

## **Hazards to Plastic Polymeric Bags and Their Effects on Humans and the Environment in Basra Governorate \ Iraq**

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### **ABSTRACT**

Plastics are materials that are indispensable and persistent in daily life and can be broken down into micro- or Nano plastics. They consist of lengthy polymer chains combined with additives that, when in touch with various species, may be harmful. The polymer matrix, additives, breakdown products, and pollutants that have been adsorbed can all cause toxicity. Plastics are manufactured from nonrenewable resources, are not biodegradable by nature, and can endure in the environment for a long time. So one of the main causes of the risks to the environment and public health is the use of plastic and polythene bags. This study was conducted to determine the present level of awareness among residents of the Basra Governorate of Iraq of the environmental and health risks associated with the use of plastic bags. In Basra Governorate, a survey was carried out in January and February of 2019. Data was collected by questionnaire survey to any adult person. The majority of participants (76.82 %) were aware of the risks to their health and the environment but continued to use the product since it was so readily available and durable.

**KEYWORDS:** polymeric plastic, Hazard, plastic waste, Recycling

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### **ARTICLE DETAILS**

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### **INTRODUCTION**

Despite its recurrent use, no contract upon the definition of dangers currently exists; it, though, hazard can be credited to a risky phenomenon, action, material property, or any condition of individuals that can cause illness, disability, or death. In addition, an absence of facilities, and establish a material burden and harm to the psychological and economic condition, as well as damage to the environment [1]. During the year 1900, the annual global production of plastic was less than 1 ton, and at that time the production increased every year until it reached 288 million tons in 2012, as well as more than half of the plastic was used in packaging and materials in 2011 as well as in the automotive industries and for the manufacture of adhesives, coatings and production fibers in the field of textiles and electronics [2].

Day by day, the issue of waste is getting worse, which can represent a heavy burden on municipalities that can't be processed in most cases. Man is mainly responsible for the form of waste, and any municipal solid waste management scheme mostly takes into consideration the position of environmental awareness among people. The first is to reduce the amount of waste generated by improving the behavior of people. The second is to improve its role in contributing to the community

by working on it [3]. Studies report that plastic production annually consumes 3-5 percent of the overall global production of crude oil and that in (2012) 280 million tons of plastic were produced globally [4]. The use of melamine-formaldehyde polymer plastics in the manufacture of household equipment such as eating dishes and trays occurs due to interactions between some spicy food components with melamine and also causes health damage. There are many chemicals added to the plastics themselves to give them certain characteristics that have negative signs on human health, which mainly affects the endocrine system [5]. Recycling is the process of reproducing and using waste in order to reduce the effect of this waste and its collection on the environment, and recycling plastic is intended to reuse plastic wastes as raw materials [6].

### **AIM OF RESEARCH**

The global consensus with the priorities of the increasing interest in recent years, on the issue of finding integrated solutions for the management of plastic bags and the use of plastic, especially after the problem of waste accumulation, which is no longer a local issue only, but has become a regional and global issue. One of the most important goals is:

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1- This study can contribute to creating environmental awareness among community members as well as ways to benefit from them. It also aims to identify the degree of environmental awareness about the dangers of plastic bags in Basra Governorate.

2-This study can contribute to creating environmental awareness among members of the community, and to developing their response trends in how to deal with plastic waste and ways to benefit from it.

3- Identifying the degree of environmental awareness about the management of plastic bags in Basra Governorate / Iraq from the point of view of the research sample members.

4- Identifying the differences between the opinions of the research sample members about the level of environmental awareness for managing plastic waste bags in the governorate according to the studied variables (gender, age, educational level, occupation).

### METHODOLOGY

#### Study design and population

A cross-sectional study was conducted on 140 respondents from different segments of society. A structured questionnaire was used to collect data. The Indigenous Society is devoted to the current study, their ages range from 18 to more than 30 years

#### The research sample

The sampling process is the selection of a number of vocabulary in the community (students, academics, employees, housewives and earners. The scale used in this research was applied electronically by designing the scale using Google Forms on Google Drive, and then sending the link to the participants.

