

Damages and effects produced by organic and inorganic solid waste on health and the environment**Daños y efectos producidos por los residuos sólidos orgánicos e inorgánicos en la salud y medio ambiente**

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Abstract

The problem of environmental pollution is a worrying issue today, mainly due to the effects and damage produced in society worldwide. The foregoing implies actions such as correcting daily customs, the way of perceiving the environment, educating from home and at school age, consumption habits, waste disposal in appropriate spaces, etc. In this investigation. The study sample was randomly taken from 80 people, both sexes. The period of the same was between the months of January-October 2022. The sample was taken in the state of Zacatecas, the ages fluctuate from 19 to 55 years of age and a questionnaire was applied. This type of research has a contribution in knowing the habits that people have about organic and inorganic solid waste, this in order to raise awareness about the management of said waste that causes serious environmental problems.

Environment, Organic waste, Inorganic waste

Resumen

El problema de la contaminación ambiental es un tema preocupante en la actualidad, principalmente por los efectos y daños producidos en la sociedad a nivel mundial. Lo anterior implica acciones como corregir costumbres diarias, la manera de percibir el medio ambiente, educar desde casa y en edad escolar, hábitos de consumo, disposición de residuos en los espacios apropiados, etc. En esta investigación. La muestra de estudio se tomó de manera aleatoria a 80 personas, ambos sexos. El lapso de la misma fue entre los meses de enero-octubre del 2022. La muestra se tomó en el estado de Zacatecas, las edades fluctúan de los 19 a 55 años de edad y se aplicó un cuestionario. Este tipo de investigación tiene una contribución en conocer los hábitos que tienen las personas sobre los residuos sólidos orgánicos e inorgánicos, esto con la finalidad de generar concientización sobre el manejo de dichos residuos que causan problemas ambientales graves.

Medio ambiente, Residuo orgánico, Residuo inorgánico

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Introduction

The problem of environmental pollution is a matter of concern nowadays, mainly due to the effects and damages produced in society worldwide. This has a direct impact on human health and the environment. Nowadays we realise that the accumulation of organic and inorganic solid waste is a matter of concern as it is generated in any space. It is presented as a global priority because of the alarming nature of the damage and effects it has on society and human beings. Solid waste is a source of contamination and the development of infections. The excessive growth and lack of awareness in the management and treatment of solid waste is a worldwide problem and we have to work strategically to mitigate its effects. This implies actions such as correcting daily habits, the way of perceiving the environment, educating from home and school age, consumption habits, waste disposal in the appropriate spaces, etc.

Irresponsible handling, improper disposal and excessive accumulation of waste can aggravate the situation. During the last decades there has been a great concern about the environmental and health effects caused by this type of waste, mainly the so-called hazardous waste (CRETIB and RPBI). This is especially true in the most economically developed countries. This made it necessary to address the problems of environmental pollution and the damage it can cause to the environment and to human health. It is important to mention that one of the health problems caused by poor waste disposal has a direct impact on the epidemiological risk it represents. The accumulation, spillage and uncontrolled spread of waste triggers the stomatological proliferation of animals, flies, rodents, bacteria and causal micro-organisms. The risks to health and the environment led to the generation of regulatory provisions (laws, regulations and standards), which establish guidelines for behaviour to avoid and to achieve in order to prevent risks. In the air, sources of air quality degradation include smoke from open burning, dust from inadequate containment, collection, open air discharge and gases generated by the decomposition of waste in an open dump or landfill.⁹

Burning at a disposal site can occur below ground and above ground. Once burning begins at a landfill site below ground, it can continue for decades or until landfill methods (including gas collection and venting) are implemented.¹⁰

Many diseases are caused by microbes that are produced by the accumulation of waste, especially when it comes into contact with drinking water or food, and must be properly managed and disposed of in a sanitary manner.¹¹

Methodology

The research methodology is longitudinal, cross-sectional and participatory. The study sample was randomly drawn from 80 people of both sexes. The time span of the study was between January - October 2022. The sample was taken in the state of Zacatecas, the ages ranged from 19 to 55 years old. In the first instance, social behaviour was observed, followed by a verbal interview about waste management habits. Finally, a dichotomous questionnaire was applied to obtain numerical data (percentages) on knowledge of solid waste, damage and effects on health and the impact on the environment.

The questions included are the following:

1. Do you think that organic waste affects the environment and health?
2. Do you consider that the effects and damages caused by inorganic waste affect health?
3. Do you know if organic and inorganic solid waste are harmful to health?
4. Do you know what organic solid waste and inorganic solid waste are?
5. Do you know if organic and inorganic solid waste have an impact on society in any way?

