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MORALITY BEFORE KNOWLEDGE

The effect of industrial waste on air pollution and water pollution causes climate change

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ABSTRACT

Background: Industrial pollution refers to any type of contamination that results directly from industrial operations. The majority of the pollution on this planet is also caused by various industries. The environment is greatly impacted by this pollution. Industrial pollution can degrade soil quality, taint sources of drinking water, and emit pollutants into the atmosphere. Energy and industrial pollution are intimately intertwined. Energy can transform from one form to another, and these changes can have a variety of effects on the surrounding area and the air we breathe. The main source of pollution is combustion, which transforms the chemical energy in fossil fuels into heat, mechanical, or electrical energy. So the biggest sources of air pollution are power plants, cars, and stoves. The pollutants released are often divided into three categories: carbon monoxide (CO), nitrogen oxides (NOx), and hydrocarbons (HC) (CO). Smog, acid rain, global warming, and climate change are mostly caused by pollutants released by the burning of fossil fuels. Future life is impacted by climate change. Deforestation, or the loss of green forest ecosystems, is one of the causes of global warming. This is because it ignores the consequences of industrial opening and changes in land use brought on by population increase. Environmental issues including air pollution and water pollution are significantly impacted by pollutants produced by the industrial sector. This research explains the effect of industrial waste on air pollution and water pollution**. Methods:** The research method used is a secondary method, namely research that involves the use of existing data. The sources in this study were taken from journals related to the effect of industrial waste on air pollution and water pollution which are one of the causes of climate change. **Findings:** At both the national and international levels, legislation and regulations have been implemented that take this environmental concern into consideration. **Conclusion:** The issue of climate change is related to reducing greenhouse gas (CO2) emissions at the international level, for instance in the energy sector. This is done within the framework of the United Nations, specifically the Climate Change Convention outlined in the Kyoto Protocol, which requires ratifying countries to reduce CO2 emissions to an agreed-upon target.

KEYWORDS: air pollution; climate change; industry; water pollution.

1. Introduction

A catastrophe brought on by climate change is currently affecting the entire planet and could eventually affect human life. The effects of and solutions to the problem of climate change have received a lot of attention in recent years. Due to environmental deterioration, environmental issues are currently the main topic of conversation in both developed and developing nations. Concerns about climate change and global warming, which are mostly caused by greenhouse gas emissions, have increased as a result of this. These changes are frequently attributed to both direct and indirect human activities,

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which have an impact on the composition of the global atmosphere and natural climate variability, as well as to natural causes, such as continental drift, volcanic activity, solar radiation, ocean currents, and ocean currents (Astra, 2010).

One of the causes is deforestation, specifically the loss of green forest ecosystems, which is currently declining as shown by the 40% reduction in the availability of forests across 2.9 million hectares (Wahyuni & Suranto, 2021). This occurs as a result of developing nations' propensity to ignore the negative impacts of establishing new enterprises that destroy a lot of lush woods. Additionally, it goes without saying that ongoing deforestation will result in a loss of the species that those forests hold. Additionally, human activities like burning fossil fuels, changing land use owing to population growth, and deforestation for agricultural and commercial purposes have all considerably increased greenhouse gas emissions. Along with altering lives, improving society, and boosting economic growth through increased production of goods and services, industrialisation also leaves us with the issue of rising greenhouse gas emissions (Ismail, 2020).

2. Methods

The research method used is a secondary method, namely research that involves the use of existing data. The sources in this study were taken from journals related to the effect of industrial waste on air pollution and water pollution which are one of the causes of climate change.

3. Results and Discussion

An industry, in general, is a collection of companies that use similar strategies and methods to generate revenue. As a result, the economic impact is more noticeable, even though there are still other effects that might be both good and destructive but are rarely spoken of. Industrial regions are land use and highly concentrated economic activity associated with production and manufacturing in urban and economic development. There is little doubt that the formation of industry affects both the social and environmental environments (Ridwan, 2016). Reducing unemployment rates, improving the wellbeing of those living near industrial zones, and other effects are some of these. Industry generally has good effects on social life, but it has many detrimental effects on the environment, such as air pollution, water pollution, and other problems. In addition to what has already been said, industry typically responds to social demands in a social setting.

An industry, in general, is a collection of companies that use similar strategies and methods to generate revenue. As a result, the economic impact is more noticeable, even though there are still other effects that might be both good and destructive but are rarely spoken of. Industrial estates are land use and intensive economic activity linked to manufacturing and production in economic planning and metropolitan areas (Putri et al., 2023). There is no doubt that the formation of the sector has an impact on both the social and environmental environments. Reducing unemployment rates, improving the wellbeing of those living near industrial zones, and other effects are some of these. Industry generally has good effects on social life, but it has many detrimental effects on the environment, such as air pollution, water pollution, and other problems. In addition to what has already been said, industry typically responds to social demands in a social setting.

