

ANTHROPIC ACTIVITIES AND RISKS OF CONTAMINATION DUE TO THE EMISSION OF LIQUID WASTE IN AGRICULTURE

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Abstract

This article is a documentary review of the elaboration and production of research works related to the study of Anthropic Activities and Liquid Waste Emission Pollution was carried out to determine the main characteristics through a bibliometric study of 23 publications registered in Scopus database during the period 2018-2023. The results yielded by such a database were organized in tables and figures, categorizing the information by variables such as Year of Publication, Country of Origin and Area of Knowledge which allowed to identify, through qualitative analysis, the position of different authors facing the proposed subject matter. The main findings of this research were that Spain presented the highest scientific production, leading the list with 4 publications. Likewise, the area of knowledge that made the greatest contribution to the construction of bibliographic material related to the study of the variables was environmental science, with 14 published documents.

Keywords: Anthropic Activities, Contamination, Risk, Liquid Waste Emission, Human.

1. Introduction

Environmental pollution has become one of the major concerns of human beings; however, it has been the same anthropic activities that have caused this problem that seems to have no end.

“We speak of contamination when elements or substances enter an environment that normally should not be there and that affect the balance of the ecosystem” (EAFIT, n/d). This can refer to contamination of the soil, air, and water sources, among others, that alter the natural state of things. Unfortunately, the need and, sometimes, the eagerness of human beings to improve themselves and transform their lifestyle has caused irreparable damage to multiple resources that are essential for the healthy conservation and development of current and future generations, so special attention must be paid to the waste resulting from the various activities that are carried out every day in each territory or human settlement.

Anthropic activities, also known as human activities, have developed over time, so the emissions emanating from each have not been constant. Even though nowadays the importance of the conservation of natural resources and the need to reduce the environmental impact generated by bad practices is emphasized, companies and, on many occasions, individuals ignore these suggestions causing an increase in the degree of contamination of vital elements such as water or air. For this reason, this research article seeks to describe the main characteristics of the set of publications attached to the Scopus database that is directly related to the variables mentioned above, as well as the description of the position of certain authors affiliated with institutions around the world, during the period between 2018 and 2023.

2. General Objective

To analyze from a bibliometric and bibliographic perspective, the development of works on the variables Anthropic Activities and Liquid Waste Emission Pollution during the period 2018-2023.

3. Methodology

This article is conducted through a mixed research approach combining quantitative and qualitative methods.

On the one hand, a quantitative analysis of the information selected in Scopus is carried out under a bibliometric approach of the scientific production corresponding to the study of Anthropic Activities and Liquid Waste Emission Pollution.

On the other hand, from a qualitative perspective, examples of some research works published in the area of the study mentioned above are analyzed from a bibliographic approach that describes the position of different authors on the proposed topic.

It is important to note that the entire search was conducted through Scopus, establishing the parameters referenced in *Figure 1*.

3.1 Methodological design

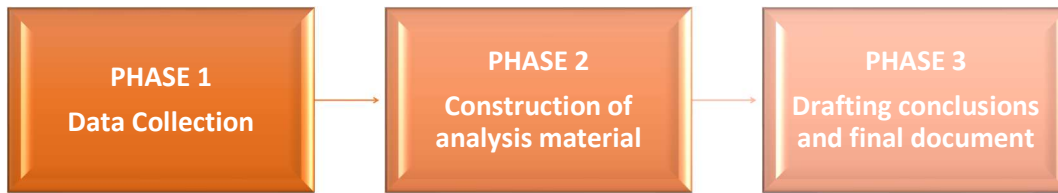


Figure 1. Methodological design

Source: Own elaboration

3.1.1 Phase 1: Data Collection

The data collection was executed from the Scopus web page search tool, where 23 publications were obtained from the choice of the following filters:

anthropic AND activities AND risks AND of AND contamination AND due AND to AND the AND emission AND of AND liquid AND waste AND (LIMIT-TO (PUBYEAR , 2023) OR LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018)))

- Published documents whose study variables are related to the study of Anthropogenic Activities and Pollution by Liquid Waste Emission.
- Limited to the years 2018-2023.
- No country limit.
- No limit in areas of knowledge.
- Without distinction of type of publication.

3.1.2 Phase 2: Construction of analysis material

The information collected in Scopus during the previous phase is organized and subsequently classified through graphs, figures and tables as follows:

- Word Co-occurrence.
- Year of publication.
- Country of origin of the publication.
- Knowledge area.
- Type of Publication.