#### The research tools

To collect the information targeted in this research and to reach its results,

The researchers used a scale with extremes hazards to plastic polymeric bags and their Effects on humans and the environment in Basra Governorate \ Iraq.

The researcher designed a scale in its initial form consists of two parts: The first part: deals with demographic data, namely: age, gender, educational attainment, as well as occupation. In addition to the questions in the questionnaire, there were 28 questions.

The researcher placed in front of each of the paragraphs the second part of the triple scale according to the "Likert" method.(agree), (disagree) and (neutral)

#### Research steps:

Designing the scale in its electronic form and starting to apply and extract data

And tab it.

using the statistical program SPSS 23 to access and discuss the results of the research

### RESULT AND DISCUSSION

**Table (1) shows the distribution of the research sample according to the personal data**

Personal data		Frequency
Gender	Female	108
	Male	32
Total		140
Age	18-22 years	51
	23-27 years	33
	28-32 years	24
	33 and above	32
Total		140
Academic achievement	Primary school	4
	Secondary school	1
	Intermediate	48
	preliminary studies	69
	Post graduate	18
Total		140
Occupation	Employe	63
	Un employe	77
Total		140

The results were for personal data and the number of participants in the research from the residents of Basra Governorate. Where the percentage of female participants is higher than males, reaching (108) participants, while males (32). The highest percentage of participating ages was

between (18-22) years, reaching (51) participants. The participation of those who obtained a diploma and a bachelor's degree (69) was the highest among the participants. Finally, the highest percentage of non-employed participants was (77). As shown in Table No. (1)

Table (2): How agree, neutral, disagree, of people is with the questions of this study.

No	Standers	Agree Freq (%)	Neutral Freq (%)	Disagree Freq (%)	Mean	S.D
1	Know what plastic is and its ingredients	91 (65.0%)	29 (20.7%)	18 (12.9%)	1.55	0.820
2	Know the meaning of polymer	46 (32.9%)	17 (12.1%)	74 (52.9%)	1.79	0.647
3	You have information on the raw materials used to produce plastics	75 (53.6%)	20 (14.3%)	41 (29.3%)	1.60	0.734
4	Know the damages of plastic bags	119(85.0%)	14 (10.0%)	6 (4.3%)	1.24	0.624
5	Realizes what effect the heat has on the plastic bags	114 (81.4%)	10 (7.1%)	14 (10.0%)	1.25	0.577
6	You can do without plastic bags	58(41.4%)	11 (7.9%)	70 (50.0%)	1.66	0.620
7	There are health disadvantages to using plastic bags	120 (85.7%)	9 (6.4%)	10 (7.1%)	1.20	0.541
8	Are there effects that lead to cancer when using plastic bags	106 (75.7%)	20 (14.3%)	12(8.65)	1.38	0.727
9	Encourages the use of plastic bags	24 (17.1%)	19(13.6%)	97 (69.3%)	1.96	0.555
10	You are aware of the health risks of using plastic bags	95 (67.9%)	31(22.1%)	13(9.3%)	1.54	0.836
11	You are aware of the environmental damage plastic bags are doing	113 (80.7%)	17 (12.1%)	8 (5.7%)	1.30	0.679
12	Prefer to use paper bags instead of plastic	118 (84.3%)	12 (8.6%)	9 (6.4%)	1.24	0.597
13	Plastic bags pose a great danger to living things	114(81.4%)	17(12.1%)	8(5.7)	1.30	0.677
14	Avoid using plastic bags	95 (67.9%)	19(13.6%)	24(17.1%)	1.45	0.726
15	Imposing fines on those who use plastic bags	72(51.4%)	24(17.15)	43(30.7%)	1.65	0.759
16	The average daily use of plastic bags is less than 10 bags	101(72.1%)	19(13.6%)	19(13.6%)	1.41	0.720
17	Do you use plastic bags when shopping?	127(90.7%)	6(4.3%)	5(3.6%)	1.12	0.443
18	Do you encourage the prevention of plastic bags and the use of an alternative	115 (82.1%)	7(5.0%)	15(10.7%)	1.21	0.521
19	Is using plastic bags repeatedly for the same bag a harmful process	109(77.9%)	9(6.4%)	21(15.0%)	1.28	.578
20	The most commonly used plastic bags for your opinion are ovens	93(66.4%)	15(10.7%)	30(21.4%)	1.43	0.683
21	Most commonly used plastic bags in your opinion are in supermarket markets	123(87.9%)	6(4.3%)	8(5.7%)	1.15	0.462
22	Most commonly used plastic bags for your grocery store	119(85.0%)	6(4.3%)	13(9.35%)	1.18	0.487
23	Most commonly used plastic bags for your views are homes	92(65.7%)	18(12.9%)	27(19.3%)	1.46	0.718
24	Do you think that the air causes the bags to move from one place to another and causes pollution	119(85.0%)	11(7.9%)	8(5.7%)	1.43	0.683
25	Do you think that incineration is the correct way to dispose destroy plastic waste	24(17.1%)	9(6.4%)	105(75.0%)	1.28	0.578
26	Are there any damages and smells suffocation when burning plastic bags	78(55.7%)	5(3.65)	55(39.3%)	1.47	0.569
27	Can plastic material be recycled	118(84.35)	8(5.7%)	12(8.6%)	1.20	0.529
28	Do you know ways to recycle plastic materials	34(24.3%)	19(13.6%)	85(60.7%)	1.89	0.612