Prior to the current financial crisis, Indonesia's economy grew quickly, particularly in the manufacturing sector. However, it is also anticipated that the expansion of the industrial sector will have a negative externality on the environment, such as pollution and environmental harm. The reality on the ground demonstrates that Indonesia's

environmental conditions are at an alarmingly high level right now. The cases below highlight several aspects of Indonesia's present environmental situation.

1. Air quality
   Assessments of air pollution levels in numerous significant Indonesian cities demonstrate that these cities have levels of air pollution that are higher than those permitted by regional air pollution guidelines. For instance, Greater Jakarta's suspended particulate matter (SPM) average value for a year was 84.56 g/m3, although the DKI Jakarta regional standard is 60 g/m3. The total hydrocarbon (T-HC) threshold recorded a value of 3696.8 parts per billion (ppb) on average during the course of a year, while the normal limit is 240 ppb. If measures to reduce air pollution are not taken, Indonesia's air pollution levels in 2020 are expected to be four to five times higher than they were in 1990 (Budiyono, 2010).
2. River water quality
   Using chemical oxygen demand (COD)7 and biological oxygen demand (BOD) test criteria, the DKI Jakarta Urban and Environmental Assessment Office (KPPL) examined the quality of river water in 50 places throughout the DKI territory from 1993 to 1995. Only 16 places (29.62%) and 17 locations (31.48%), respectively, had water quality that satisfied the COD quality level and the BOD quality standard during the 1993–1994 period, according to monitoring results. In contrast, during the 1994–1995 period, only 11 places (20.3%) and 13 locations (24.07%), respectively, satisfied COD and BOD criteria. The UI Center for Human Resources and Environment Research states that residential liquid waste (44.9%) is the main source of river contamination in DKI.
3. Groundwater quality
   The state of groundwater in crowded metropolitan areas is also quite concerning. A survey of 252 shallow wells (1–15 m) in 89 urban villages in DKI Jakarta in the years 1994–1995 revealed that all of these wells had been contaminated with coliform and fecal coli bacteria and that 45.2% of them had an organic content that was above the threshold (Widiyanto et al., 2015).

Deteriorating environmental circumstances may make it difficult to rebuild Indonesia's economy and achieve sustainable economic growth while the country is in an economic crisis. As a result, strategies that might reduce harmful externalities from economic activity—such as environmental pollution—without substantially reducing those same activities are required.

On the one hand, industrial development brings about changes that affect the socioeconomic community, but on the other, it also brings about changes that have a negative impact. These negative impacts include pollution of the environment near the industry, such as clean water pollution, noise pollution, and air pollution. Negative effects of environmental pollution such as water pollution, air pollution, soil pollution, and others that risk the survival of all organisms are also experienced in addition to environmental pollution. The corporation and the regional government have both taken a number of steps to reduce the possibility of environmental damage brought on by industrial activity.

1. Pollution of clean water
   The absence of environmental pollution issues is not entirely guaranteed by efforts that have been made to decrease or minimize the risk of environmental contamination. The resident's well water is tainted by waste from the industry, which causes environmental damage. There is a sizable amount of waste capacity, but because the waste storage capacity is of poor quality and capacity, the garbage seeps into the ground and ends up in community wells (Sulistina, 2018).
2. Noisy environment
   In addition to contaminating the homeowners' well water, excessively noisy production activities also cause pollution. One technique to lessen it is to install trees surrounding the factory and improve the building's quality to lower noise intensity.

3. Air pollution
   This pollution is caused by industrial production equipment that releases its smoke waste through company chimneys, particularly businesses that engage in more combustion activities during production. In addition to air pollution brought on by industrial activity, a significant number of company trucks with big payloads entering and exiting the factory to deliver the company's goods also contribute to air pollution.

3.1 Air pollution

Both natural sources, like volcanoes, and man-made sources, such motor vehicles and industrial exhaust gases, can produce air pollution. More air pollution issues in cities are caused by man-made sources. As urban areas continue to quickly urbanize, the issue of manufactured pollution will only get worse (Budiyono, 210). According to predictions, the percentage of people living in cities worldwide reached 40% in 2000 and will reach 55% in 2010. The relatively high rate of population growth in metropolitan areas has led to environmental issues, such as the lack of access to clean water, unsanitary conditions, the improper disposal of solid and hazardous waste, the loss of open space, and air pollution (Tainio et al., 2021).

