



SOLID WASTE MANAGEMENT PRACTICES OF RESIDENTS OF SAN GABRIEL, TUGUEGARAO CITY

MA. ELEANOR FERNANDEZ, MBA

Faculty Member

College of Business, Entrepreneurship and Accountancy

Cagayan State University, Andrews Campus

Tuguegarao City, Cagayan, Philippines

ABSTRACT: *Solid waste is one of the biggest problems in today's generation which is the by-product of human activities that ruins little by little our environment because of improper disposal of solid wastes. This study was conducted to determine the practices of the residents on the implementation of solid waste management. This undertaking made use of the descriptive research design utilizing descriptive statistics like frequency counts and percentages. The data gathering tool was used to collect the necessary data from the selected residents of San Gabriel, Tuguegarao City. The data gathering tool was patterned from the undergraduate thesis of Pascual Gerald et al. as the main instrument. As revealed from the findings of this study, majority of the respondents have not attended any seminars or trainings on solid waste management, though many of the respondents do practice the segregation of their solid wastes and the 4R's. Based on the findings of the study, the researcher recommends that residents should be encouraged to attend a seminar/training related to the proper wastes management and disposal and a similar study may be conducted that will include variables/areas not covered in the present study.*

Keywords: *Solid waste, management, ecological, respondents, staffs, bio-degradable, non-degradable, garbage collection*

INTRODUCTION

Solid waste is one of the biggest problems in today's generation. It is a by-product of human activities. In our environment that ruins little by little because of improper disposal of solid wastes. Some people are unaware of the danger that might cause because of negligence in disposing our wastes. Unhealthy disposal of solid wastes might cause environmental calamities such as flood, pollution and others. Moreover, it pollutes the air, water and land



resources and therefore threatens the well-being of the people, animals and plant species. As safe potable drinking water becomes widely scarce, environmental contaminations attributed to poor sanitation and improper disposal of solid wastes render water sources, unhealthy for people. This is because of the carelessness of the people of the human activities and also because of the fast-growing of our country, the Philippines. Our country is facing a problem regarding solid waste disposal that is why our government enacted Republic Act No. 9003 also known as "The Ecological Waste Management Act of 2000".

The Philippines ranked highest in the Southeast Asia regarding trash collection rate (Ranada, 2015) and the world's third biggest dumper of plastic in the ocean (Suarez, 2015). Also, the National Solid Waste Management Commission (2013) reported that the Philippines generates waste every year on an average of 0.40 kg per capita. With this generation rate, the amount of waste is expected to increase to 16.63 million tons in 2020 from 14.66 million tons in 2014 with Metro Manila as the highest waste contributor (DENR, 2015). Critical to a successful solid waste management program is education. Educating people and inviting them to participate in waste management program and initiatives can help them understand the waste issue and its consequences on human and environmental health, and the ways they can to mitigate it (Chakraborti, Hussam&Alauddin, 2003). Relevant to this idea, R.A. 9003 mandates the stronger integration in the academic curricula of formal and non-formal education of ecological solid waste management and resource conservation and recovery topics to promote environmental awareness and action among the citizenry (Section 2).

In the study conducted by Desa, Kadir&Yusooff (2012), they considered the attitudes, behavior, and practices towards the solid waste management of 591 first year students from UKM, Bangi Campus displayed that students have a high level of behavior and practices regarding solid waste management program. However, the researchers noted that waste education and awareness strategy are still needed to develop more students' awareness and attitude towards managing solid waste to reduce the impact of the waste problem on the campus. A similar cross-sectional study was conducted by Licy et al. (2013) to assess the knowledge, attitude, and practice of 300 high school and higher secondary school students on household waste management in Thrissur, Kerala. Using a self-administered questionnaire, the findings showed that high school students were more aware of the



importance of waste management compared to higher secondary students. Both groups lacked awareness of e-waste and its disposal. The findings further indicated that students demonstrated a positive attitude towards waste management. Also, no significant difference was found in the awareness and practice of students on waste management at home. The researcher also pointed out the need for waste management awareness to improve the practice of waste management. Parents should also be given environmental education during parentteaching meetings or in community-based programs

STATEMENT OF THE PROBLEM

This study was conducted to determine the practices of the residents on the implementation of solid waste management. Specifically, it sought to answer the following questions:

1. What is profile of the residents in terms of?
 - 1.1 Age
 - 1.2 Sex
 - 1.3 Number/s of Trainings/Seminars attended in Solid Waste Management
2. How do the residents collect and dispose their solid waste?
3. What are the segregation practices of the residents on solid waste management?

RESEARCH METHODOLOGY

This undertaking made used of the descriptive research design utilizing descriptive statistics like frequency counts and percentages. The data gathering tool was used to collect the necessary data from the selected residents of San Gabriel, Tuguegarao City. The data gathering tool was patterned from the undergraduate thesis of Pascual Gerald et al. as the main instrument.