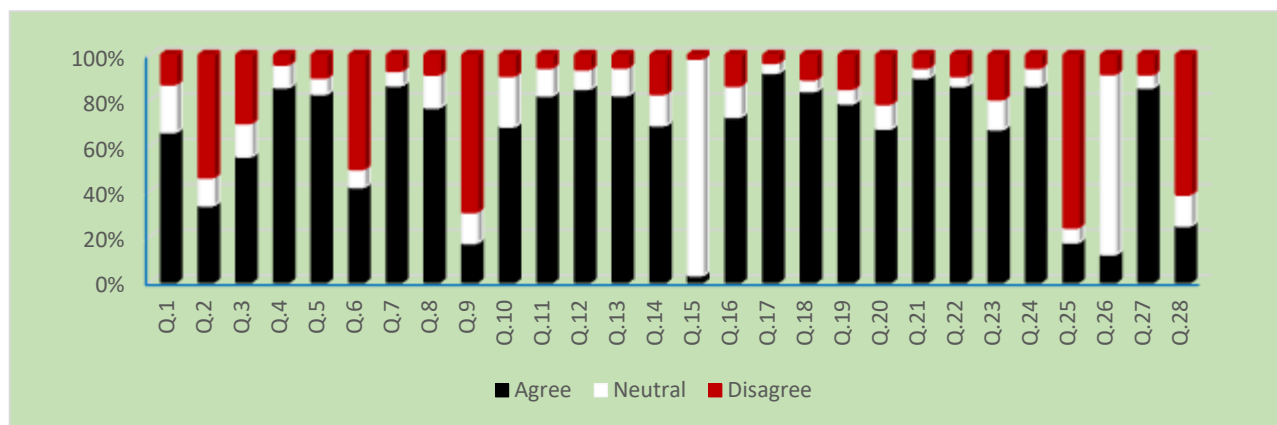


Figure (1): How agree, neutral, disagree, of people is with the questions of this study.