3.1.3 Phase 3: Drafting conclusions and final document

In this phase, the study analyzed the results previously obtained, resulting in the determination of conclusions and, consequently, the final document.

4. Results

4.1 Co-occurrence of words

Figure 2 shows the Co-occurrence of keywords found in the publications identified in the Scopus database.

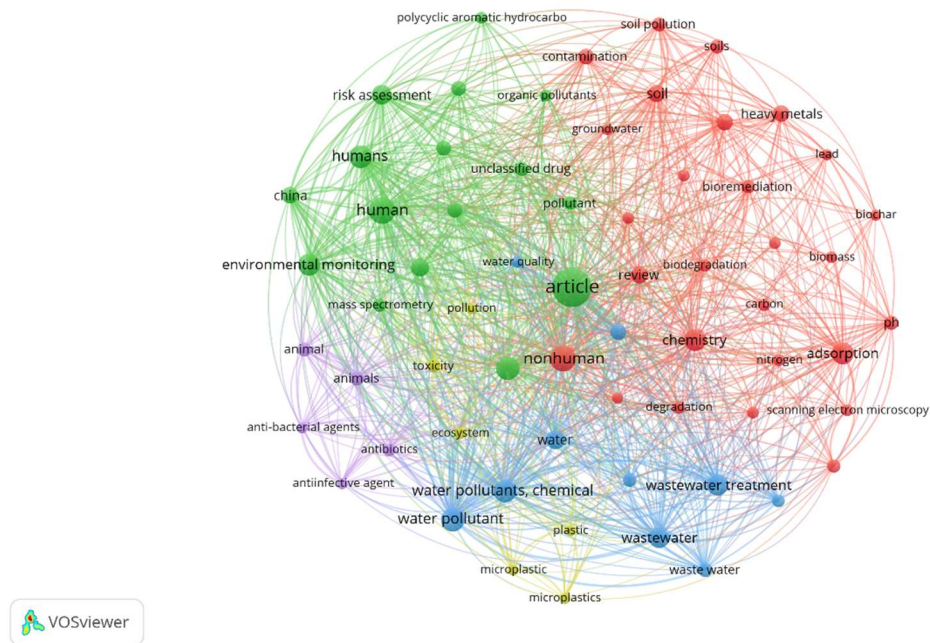


Figure 2. Co-occurrence of words

Source: Own elaboration (2023); based on data exported from Scopus.

The data in Figure 2, exported from Scopus, shows the variables and their relationship with other terms, which are explained below.

Humans, through their anthropic activities, generate daily a large number of wastes that, if not well managed, cause significant damage to the natural resources of each territory. These can be solid and liquid.

Industrialization has been the leading cause of this damage, thanks to the excessive manufacture and elaboration of products that, contradictorily, are requested by those affected. For this reason, in this map, it is possible to find terms such as chemicals and heavy metals that are present mainly in water sources that, after their study, are declared contaminated, and therefore the consumption of the precious liquid is prohibited.

4.2 Distribution of scientific production by year of publication

Figure 3 shows the distribution of scientific production according to the year of publication.

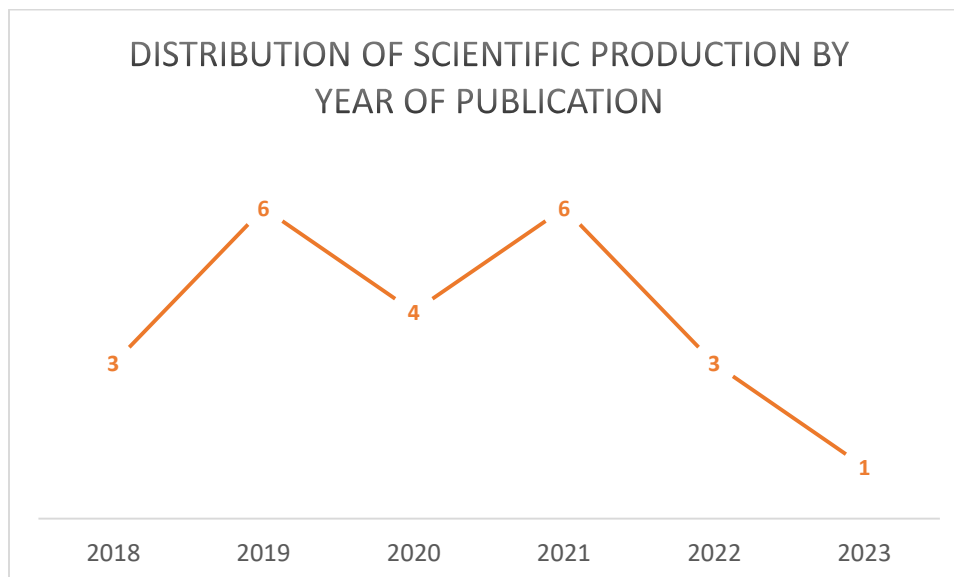


Figure 3. Distribution of scientific production by year of publication.
Source: Own elaboration (2023); based on data exported from Scopus.