Results

Considering the sample of 80 people, the following results were obtained:

Question	Answer		Percentage that represents	
	Yes	No	Yes	No
1	18	62	22.5	77.5
2	18	62	22.5	77.5
3	20	60	25	75
4	22	58	27.5	72.5
5	24	56	30	70

Table 1

1. Do you believe that organic waste affects the environment and health?

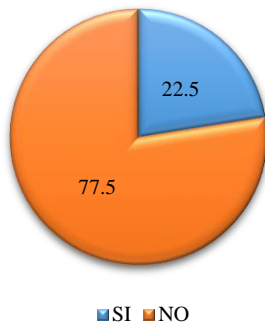


Figure 1 Organic waste survey

2. Do you consider that the effects and damages caused by inorganic waste affect your health?

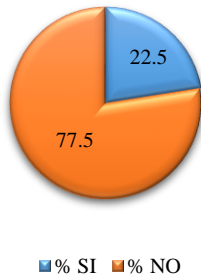


Figure 2 Survey on inorganic waste

From the above graphs it is clear that a high percentage must be unaware of the negative effect of waste on both health and the environment, as 77.5% consider this to be the case.

3. Do you know if organic and inorganic solid wastes are harmful to health?

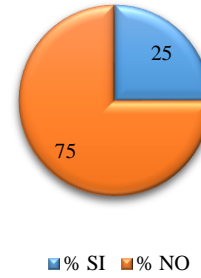


Figure 3 Survey on the harmfulness of organic and inorganic wastes

4. Do you know what organic solid waste and inorganic solid waste are?

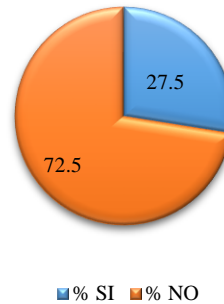


Figure 4 Survey on knowledge of organic and inorganic waste

Similarly, if we look at the above results, there is a lack of knowledge about the difference between organic and inorganic solid waste, as well as whether these will have any impact. This leads us to think about several situations involving socio-economic, educational, cultural and household habits, etc.

5. Do you know if organic and inorganic solid wastes impact society in any way?

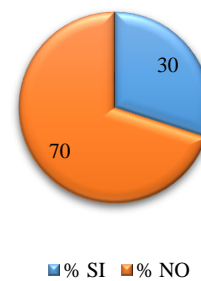


Figure 5 Survey on the impact of organic and inorganic waste

For society, depending on the environment in which they live, there are some other issues that capture their attention, leaving aside a problem with a global impact such as solid waste management.

The main health damages caused by organic and inorganic waste and poor waste disposal are mainly due to the increase of organic and inorganic waste, pollution and diseases such as Intestinal Parasitism as a consequence of open faecalism (nowadays in a lower percentage). If we focus on homes, classrooms and social events where there is an accumulation of waste, in the absence of adequate ventilation and hygiene, germs and parasites are ingested by people in food and water. Many vegetables watered with water containing hazardous waste or harvested from contaminated soils cause acute diarrhoeal diseases and intestinal parasitism, another factor is the presence of micro-dumps, which causes the accumulation of rubbish sometimes for more than 5 or 10 days. The solid waste abandoned in open-air dumps deteriorates the quality of the air we breathe, both locally and in the surrounding area, because of the burning and fumes, and the dust raised by the wind in dry periods (very frequent in the capital); it causes harmful micro-organisms to be transported to other places, causing respiratory infections, nasal and eye irritations, and the nuisance caused by bad smells. In the place where the waste is dumped, it is burnt without taking into account that this procedure is inadequate as it considerably damages the soil, the air, health and the ozone layer. Soils are altered in their structure due to the interaction between liquids and solid waste, which makes them unusable for long periods of time. Inadequate waste management conditions, education about the presence, effects and damage caused by waste, the absence of adequate conditions such as a drainage and sewage system or the presence of septic tanks or latrines in places where this service is not available, leads to the potential increase and proliferation of breeding grounds for vectors and rodents, the appearance and transmission of diseases and a truly dangerous impact on the environment that brings with it natural disasters.

Conclusions

From the results obtained, we can see that ignorance of waste management has an initial impact on health problems. These include diarrhoea, parasitism, vomiting, dizziness, etc. Next, the impact on the environment ranges from the contamination of soil, air, aquifers, fauna, vegetation, etc. It can be inferred that the existence of bad habits in society due to a lack of knowledge, firstly of the type of waste generated and then of its management, has a great impact on the space we occupy. The lack of personal habits, awareness of the population and collection methods cause damage to health and the environment, especially due to the absence of adequate conditions, as well as the poor disposal of organic and inorganic waste.

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