The table (1) and Figure (2), shown that the percentage of people who agree with question 1, 3, 4, 8, 10, 11, 12, 13, 17 and 24 is the highest compared to the percentage of neutrals that follow it and the percentage of those who disagree. The percentages for question 1 were as follows: 91 (65.0%) and 29 (20.7%), 18 (12.9%) for question 3 as follows 75 (53.6%), 20 (14.3%) and 41 (29.3%) for question 4 as follows 119 (85.0%), 14 (10.0%) and 6 (4.3%) and for question 8 as follows 106 ( 75.7%), 20 (14.3%) and 12 (8.65) for question 10 as follows 95 (67.9%), 31 (22.1%), 13 (9.3%) and for question 11 as follows 113 (80.7%), 17 (12.1%) and 8 (5.7%) for question 12 is as follows 118 (84.3%), 12 (8.6%) and 9 (6.4%) for question 13 is as follows 114 (81.4%), 17 (12.1%) and 8 (5.7) and for question 17 is as follows 127 (90.7%), 6 (4.3%) and 5) 3.6%) as follows and for question 24 as follows: 119 (85.0%), 11 (7.9%) and 8 (5.7%), respectively. And the percentage of people who disagree with question 2, 6, 9, 25 and 28 is the highest compared to the percentage of those who agree with the next and the percentage of neutrals. The percentages for question 2 were as follows: 74 (52.9%), 46 (32.9%) and 17 (12.1%), and the percentages for question 6 are as follows: 70 (50.0%). 58 (41.4%), 11 (7.9%), and the percentages for question 9 are as follows: 97 (69.3%), 24 (17.1%), 19 (13.6%), and the percentages for question 25 are as follows: 105 (75.0%), 24 (17.1%), 9 (6.4%), and Question

28 are as follows: 85 (60.7%), 34 (24.3%), and 19 (13.6%), respectively.

The percentage of people agreeing to question 5, 7, 14, 15, 18, 19, 20, 21, 22, 23, 26 and 27 is the highest compared to the percentage of those who disagree with the next and the percentage of neutrals. The percentages for question 5 were as follows: 114 (81.4%), 14 (10.0%) and 10 (7.1%). For question 7 as follows 120 (85.7%), 10 (7.1%) and 9 (6.4%), for question 14 as follows 95 (67.9%), 24 (17.1%), 19 (13.6%), and for question 15 as follows 72 (51.4%) and 43 (30.7%) and 24 (17.15) for question 18 as follows 115 (82.1%), 15 (10.7%) and 7 (5.0%), for question 19 as follows 109 (77.9%), 21 (15.0%) and 9 (6.4%) and for question 20 as follows 93 (66.4) %), 30(21.4%) and 15(10.7%) for question 21 are as follows 123(87.9%), 8(5.7%) and 6(4.3%), and for question 22 are as follows 119(85.0%), 13(9.35%) and 6(4.3) % ) are as follows and for question 23 they are as follows 92 (65.7%), 27(19.3%) and 18(12.9%) and for question 26 are as follows 78 (55.7%), 55 (39.3%) and 5(3.65), while the percentages for question 27 are as follows: 118 (84.35) and 12 (8.6%) and 8 (5.7%), respectively.

As for question 16, the percentages of those who agreed was the largest, while the proportions of neutrals and those who disagreed were equal, and the percentages were as follows,101(72.1%) and19(13.6%) and19(13.6%), respectively.