Figure 3 shows the scientific production concerning the variables Anthropogenic Activities and Pollution by Liquid Waste Emission from 2018 to 2023, which resulted in the publication of 23 documents in the Scopus database containing the keywords. Likewise, throughout the period, several changes were experienced. It starts with the year 2018 with 3 documents, a number that increases the following year. In 2020, a slight decrease was observed, a figure that rises again in 2021. The last two years show another decrease in the number of publications; however, it should be taken into account that it is only the beginning of the second month corresponding to the year 2023.

In 2020, the article “Past and present anthropogenic environmental stress reflects high susceptibility of natural freshwater ecosystems in Romania” is highlighted (Ionete et al., 2020) which investigates the presence of various “heavy metals and trace elements in river bed sediments and freshwater that received sewage discharge, industrial wastewater inputs and mining waste” through measurement mechanisms that allowed classifying metals according to their components to determine the origin of the metals. The origin of contaminants in sediments and water appears to be both natural and human-related activities, so it is considered necessary to take into account environmental factors, and physicochemical characteristics of water are necessary to develop strategies for the management, assessment and mitigation of pollution under the actual conditions of climate change.”

4.3 Distribution of scientific production by country of origin.

Figure 4 shows the distribution of scientific production according to the nationality of the authors.

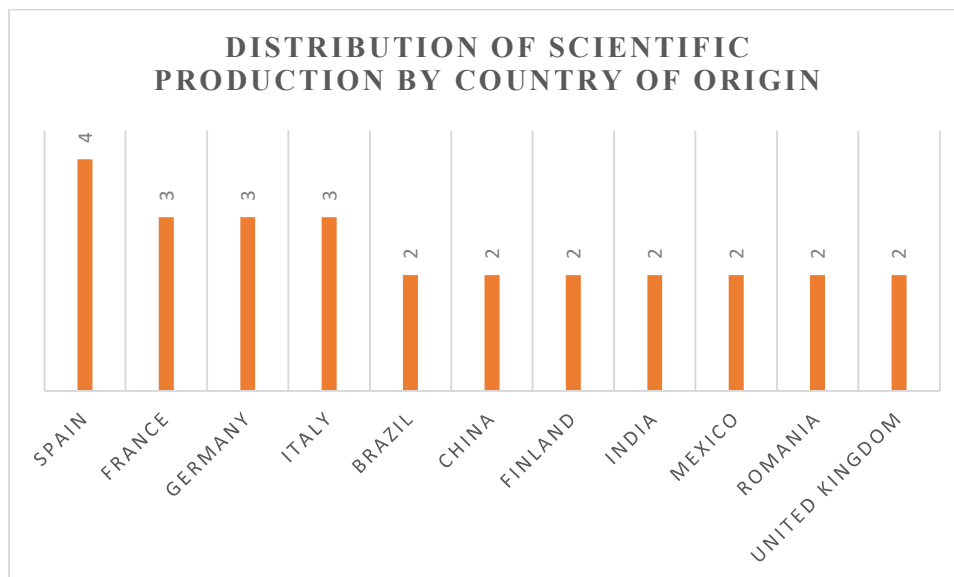


Figure 4. Distribution of scientific production by country of origin.

Source: Own elaboration (2023); based on data provided by Scopus.

In the study of Anthropogenic Activities and Liquid Waste Emission Pollution, Spain leads the list of published papers with 4 records in the Scopus database between 2018 and 2023, followed by France and Brazil, with 3 texts each.

The article entitled “Assessment of potentially toxic elements in the mundaú lagoon: Systematic environmental monitoring of water and food quality” (Botero et al., 2021), from Brazil, is based on environmental monitoring carried out in the Mundaú Lagoon, which has a large number of human and industrial activities, to identify the elements with the highest concentration in the water declared “impure and pollute” (Botero et al., 2021).

