

Retraction

Retracted: Environmental Impact Assessment of Production Plant during Construction Period

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

- [1] L. Kong, "Environmental Impact Assessment of Production Plant during Construction Period," *Journal of Sensors*, vol. 2022, Article ID 2712062, 9 pages, 2022.

Research Article

Environmental Impact Assessment of Production Plant during Construction Period

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Based on the construction project of a manufacturing plant, the environmental impact assessment of possible environmental pollution during the construction period was carried out from the perspective of atmosphere, water, noise, and solid waste. The analysis of air pollution indicates that dust and motor vehicle exhaust are the main air pollution factors, of which dust emission is 33 t, and the daily emission of NO_x, CO, and THC in tail gas is 5.35 kg, 3.7 kg, and 1.1 kg, respectively. The annual average wind speed of the area where the factory is located is 3.15 m/s, and the average wind speed in August is 2.50 m/s, which is 20.6% lower than the annual average. The annual average monthly precipitation is 59.5 mm, and the precipitation in July is 186.4 mm, which is 213.3% higher than the monthly average. Therefore, summer is the best time for construction. Meanwhile, in addition to taking road hardening measures to reduce emissions, dust can also be restrained through watering, and motor vehicle exhaust is reduced through reasonable operation. Water pollution analysis shows that the pH of groundwater in the factory is within the standard limit range (6.5-8.5), and the maximum standard index is less than 0.1, with a very high level of reaching the standard. Cleaning engineering machinery will produce wastewater containing petroleum substances and suspended solids. The amount of wastewater produced every day is 0.5 m³, which can be used for dust suppression. The daily amount of sewage during the construction period is 0.6 m³, which can be directly discharged to the pipe network without polluting local water sources. Noise pollution analysis shows that the minimum distance between day construction and night construction is 50 m and 281 m, respectively. Although there is large construction machinery in the construction area, the construction area itself is in the production area and there are other noise pollution sources around it, so there will not be obvious noise pollution during the construction period. The analysis of solid waste pollution indicates that the total amount of construction waste generated during the construction period is about 4.2 t, and the daily production of domestic waste is 21 kg. Part of various solid wastes is collected and treated in a centralized manner, while the rest can be conducted with landfill treatment after part of them is recycled and utilized, without causing significant pollution to the local environment.

1. Introduction

With the continuous development and growth of China's economy, the construction of projects throughout the country is also increasing significantly. While these projects contribute to social infrastructure and national economic growth, their own problems are also exposed, and the most serious one is the impact of engineering construction on the environment. The construction of the projects will produce a large amount of dust, sewage, and noise and other environmental pollution, and the dense personnel, open-

work, many construction machineries, complex construction conditions, and poor construction environment will also intensify the generation and diffusion of the pollution. While people enjoy the achievements made by rapid economic growth, they also pay more and more attention to environmental pollution and its treatment, especially the environmental pollution and treatment of engineering construction located in densely populated areas of cities. To not only guarantee the quality and efficiency of engineering construction but also not let engineering construction have too much impact on the environment, various countries

have put forward some effective methods to solve this contradiction, among which the environmental impact assessment method is widely used [1–5]. The so-called environmental impact assessment (EIA) is an environmental protection system and method that indicates the assessment and prediction of the possible impacts on the ecological environment during the construction of engineering projects and then provides suggestions on preventive measures for these impacts [6]. In addition to relevant national laws and regulations, environmental impact assessment of engineering projects should also abide by the normative documents of national environmental protection agencies and local environmental laws and regulations, such normative documents as *Classified Management Directory of Environmental Impact Assessment of Construction Projects*, *Guidance Directory for Industrial Structure Adjustment*, and *Technical Guidelines for Environmental Impact Assessment of Construction Projects* [7, 8]. Besides, the ministries and commissions of the State also issued several policy documents to assist in guiding the environmental impact assessment of engineering projects by judging the consistency of project contents and the terms of the documents [9, 10]. Different environmental impact assessment methods are used for different environmental elements and their pollution conditions. The specific methods follow the requirements of the *Technical Guideline for Environmental Impact Assessment of Construction Project General Programme* for the assessment methods of various environmental elements and their pollutants, and different sampling methods and pollution source strength calculation methods are adopted.

In this paper, the machining production plant that a mechanical parts manufacturer A planned to build was selected as the research object, and the possible environmental pollution caused by the production plant during the construction period was systematically analyzed and studied by using the method of environmental impact assessment. According to the existing available area in the plant, the production plant will be limited to a rectangular area with a length of 96 m and a width of 32 m, covering an area of 3072 m², which is located at 41.9° N and 123.5° E, and this area is located in the north of Shenyang City, with a resident population of 940000. The highest temperature is 37.5°C and the lowest temperature is -32.9°C, belonging to a moderate humidity climate. According to actual needs, the production plant will include production line area, production preparation area, parts delivery area, office area, and auxiliary area, covering a floor area of about 4195 m².