RESULTS AND DISCUSSIONS

Table 1: Frequency and Percentage Distribution of respondents as of Sex

SEX	Frequency	Percentage
Male	19	25.00
Female	56	75.00
Total	75	100.00

The data on the table shows the frequency and percentage distribution of respondents as to sex. As gleaned from the table, 56 or 75.00 percent are female which manifests that majority of those who participated in this undertaking involved housewives who have the proximity of the household.

Table 2: Frequency and Percentage Distribution of respondents as of Age

AGE	Frequency	Percentage
22-32	18	24.00
33-42	39	52.00
43-52	13	17.00
53-62	3	4.00
63-72	2	3.00
Total	75	100.00

Table 2 shows the frequency and percentage distribution of respondents in terms of age. As revealed from the results, 39 or 52.00 percent belong to the age bracket of 33-42 years of age which implies that majority of the respondents are on the fulfillment of their professional lives and have reached a certain maturity, competence and stability in life and derived satisfaction form family and social-work life.

Table 3: Frequency and Percentage Distribution of respondents as of Number of Seminars/Trainings attended related to Solid Waste Management

Number of Seminars/Trainings attended related to Solid Waste Management	Frequency	Percentage
0	48	64.00
1	14	18.67
2	7	9.33



3	6	8.00
Total	75	100.00

Data on the table showed the frequency and percentage distribution of the respondent as to number of seminars or training they have attended. As revealed from the data, majority of the respondents with a frequency of 48 or 64.00 percent have not attended any seminars or training in relation to solid waste management. This result implies that the respondents may not have enough information and education on the proper way of solid waste management, thus may result on the poor management and disposal of solid waste.

Table 4: Segregation Practices of Residents on Solid Waste Management

Segregation Practices of Residents	Frequency	Rank
Segregation of biodegradable from non-biodegradable wastes	64	1st
Selling of bottles, plastics, and cans to junkshops	32	3 rd
Feeding left over foods to pets	22	4 th
4R's (reuse, reduce, recycle and restore)	34	2 nd

Table 4 shows the practices of residents as to segregation of their solid wastes. Segregation of biodegradable from non-biodegradable wastes ranked first among the practices of the respondents. This data implies that the respondents are fully aware of the R.A. 9003. Furthermore, the respondents are also practicing the 4R's which consequently be done after the segregation of the solid wastes which wastes be reused, reduced, recycled and restored. These data showed the awareness of the respondents on the existence of the law on solid waste management.

Table 5: Type of container used by the household residents in waste collection

Type of container	Frequency	Rank
Carton	4	4 th
Waste Baskets	13	3 rd
Plastic/Garbage bag	64	1 st
Can	27	2 nd

Table 5 shows the type of container usually used in collecting solid waste, most of the respondents preferred to use plastic/garbage bag in segregating wastes which have a frequency of 64 and ranked first because it is cheaper, lighter to carry and easily accessible on the stores.



Table 6: Areas Used by the residents on Segregated Waste

Place for Segregated Wastes	Frequency	Rank
In the public bin	36	2 nd
Garbage truck	67	1 st
An open space	24	3 rd

Respondents predominantly dispose their solid waste on the garbage truck which is regularly scheduled in collecting solid wastes in the area. The collection of the solid wastes is done on a regular basis by the assigned garbage truck collector in the area, thus, every household is duty bound to segregate their household solid waste while the garbage truck collector is not around.

CONCLUSION

Based from the findings of this study, majority of the respondents have not attended any seminars or trainings on solid waste management, though many of the respondents do practice the segregation of their solid wastes and the 4R's.

RECOMMENDATIONS

Based on the findings of the study, the researcher recommends the following scheme:

- There must be a regular checking of houses by the barangay health sanitation workers as to the implementation of the proper solid wastes disposal and segregation
- A stricter penalty be imposed for those who will not comply with the provision of the law on the proper disposal and segregation of solid waste.
- The barangay health sanitation council should initiate the conduct of seminars/training on the proper wastes management and disposal
- Residents should be encouraged to attend a seminar/training related to the proper wastes management and disposal
- A similar study may be conducted that will include variables/areas not covered in the present study.



