

## REQUIREMENTS OF THE MODERN WORLD- THE REASON FOR CLIMATE CHANGE

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### **Abstract**

*The main objective of the research is to detail the dynamics of indicators selected from the Eurostat database. The indicators that will be presented are the production of chemicals, the consumption of chemicals and waste treatment. These analyzed indicators provide an overview of the situation at the European Union level in terms of production and consumption of chemicals, as well as waste treatment. The indicators established in this research have an impact on the environment. Furthermore, environmental problems arise due to imbalances caused by pollution. This article raises an alarm on the values of the indicators as an average of the European Union for the periods analyzed. The current situation requires recovery measures.*

**Keywords:** *production of chemicals, consumption of chemicals, climate changes, pollution, waste treatment,*

**Clasificare JEL :** *M40, M41*

### **1. Introduction**

The main goal of the article is to establish situation in which the European Union average is, more precisely on the production and consumption of chemicals and waste treatment that affect.

Among the most pressing challenges of the modern world is climate change. The planet’s capacity to regenerate naturally is less than the force with pollution which pollution presses on the planet. Whether it is water, air or soil, all suffer from pollution. Temperature imbalances, floods or other natural climatic disasters affect the proper functioning of the planet, producing devastating effects on the environment.

Pollution is frequent topic, and numerous researchers analyze the relationship between pollution and environmental imbalances. The subject of climate change dates back centuries. In 1976, Bach published a report with findings on pollutant emissions, removal processes and pollutant concentrations, as well as some aspects of climate change (Bach, 1976).

Currently, more and more studies are analyzing the impact of climate change and pollutin on human health. Recently it is being analyzed topics such as the emerging challenges of the impact of microplastics on ecological health or climate change (Nguyen et al., 2026) or deciphering the dynamic interplay of air pollution and climate change on pulmonary tuberculosis (Yi & Liu, 2026).

Another study investigated the associations between gaseous pollutants found in the air and humiditi and temperature as climate changes with the occurrence of stroke (Bhasin et al., 2026). Other researchers are concerned that the air breathed by over 99% of the world’s population exceeds the limits set by the World Health Organization (Zhang et al., 2026).

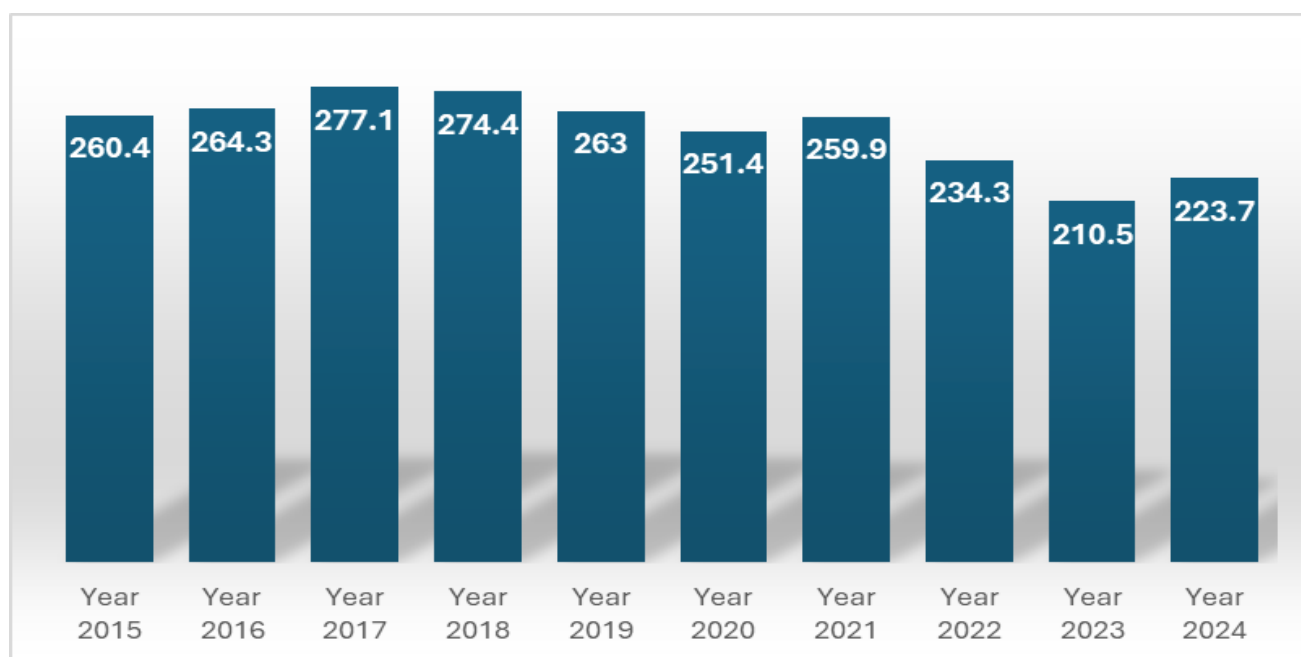
On the other hand, floods or ther natural disasters such as wildfires, seen as effects of climate change, profoundly affect cardiovascular health, especially among vulnerable people (Navas-Acien et al., 2026).