At this point, it is important to note that the elaboration of scientific publications, in many cases, is based on collaborations that may involve private and public institutions from one or several countries. Therefore, the same publication may be linked to one or more authors with different nationalities and thus to more than one country simultaneously, making part of each of the total number of articles or publications in the final sum. *Figure 5* shows the flow of collaborative work carried out by several countries in greater detail.

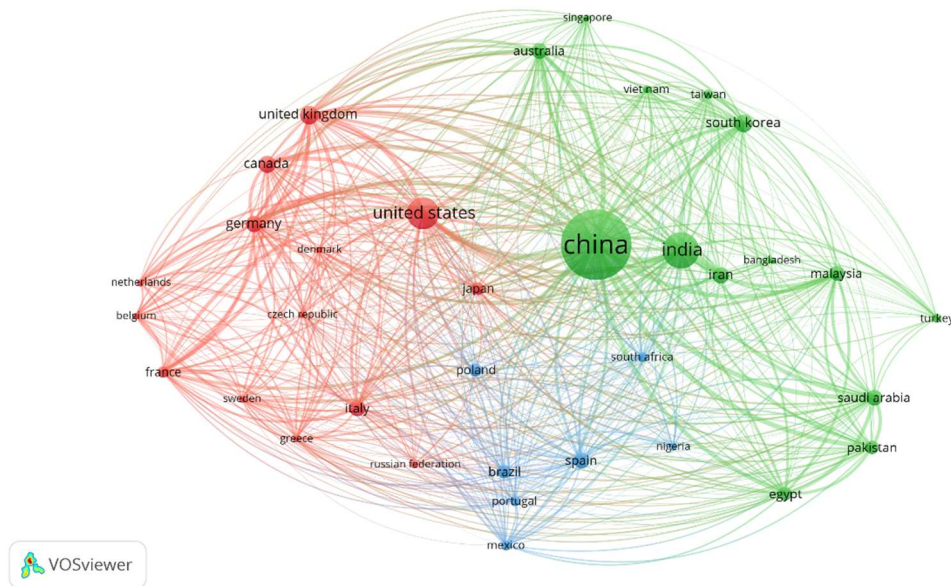


Figure 5. Co-citations between countries.

Source: Own elaboration (2023); based on data provided by Scopus.

Figure 5 shows the research grouping according to the collaboration between authors from different international institutions. There is outstanding participation between authors affiliated with institutions from Latin American countries such as Brazil and Mexico and countries from other regions such as China, India, Nigeria, Pakistan and the United States, among others.

4.4 Distribution of scientific production by area of knowledge

Figure 6 shows the distribution of the production of scientific publications according to the area of knowledge through which the different research methodologies are implemented.

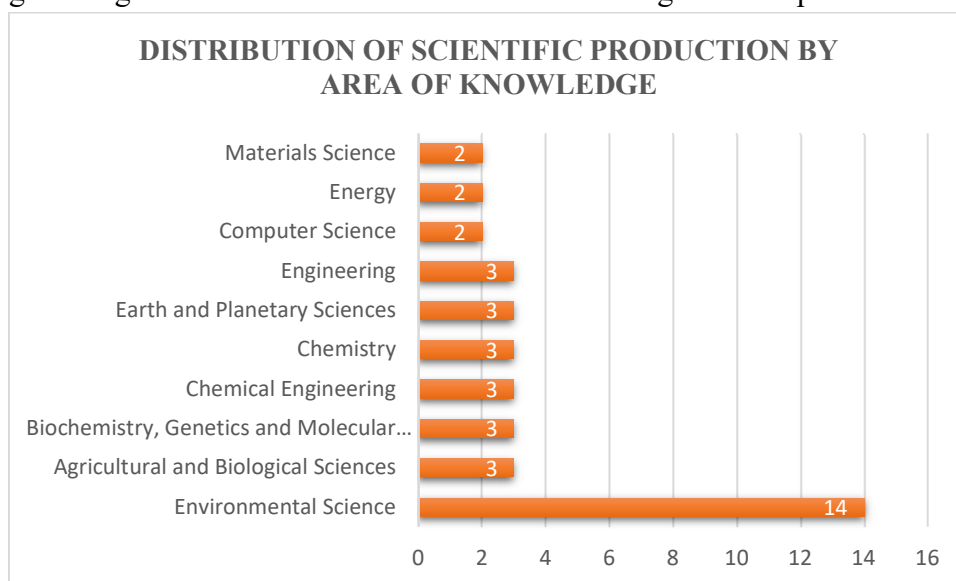


Figure 6. *Distribution of scientific production by area of knowledge.*

Source: Own elaboration (2023); based on data provided by Scopus.