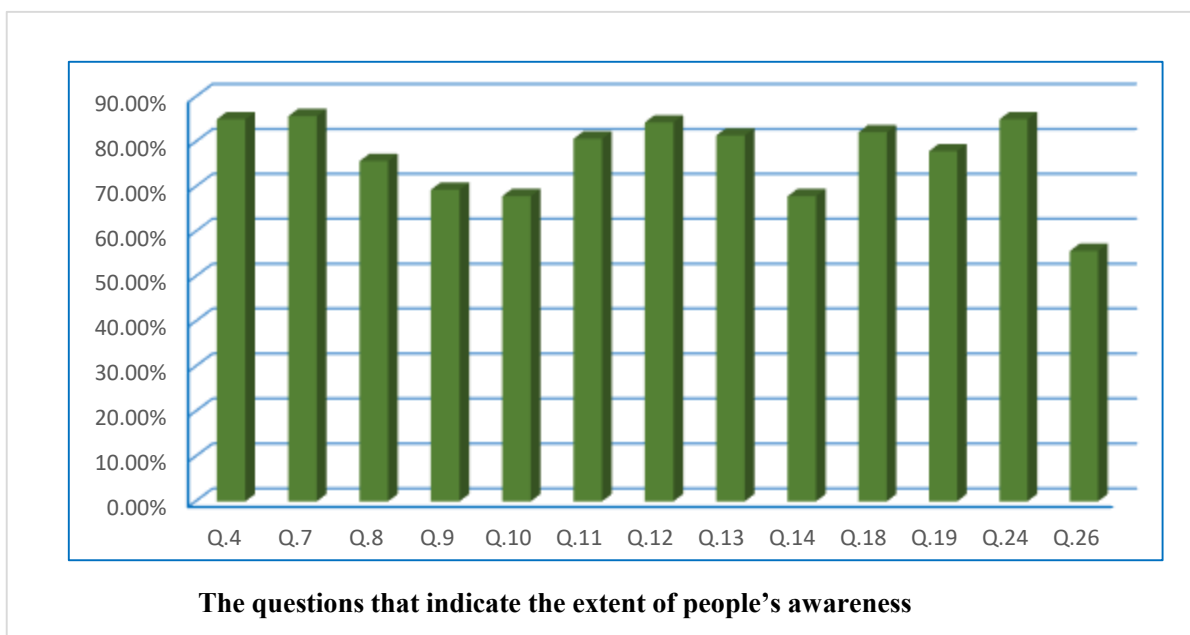


Figure (2): The questions that indicate the extent of people's awareness in this study.

The updated marketing infrastructure has led to an increase in the use of plastic bags. The advantages of plastic bags over paper or other alternatives are their light weight, resistance to sunlight, durability, affordability, and ease of supply. The percentage of people who are aware of the use of plastic bags and their danger to human health and the environment is (76.82%), according to Figure (2), which includes the most questions that indicate the extent of people's awareness of the use of plastic bags from the questions of the current study, however, the participants continued to use plastic bags due to their accessibility and durability.

Plastics and polythene can last in the environment for a number of years because they are non-biodegradable and made from non-renewable resources. Low density polyethylene is utilized as a raw material to make plastic bags, and linear low-density polyethylene is mostly used to make the shopping bags that are used in supermarkets. Individual users may gain from plastic bags in this way, but the disposal of these bags poses enormous challenges for our entire society. It puts the sustainability of the environment and the well-being of people at danger, and the plastic doesn't degrade biologically for 15–1000 years[7].

Plastics are materials that are indispensable and persistent in daily life and can be broken down into micro- or nanoplastics. They consist of lengthy polymer chains combined with additives that, when in touch with various species, may be harmful. The polymer matrix, additives, breakdown products, and pollutants that have been adsorbed can all cause toxicity. Despite this, there is still a vast knowledge gap about the distinct and combined effects of plastics[8].

Massive amounts of plastic trash are introduced into the environment as a result of the enormous production, low rates of recycling or reusing, and a lack of sustainable laws supporting the circular economy for plastics [9].

Additionally, their endurance potentiates their temporal and spatial spread within ecosystems, having abiotic as well as physiologic and biochemical repercussions for many species. There have been reports of the hazardous effects of plastics everywhere, including in the Antarctic, Africa, America, Asia, Europe, and the Arctic[10]. According to the size, shape, and kind The effects will vary depending on of polymer; nevertheless, smaller sizes (micro and nanoplastics) are of particular concern [11]. Additionally, the plastics we use every day might have detrimental effects throughout their whole life cycle (since they are produced and used until they become waste). Despite the fact that plastics are thought to be biochemically inert [12], They may interact negatively and have an adverse effect on both people and the environment. Plastics' toxicity may be caused by their polymer matrix, additives, breakdown products, or pollutants that have been adsorbed. There are frequently leftover monomers, oligomers, low molecular weight polymer fragments, catalysts, and solvents in the polymeric matrix since polymerization operations are rarely complete. Some of them might have negative, long-lasting consequences on the environment and people's health. Additionally, they could contain endogenous chemical additives including bisphenol A (BPA), phthalates, polybrominated diphenyl ethers (PBDE), and antioxidants that are introduced during the plastic production process. They move from plastic items to air, water, sediment, other contact media (such food), or, upon ingestion, to tissues due to their weak bond to the polymer molecule [8].