REFERENCES

- Adeolu, A. T., Enesi, D. O., & Adeolu, M. O. (2014). Assessment of secondary school students' Knowledge, attitude and practice towards waste management in Ibadan, Oyo State, Nigeria. *Journal of Research in Environmental Science and Toxicology*, 3(5), 66-73.
- Abdul-Wahab, S. A. & Abdo, J. (2010). The effects of demographic factors on the environmental awareness of Omani citizens. *Hum Ecol Risk Assess*, 16(2): 380–401.
- Ahmad, J., Noor, S. M., & Ismail, N. (2015). Investigating students' environmental knowledge, attitude, practice and communication. *Asian Social Science*, 11(16), 284.
- Atienza, V.A. (2008). A breakthrough in solid waste management through participation and community mobilization: The experience of Los Baños, Laguna, Philippines. *Japanese Institutional Repositories Online*, 17-34. Retrieved from http://rcube.ritsumei.ac.jp/bitstream/10367/231/1/RJAPS24_A%20Breakthrough%20in%20Solid%20Waste%20Management%20in%20Los%20Ba%C3%B1os%20Laguna%20Philippines.pdf
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179- 211. Retrieved from [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Barloa, E. P., Lapie, L. P., & de la Cruz, C. P. P. (2016). Knowledge, attitudes, and practices on solid waste management among undergraduate students in a Philippine State University. *Journal of Environment and Earth Science* 6 (6). Retrieved on January 17, 2018 from <https://www.researchgate.net>.
- Bradley, J.C., Waliczek, T.M., & Zajicek, J.M. (1999). Relationship between environmental knowledge and environmental attitude of high school students. *Journal of Environmental Education*, 30(3), 1-21. Retrieved from <https://doi.org/10.1080/00958969909601873>
- Department of Environment and Natural Resources, Environmental Management Bureau. (2015). National solid waste management status report (2008-2014). Retrieved from <http://nswmc.emb.gov.ph/wp-content/uploads/2016/06/SolidWastefinaldraft-12.29.15.pdf>
- Desa, A., Kadir, N. B. Y. A., & Yusooff, F. (2011). A study on the knowledge, attitudes, awareness status and behavior concerning solid waste management. *Procedia-Social and Behavioral Sciences*, 18, 643-648.
- Desa, A., Kadir, N. B. Y. A., & Yusooff, F. (2012). Environmental awareness and education: A key approach to solid waste management (SWM) - a case study of a University in Malaysia.



In L. F. M. Rebellion (Ed.), Waste management - an integrated vision. Retrieved from DOI: 10.5772/48169

Diekmann, A., &Preisendörfer, P. (1998). Environmental behavior: Discrepancies between aspirations and reality. *Rationality and society*, 10(1), 79- 102.

Domato, A. (2002). International environmental governance—its impact on social and human development. H. Ginkel, B. Barrett, J. Court, & J. Velasquez (Eds.), *Human development and the environment: challenges for the United Nations in the new millennium* (pp. 284-301). The United Nations University Press.

Eero, O. Grenstad, G. &Wolleback, D. (2001). Correlates of environmental behavior: Bringing back social context. *Environment and Behavior* 33(2), 181- 208. Retrieved from <https://doi.org/10.1177/0013916501332002>

Ehrampoush, M. H., &Moghadam, M. B. (2005). Survey of knowledge, attitude, and practice of Yazd University of Medical Sciences students about solid wastes disposal and recycling. *Journal of Environmental Health Science & Engineering*, 2(2), 26-30.

Ejaz, N., Akhtar, N., Hashmi, H. N., &Naeem, U. A. (2010). Environmental impacts of improper solid waste management in developing countries: A case study of Rawalpindi city.

In C. A. Brebbia (Ed.), *The sustainable world* (pp. 379-387). Southampton, England: WIT Press. Retrieved from DOI: 10.5772/48169

Esa, N. (2010). Environmental knowledge, attitude and practices of student teachers. *International Research in Geographical and Environmental Education*, 19(1), 39-50.

Finisterra do Paço, A., Raposo, M. L. B. &Filho, W. L. (2009). Identifying the green consumer: A segmentation study. *56 Repletos Multidisciplinary Research Journal December Journal of Targeting, Measurement, and Analysis for Marketing*, 17 (1), 17-25. Retrieved from <https://doi.org/10.1057/jt.2008.28>

Fishbein, M. &Ajzen, I. (1975). *Belief, attitude, intention, and behaviour: An introduction to theory and research*. Reading, MA: Addison-Wesley. Francis. (2015).

Laudato Si: On care for our common home. Retrieved on August 5, 2017 from http://w2.vatican.va/content/francesco/en/encyclicals/document_s/papa-francesco_20150524_encyclicalaudato-si.html

Franson, N. &Garling, T. (1999). Environmental concern: Conceptual definitions, measurements, methods, and research finding. *Journal of Environmental Psychology*, 19,



369-582. Global Education Monitoring Report. (2015). Education increases awareness and concern for environment. Retrieved August 25, 2017, from <https://gemrepor.tunesco.wordpress.com/2015/12/08/education-increases-awareness-andconcern-for-the-environment/>

Green, D. P. & Fox, J. (2007). Rational choice theory. In W. Outhwaite & S. P. Turner (Eds.), *The SAGE handbook of social science methodology* (pp. 269-281). Thousand Oaks, CA: SAGE. Retrieved from <http://dx.doi.org/10.4135/9781848607958.n15>

Hines, J. M., Hungerford, H. R., & Tomera, A. N. (1987). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *The Journal of Environmental Education*, 18(2), 1-8.