2. Analysis of Environmental Impact during Construction Period

According to the construction requirements of the manufacturing plant, the construction process and environmental pollution content of each main construction link are shown in Table 1.

2.1. Air Pollution Analysis. According to the contents listed in Table 1, the main air pollutants during the construction of the production plant are dust and motor vehicle exhaust. Among

TABLE 1: Construction process and environmental pollution factors of manufacturing plant.

Construction links	Environmental pollution factors			
	Dust	Tail gas	Noise	Solid waste
Land grading	√	√	√	√
Foundation trench digging	√	√	√	√
Foundation laying	√	√	√	√
Main construction	√	√	√	√
Equipment installation	×	√	√	×
Construction of supporting facilities	×	√	√	√

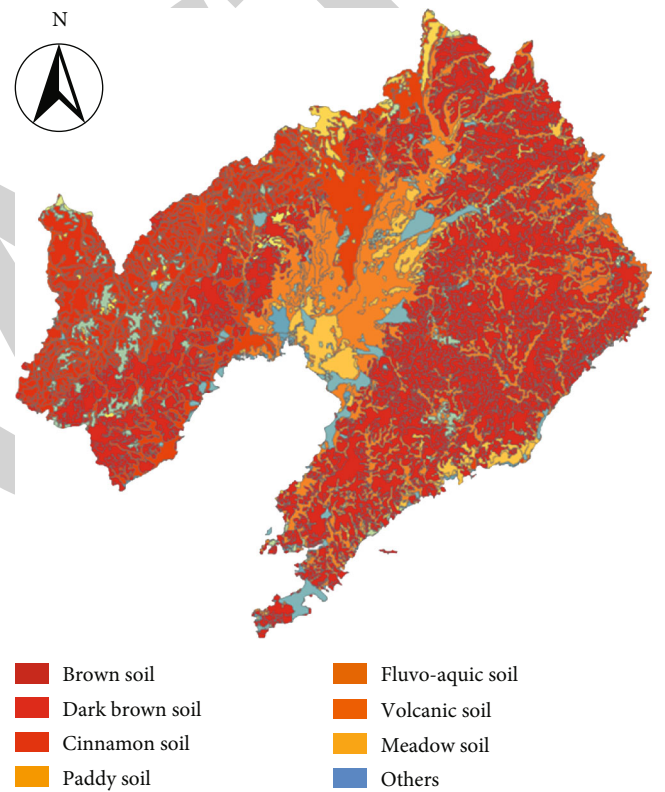


FIGURE 1: Soil type map of the area of manufacturing plant.

them, the dust mainly comes from the excavation, stacking, transportation, and backfilling of earthwork, and part of it comes from the stacking and transportation of construction materials and construction wastes. Meanwhile, the wind-induced dust on temporary roads and bare ground in the construction site also plays a certain role in dust pollution.

The area where production plant is located belongs to the junction zone of the second giant uplift belt and the second giant subsidence belt of New Cathaysia, with the Cathaysia Valley in the east and Xialiaohe graben basin in the west. The area is mainly located in the Xialiaohe graben basin, where the quaternary strata are unintegrated on the bedrock, and the surface lithology is mainly sandy loam soil and loam soil. The soil type of the area where production

TABLE 2: Soil composition of the site of manufacturing plant.

Soil name	Soil composition	Soil stage
Miscellaneous fill	Construction waste, household garbage, slag, residual soil	Moist and loose
Silty clay	Iron manganese nodules	Tawny, containing a few brown or black spots, moist, medium strength and toughness, good ductility
Medium sand	Mainly feldspar quartz sand, mixed with coarse gravel and a small amount of clay	Brown yellow, moist, medium density, uniform particles
Gravel	Mainly feldspar quartz sand, containing 3-7% pebbles, with good gradation and local coarse-grained lens	Brown yellow, saturated, dense, the maximum pebble diameter is 50 mm
Shingle	Mainly feldspar quartz sand, containing a very small amount of pebbles, mixed grain structure, inclusion of medium sand, and a small amount of clay	Brown yellow, saturated, dense
Pebble	It is composed of weathered crystal rock debris, and the filling material is mixed sand with good gradation, coarse sand and medium sand, and quick fertilizer layer	The maximum particle size is 80 mm, hard, saturated, and dense

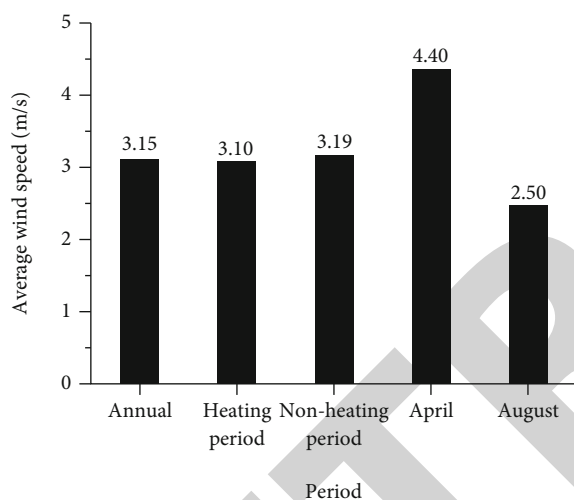


FIGURE 2: Average wind speed of manufacturing plant's location.