Due to the nature of our variables, it is not surprising that most of the publications found in the Scopus database on these variables are from environmental science, which is the main publication area. However, other areas such as agricultural and biological sciences, as well as biochemistry, genetics and molecular biology, have contributed to the study of these variables, publishing 3 papers each.

As can be seen in *Figure 6*, the variables that are the object of this study are relevant in various areas of knowledge since human activities are the primary sources of pollution, which has gradually affected our environment, compromising our health and access to essential resources that allow enjoying a good quality of life.

4.5 Type of publication

Figure 7 shows the distribution of the bibliographic findings according to the type of publication made by each of the authors found in Scopus.

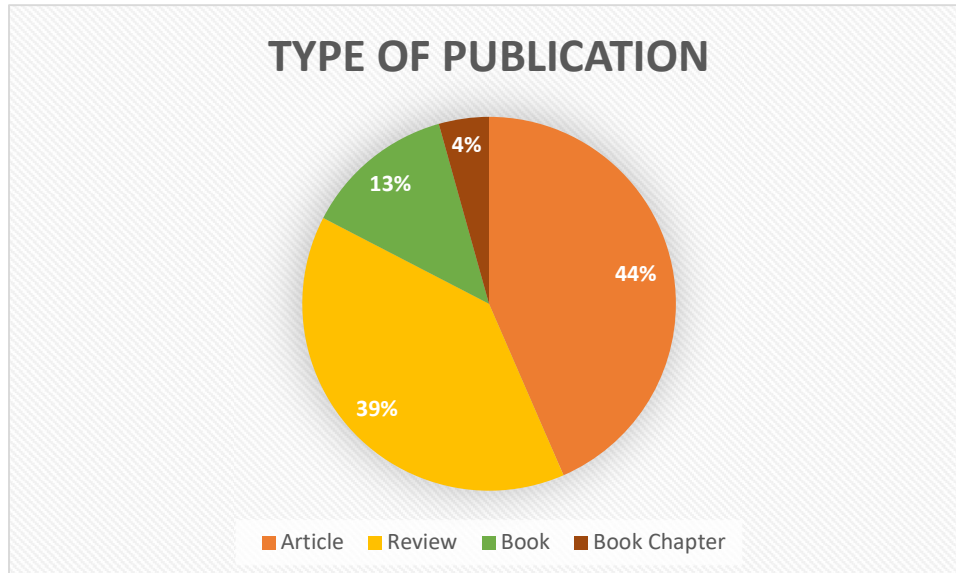


Figure 7. *Type of publication.*

Source: Own elaboration (2023); based on data provided by Scopus.

Figure 7 clearly shows that the predominant type of publication in the study of Anthropogenic Activities and Pollution by Liquid Waste Emission was the journal article, with 10 documents corresponding to 44% of the publications. Second place was reviewed with 9 documents, followed by books with 3 publications, representing 39% and 13%, respectively.

The review entitled “Anthropogenic pollutants of high concern: Existence in water resources and their adverse effect” (Arévalo-Gallegos et al., 2019), describes the presence of CA in water bodies and their toxicological effect on living organisms. For this, CA is classified according to their type and source, determining the greater presence of pharmaceuticals, illicit drugs, and industry derivatives, among others.

5. Conclusions

Finally, thanks to the bibliometric analysis carried out in the present research work, it was possible to establish that Spain was the country with the highest number of published records regarding the variables Anthropogenic Activities and Pollution by Liquid Waste Emission, with a total of 4 publications in Scopus database during the period 2018-2023.

It is worth noting that most of the documents found in the database refer to rivers, lakes and other water sources in which it was possible to find high concentrations of heavy metals and elements that modify the natural composition of this resource, so in each of them it is suggested to take action and prevention measures to stop the pollution resulting from the emission of liquid and solid wastes.

Accordingly, it can be determined that there is a strong relationship between anthropogenic activities and pollution caused by the emission of liquid waste. All this could be due to the lack of training and control by the agencies responsible for monitoring the environment and its effects. For this reason and to continue generating awareness of the importance of implementing awareness programs and sanctioning strategies that lead to better handling and disposal of waste according to its composition and state, this article encourages the participation of scientific communities in the study of these variables from any scientific profile and area of knowledge always seeking to provide more options for the measurement of pollution and alternatives for its reduction.

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