The sustainability of the environment is significantly impacted by humans and all of their actions as a component of the ecosystem. Therefore, the rapid growth in the population of metropolitan areas and the associated movement activities will have an impact on the environment. A city's population growth results in an increase in daily trips that is at least equal to the population growth. Additionally, increased journeys will lead to higher use of motorized cars, and motor vehicle exhaust is the primary cause of air pollution in major cities. (P. P. Ekonomi, I. Pengolahan, and T. Kualitas, 2022). For example, 70% - 80% of the total air pollution comes from motorized vehicles, such as in the cities of Manila, Kuala Lumpur, and Jakarta.

We require air at all times; on average, people cannot survive more than 3 minutes without it. Humans never consider or pay attention to it because it is present everywhere in the form of air gas. Up until then, air pollution in Belgium caused an outbreak of lung disease. In the years that followed, air pollution frequently resulted in pandemic levels of illness and death in many regions of the world (Abidin & Hasibuan, 2019). Chemical, physical, and biological substances are the three categories into which air pollution substances can be divided. the effects of these air contaminants, particularly chemical and physical substances, on people (Resosudarmo et al., 1997).

3.2 Water pollution

Water is a natural resource that is essential to many people's survival and to all other living things. Therefore, it is important to safeguard these water resources so that people and other living things can make the most use of them. The interests of both current and future generations must be considered while using water for diverse reasons. Water supplies are still being damaged and declining, and the problem is getting worse every year (Kwanda, 2003).

Although numerous measures have been taken to address the issue, the harm is still being done at an unpredictable rate. Almost all major cities in the world today experience water pollution, which has been a problem for hundreds of years. There is hope that Indonesia still has a chance to reduce the pollution that has occurred because of the experience of industrialized nations during the industrial revolution 150 years ago (Widiyanto et al., 2015)

When combating water pollution, it's important to determine the pollution's sources, materials, nature, and character before deciding how to handle the problem.

The lack of access to clean water, the low use of latrines, the contamination of soil, water, and air by household waste, industrial waste, agricultural waste, and transportation

facilities, as well as the physical environmental factors that support the development of vector breeding, are issues that arise from Indonesia's high prevalence of environment-based diseases in general. Another issue that requires attention and is frequently encountered in the community is the water quality in clean water supply facilities that do not satisfy the requirements (Purba & Budiono, 2019).

Groundwater is an extremely significant water source. People consume a lot of groundwater during the dry season when surface water is scarce because of the dry weather. The local community makes use of ground water since it has better quantity continuity than precipitation or surface water. Like river water, groundwater can become polluted, but the process is different. Surface water is more easily damaged than groundwater because it is more open. Because of this, people frequently use groundwater as a supply for necessities like drinking water (Ameilia et al., 2018).

Numerous factors, including well construction, distance from sources of pollution, and residential and industrial activity, affect the quality of groundwater used by inhabitants, particularly well water. According to the findings of the univariate analysis, 100% of the residents' well water—21 samples total—did not meet the microbiological standards due to the presence of coliform bacteria. The residents' well water had a 47.62% odor, a 38.09% taste, a 33.33% hue, and a 28.57% murkiness (Dirgapraja et al., 2019).

Waste that is created from both biological and inorganic components can be liquid waste. Contamination Liquid waste can harm the soil, especially its fertility and water supplies, if it seeps beneath the soil's surface. Our health could be in jeopardy if we consume everything from a contaminated environment, and different illnesses like diarrhea and dysentery could spread throughout society. By first determining the source of the pollution, the type and characteristics of the pollutant, and then making decisions to deal with the pollution, water pollution can be reduced. By arranging for spatial planning that is both environmentally sound and protected by existing laws, pollution management needs to be done in order to safeguard water sources.

4. Conclusions

At both the national and international levels, legislation and regulations have been implemented that take this environmental concern into consideration. The issue of climate change is related to reducing greenhouse gas (CO2) emissions at the international level, for instance in the energy sector. This is done within the framework of the United Nations, specifically the Climate Change Convention outlined in the Kyoto Protocol, which requires ratifying countries to reduce CO2 emissions to an agreed-upon target. The US, a quarter of the world's CO2 emitters, has rejected the Kyoto Protocol due to its corporate and power ties. According to the Decree of the Minister of State for Population and Environment, No. Kep.-02/MENKLH/I/1988 concerning Guidelines for Setting Environmental Quality Standards, government efforts at the national level in the field of regulations to combat air pollution have also been carried out by setting limits on emission levels. But because of the process of development, environmental pollution is present all the time.

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