Moreover, waste-related pollution constitutes a major environmental challenge, with significant implications for ecosystem balance, public health, and the prospects of sustainable development on a global scale. The rapid increase in waste generation, coupled with inadequate management practices, represents a key factor in the emergence and intensification of numerous environmental and health-related issues (Agboola et al., 2025).

Traditional wastewater treatment technologies are outclassed by current modern methods. Methods using microalgae have been reported to absorb and remove antibiotics from water such as tetracycline or azithromycin (Singh et al., 2026). Another method for removing color pollutants from wastewater is based on nanoabsorbents (Jain et al, 2026).

## 2. Dynamics of statistical indicators

The analysis of the chosen indicators provides a board perspective on the importance of the production and consumption of chemicals, as well as waste treatment, on the environment. Pollution is part of the current language and is commonly referred to.



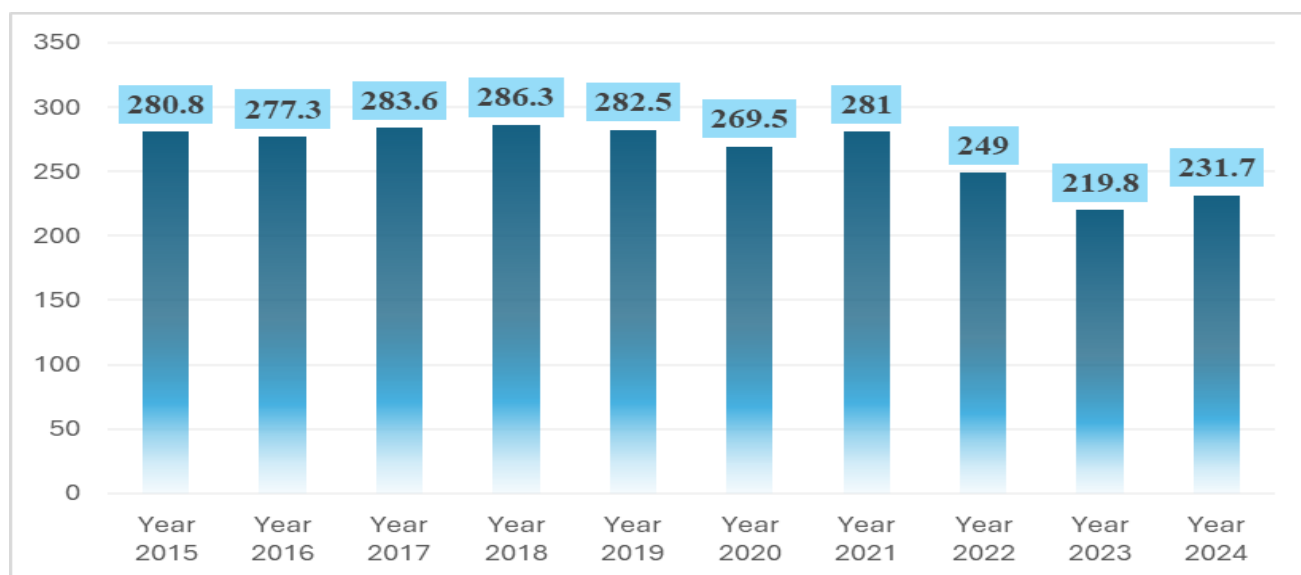
**Figure no. 1 ”Production of chemicals, average EU, 2015-2024”**