## CONCLUSIONS

1-There is an environmental awareness about the danger of plastic to health, and considering it a source of pollution and diseases.

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2- Environmental awareness is linked to the cultural level, as it has been observed that the level of awareness is higher among the educated than the illiterate.

3- It was noted that the environmental awareness among males and females, as females are more knowledgeable than men for their frequent dealings with plastic bags.

4- Having a social readiness to contribute to dispensing with plastic bags

### RECOMMENDATION

- 1- The best alternative is reusable shopping bags, as they are very durable and can be reused many times over their useful life
- 2- The need to pay more attention to spreading environmental awareness among uneducated societal groups
- 3- The use of paper bags instead of plastic was used on a daily basis before the advent of plastic, and some vegetable and fruit stores still use them on a daily basis to this day.
- 4- Activating plastic recycling operations so as to use plastic in the province in abundance
- 5- Global compatibility with the global concern in the issue of plastic pollution and finding the appropriate solution to it

### REFERENCES

- I. A. H. Elewa, S. Hassan, and A. El, "Occupational Hazards as Perceived by Nursing Interns and Protective Measures," *IOSR J. Nurs. Heal. Sci.*, vol. 5, no. 6, pp. 107–118, 2016, doi: 10.9790/1959-050601107118.
- II. U. D. Markus K., David G., Andreas P., Cecilia H., "Everything you (don't) want toknow about plastics. Report by; Aturskyddsforeningen.," no. 1, p. 2014, 2014.
- III. Shaheen, Haitham, Tayoub, Mahmoud, Ahmed, & Safa Hikmat. (2015). The role of environmental awareness in municipal solid waste management, a field study in Lattakia Governorate. Series of economic and legal sciences ISSN: 2079-3073, 36(5)
- IV. M. Klar, D. Gunnarsson, A. Prevodnik, C. Hedfors,

and U. Dahl, "Everything you (don't) want to know about plastics," 2014. [Online].

- V. European Commission, "Science for Environment Policy In-Depth Report. Plastic Waste: Ecological and Human Health Impacts," p. 2011, 2011.
- VI. D. . Saharan B. S., Ankita, "Bioplastics-For Sustainable Development," *Int. J. Microb. Resour. Technol.*, vol. 1(1), pp. 11–23, 2012, [Online]. Available: <https://dspace.ups.edu.ec/bitstream/123456789/5224/1/UPS-QT03885.pdf>.
- VII. S. Thiruketheeswaranathan, "Usage of Plastic Bags and Environment , Health Hazards : A Study to Access Awareness Level Among a Small Population of Trincomalee Town," vol. 2, no. 3, pp. 42–44, 2019, [Online]. Available: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3446353](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3446353).
- VIII. M. O. Rodrigues, N. Abrantes, F. J. M. Gonçalves, H. Nogueira, J. C. Marques, and A. M. M. Gonçalves, "Impacts of plastic products used in daily life on the environment and human health: What is known?," *Environ. Toxicol. Pharmacol.*, vol. 72, 2019, doi: 10.1016/j.etap.2019.103239.
- IX. Ellen MacArthur Foundation and World Economic Forum, "The New Plastics Economy: Rethinking the future of plastics," *Ellen MacArthur Found.*, no. January, p. 120, 2016.
- X. P. L. Corcoran, K. Jazvac, and A. Ballent, "Plastics and the anthropocene," in *Encyclopedia of the Anthropocene*, vol. 1–5, 2017, pp. 163–170.
- XI. C. Dris, R., Imhof, H., Sanchez, W., Gasperi, J., Galgani, F., Tassin, B., & Laforsch, "Beyond the ocean: contamination of freshwater ecosystems with (micro-) plastic particles.," *Environ. Chem.*, vol. 12, pp. 539–550, 2015.
- XII. G. Lithner, D., Larsson, Å., & Dave, "Environmental and health hazard ranking and assessment of plastic polymers based on chemical composition," *Sci. Total Environ.*, vol. 409(18), pp. 3309–3324, 2011.