can be drawn some conclusions as follows:

1. Waste management in the city of Makassar car garage can be described as follows: (1) make a deposit of waste in the open for solid waste, (2) holds liquid waste in containers such as drums and jerry cans, (3) exhaust pollution released into the atmosphere through the chimney .
2. Barriers faced by managers of auto repair shops in waste management in Makassar, namely: (1) the lack of knowledge about waste management, (2) less education on environmental and waste management, (3) the lack of training for auto repair shop waste management.
3. The efforts have been made of car repair shop manager in waste management, such as: (1) waste sorting, (2) providing shelter for storage of solid waste, wastewater, and waste gas/smoke, (3) a few types of waste can be reused, (4) provided sand or sawdust to clean the floor from grease or oil spilled.
4. The Efforts that have been carried out by the government in the maintenance of the environment, such as: Guidance

counseling on environmental management and waste management to the workshop manager, training how to manufacture septic tanks, training how to create a chimney for the release of gases / fumes, supervision and monitoring of a car repair shop that has a tendency polluting, and the imposition of sanctions for a car repair shop manager do not care about the cleanliness of the environment.

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