Ifegbesan, A. (2010). Exploring secondary school students' understanding and practices of waste management in Ogun State, Nigeria. *International Journal of Environmental and Science Education*, 5(2), 201-215. International Institute for Sustainable Development (2013). Who are the green consumers?. Retrieved August 22, 2017, from https://www.iisd.org/business/markets/green_who.aspx

Jones, R. E. & Dunlap, R. E. (1992). The social bases of environmental concern. Have they changed over time? *Rural Sociology*, 57(1), 134-144.

Leedy, P. D. & Ormrod, J. E. (2005). *Practical research: Planning and design* (8th ed.). Upper Saddle River, NJ: Prentice Hall.

Licy, C. D., Vivek, R., Saritha, K., Anies, T. K., & Josphina, C. T. (2013). Awareness, attitude, and practice of school students towards household waste management. *Journal of Environment*, 2(6), 147-150.

Liou, J. C. (1992). Environmental knowledge, attitudes, behavioral intention, and behavior of preservice elementary teachers in Taiwan, the Republic of China (Unpublished doctoral dissertation). University of Florida, Gainesville, FL.

McKenzie-Mohr, D., Nemiroff, L. S., Beers, L., & Desmarais, S. (1995). Determinants of responsible environmental behavior. *Journal of Social Issues* 51(4), 138-156. Retrieved from 10.1111/j.15404560.1995.tb01352.x

Müderrisoglu, H., & Altanlar, A. (2011). Attitudes and behaviors of undergraduate students toward environmental issues. *International Journal of Environmental Science & Technology*, 8(1), 159-168. National solid waste management strategy (2012-2016). (n.d.) Retrieved from



- <http://nswmc.emb.gov.ph/wp-content/uploads/2016/07/NSWM-Strategy-2012> National solid waste management strategy (2012-2016). (n.d.) Retrieved from <http://nswmc.emb.gov.ph/wp-content/uploads/2016/07/NSWM-Strategy-2012> 2016.pdf
- Neller, A. H., & Neller, R. J. (2009). Environment well-being and human well-being. In R. C. Elliot (Ed.), 2017
- Madrigal and Oracion 57 Institutional issues involving ethics and justice . Volume 2, (p.137) Oxford, England: Eolss.
- Olli, E., Grendstad, G., & Wollebaek, D. (2001). Correlates of environmental behaviors: Bringing back social context. *Environment and behavior* , 33(2), 181-208. Republic Act No. 9003, "Ecological Solid Waste Management Act of 2000". (2000). Retrieved on July 10, 2017, from [www. http://emb.gov.ph/wpcontent/uploads/2015/09/RA-9003.pdf](http://emb.gov.ph/wpcontent/uploads/2015/09/RA-9003.pdf)
- Ranada, P. (2015 October 6). Why is PH world's 3rd biggest dumper of plastics in the ocean? Rappler. Retrieved July 25, 2017, from <http://www.rappler.com>.
- Rahmaddin, M. Y., Hidayat, T., Yanuwadi, B., & Suyadi. (2015). Knowledge, attitude, and action of community towards waste management in river bank of Martapura. *International Journal of Applied Psychology*, 5(4), 96-102. Retrieved from doi:10.5923/j.ijap.20150504.03
- Raudsepp, M. (2001). Some sociodemographic and socio-psychological predictors of environmentalism. *TRAMES*, 5(4), 355-367.
- Scott, D., & Willets, F. K. (1994). Environmental attitudes and behavior. *Environment and Behavior*, 26(2), 239- 261. Retrieved January 17, 2018 from <http://journals.sagepub.com/doi/10.1177/001391659402600206>
- Simmons, A. (2016, April 22). The world's trash crisis, and why many Americans are oblivious. *Los Angeles Times*. Retrieved on July 23, 2017, from <http://www.latimes.com>
- Sinha, R., Bharambe, G. Nair, J. & Heart, S. (2008). Mounting waste -- the inevitable byproduct of human activities: strategies and policies for their safe management: some experiences from India and Australia.
- J. Daven & R. Klein (Eds.), *Progress in waste management research* (pp. 11-91). New York, New York: Nova Science.
- Suarez, K. D. (2015 February 13). PH among top nations dumping plastic into seas. Rappler. Retrieved July 25, 2017, from <http://www.rappler.com>.
- Yildiz, N. D., Yilmaz, H. Demir, M. & Süleyman, T. (2011). Effects of personal characteristics on environmental awareness; a questionnaire survey with university campus people in a



developing country, Turkey. *Scientific Research and Essays*, 6(2), 332-340. Retrieved from http://www.academicjournals.org/article/article1380631023_Yildiz%20et%20al2.pdf