Source: Created by authors use the Eurostat database:

[https://ec.europa.eu/eurostat/databrowser/view/env\\_chmhaz/default/table?lang=en&category=env.env\\_chm](https://ec.europa.eu/eurostat/databrowser/view/env_chmhaz/default/table?lang=en&category=env.env_chm)

In Figure no. 1 is presented production of chemicals, hazardous and non-hazardous- total, between 2015 to 2024 for the average of the countries in the European Union. From Figure no. 1 it is observed that for the production of chemicals, the average of the EU level fluctuated from 260.60 million tonnes in 2015, reaching 223.70 million tonnes in 2024. It is a welcome development that the production of chemicals is decreasing, because thus the level of pollution is also decreasing. However, the year 2024 recorded a higher value than the year 2023, when the value of this indicator was 210.50 million tonnes.

From Figure no. 2 it can be observed consumption of chemicals, more precisely the total of hazardous and non-hazardous substances representing the average at the level of EU member states. Figure no. 2 indicates the dynamics of this indicator during the period 2015-2024. It is noticeable that the consumption of chemical substances decreased from 280.80 million tonnes in 2015, to 231.70 million tonnes in 2024. As in the case of production, consumption recorded the lowest value of the entire analyzed period in 2023. Consumption in 2023 was 218.90 million tonnes.



**Figure no. 2 ”Consumption of chemicals, average EU total, 2015-2024”**

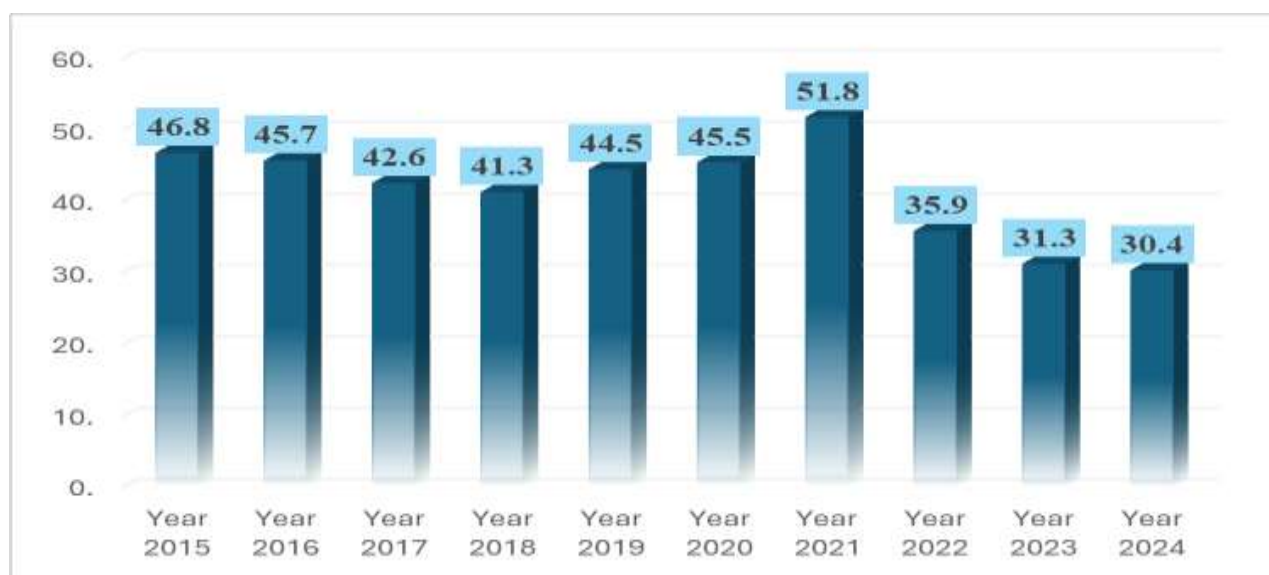
Source: Created by authors use the Eurostat database:

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The much lower values in 2023 are the result of combination of factors, including the increase in the price of energy. High energy and raw material costs due to general price increases have slowed down the production of chemicals.

In contrast, the developments observed in 2024 do not signal a full recovery but rather a post- shock adjustment. The relative easing of energy prices partially restored the economic viability of production, enabling the restart of certain facilities and the resumption of activities in previously affected plants.

More than the total consumption of toxic substances, a more specific indicator is of importance which shows the consumption of chemicals most harmful substances for health on average in the EU states for the same period and which is presented in Figure no. 3.



**Figure no. 3 ”Consumption of chemicals, average EU- most harmful for health, 2015-2024”**

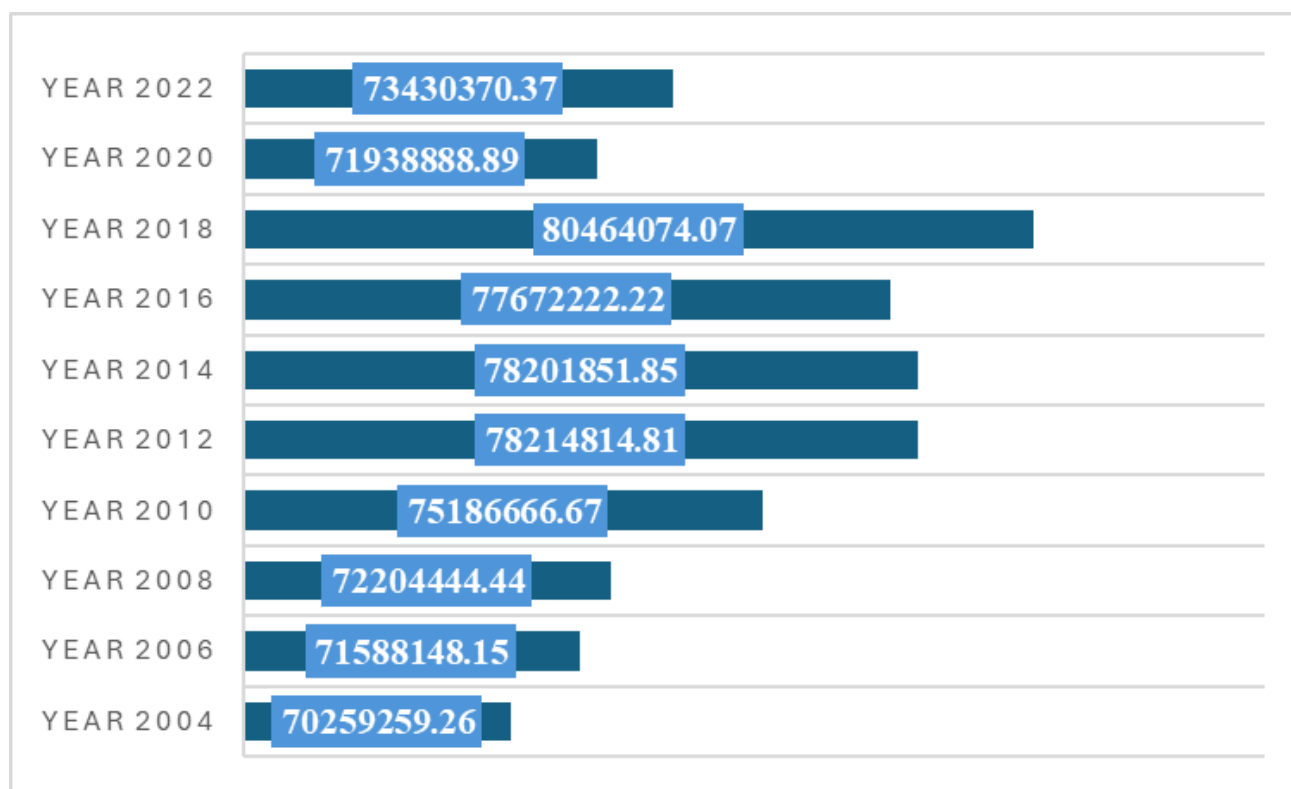
Source: Created by authors use the Eurostat database:

The indicator illustrated in Figure no. 3 leads that in 2015, EU countries consumed an average of 46.80 million tonnes of substances that are very dangerous to the health of the population. This indicator has decreased, reaching a value of 30.40 million tonnes in 2024.

Pollution becomes a pressing issue especially when people's lives are put at risk. A study shows the correlation between heat waves and high ozone levels with lung deaths. The effects of ozone persist for up to two days (Park, 2026). When combined with heat exposure, it appears to lead a higher mortality rate in the elderly.

Chemical pesticides applied in agriculture are toxic to human health and things can get worse depending on the period of exposure and amount of chemicals used (Mohanrasu et al., 2025). The most advanced fungal treatment methods use fungal mycelia which are an environmentally friendly alternative to treating industrial waste (Aseloloye, 2026).

The production and consumption of chemicals it involves processes that can affect the environment. During these activities, emission and residues are generated that can pollute the water, soil or air if are not properly controlled. For this reason, the way waste is managed, depending on its type, must be carefully monitored. Proper treatment helps reduce the negative impact on nature and supports the maintenance of ecological balance.



**Figure no. 4 "Waste treatment- hazardous and non-hazardous, average EU, 2004-2022"**

Source: Created by authors use the Eurostat database:

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Figure no. 4 presents the waste treatment indicator. From Figure no. 4, it can be observed the waste treatment according to the category of waste, hazardous and non-hazardous, presented in total and displayed every 2 years, from 2004 to 2022. The values represented graphically show the average volume of waste treatment in the European Union states, starting from the value of 70259259.26 tonnes in 2004 and reaching 73430370.37 tonnes in the year 2022.

With industrialization, environmental pressures have emerged, especially through greenhouse gas emissions (Gao et al., 2026). Emissions come largely from the treatment of hazardous industrial waste.

## 5. Conclusions

Sometimes, unconsciously, we have a behavior that is harmful to the environment. Excessive acceleration of cars in traffic produces additional pollutants and loads the air that we then inhale. Acts such as dumping waste in unauthorized places or excessive use of pesticides, all of which affect the environment in which we live and ultimately affect us. The high level of chemicals produced and consumed, presented in this paper, propels us towards the effects on the environment. Soil and air loaded with toxic substances means a polluted environment, which undergoes changes and gives alarm signals through climate changes that are increasingly unpredictable.

Climate change is a serious cause for concern and alarm signals given by a planet that is burdened due to pollution or other factors. The modern world wants paradigm shifts, electric cars, clean water and fertile soil, without pesticides or other chemical compounds, to transform the polluted planet into a clean and green planet.

Numerous research shows complex interactions between human health, climate change and air pollution, as well as those related to artificial intelligence. Therefore, there is a need to adopt measures to combat climate change by reducing pollution. One measure to reduce water pollution is to switch to environmentally treatment methods, using alternative forms of waste treatment. Another measure to reduce air pollution would be to adopt electric cars, to reduce the harmful effects of fuels.

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