plant is located is shown in Figure 1. As can be seen from the table, most of the soil types in this area are brown soil, dark brown soil, or brown soil, and there are also other types of soil such as paddy soil, tidal soil, volcanic ash soil, and meadow soil. The soil composition of the area where production plant is located will affect earthwork excavation and dust generation during construction, and the soil composition is shown in Table 2. It can be seen from the table that the excavation of earthwork in the construction process mainly involves miscellaneous fill, silty clay, and medium sand, which are relatively moist and easy to be excavated. In particular, the miscellaneous fill and silty clay on the surface become the main dust pollution sources due to their loose and plastic characteristics.

It can be seen from Figure 2 that the annual average wind speed in manufacturing plant's location is 3.15 m/s. The average wind speed in the heating period is 3.10 m/s and that in the nonheating period is 3.19 m/s, which is roughly equivalent to the annual average. However, according to the monthly investigation, the average wind

speed in April is 4.40 m/s, 39.7% higher than the annual average, while it is only 2.50 m/s in August, 20.6% lower than the annual average. As shown in Figure 3, the annual dominant wind direction in manufacturing plant's location is S wind with a frequency of 12.2%, and the secondary wind direction is SSW wind with a frequency of 11.8%. In the heating period, the dominant wind direction is N wind with a frequency of 12.5%, and the secondary wind direction is S wind with a frequency of 9.8%. In the non-heating period, the dominant wind direction is S wind with a frequency of 14.4%, and the secondary wind direction is SSW wind with a frequency of 13.4%. Based on the data on average wind speed and wind frequency, it can be known that the region has a monsoon climate and high wind speed in spring, which is easy to produce serious dust. The dust becomes the main air pollution source during construction in spring.

Rainfall can wrap dust in the atmosphere in raindrops and bring it back to the ground, which can effectively reduce dust and avoid dust from polluting the atmosphere. Figure 4 shows that the annual average monthly precipitation of the region where manufacturing plant is located is 59.5 mm. However, the actual precipitation in different months is not evenly distributed. For example, the precipitation in January is only 6.9 mm, far lower than the monthly average, while in July, it is 186.4 mm, 213.3% higher than the monthly average, indicating that the rainy season of manufacturing plant is mainly in summer, and considering the impact of monsoons and rainfall on dust, summer is obviously the best time for engineering construction.

Dust will still be generated during the construction of the nonrainfall period in summer. At this time, the method of the watering can suppress the generation and diffusion of dust to a certain extent [11]. The essence of flying dust pollutant is total suspended particulate (TSP) matter, and the concentration of TSP in unit time is mainly examined when quantitatively assessing the air pollution degree of flying dust [12]. To compare the dust suppression effects of the watering measures, dust suppression tests at different distances were conducted, and the results are shown in Figure 5.

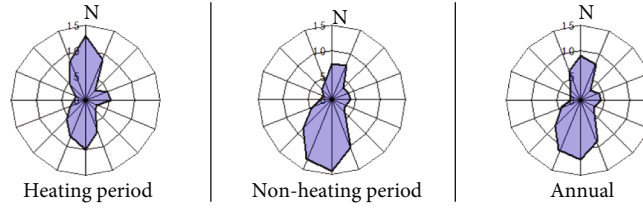


FIGURE 3: Wind frequency of manufacturing plant's location.

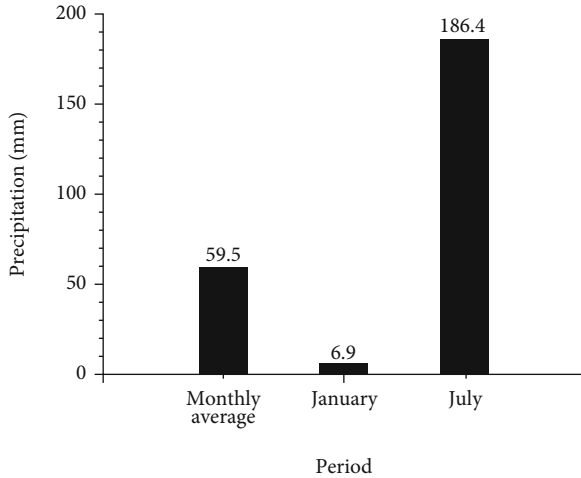


FIGURE 4: Precipitation of manufacturing plant's location.

According to Figure 5(a), TSP concentration is negatively correlated with the distance from the dust center regardless of whether water is sprayed or not. The farther the distance from the dust center is, the lower TSP concentration is. The TSP concentration is 10.14 mg/m^3 at 5 m away from the dust center and 2.89 mg/m^3 at 20 m without watering. When the distance reaches 50 m, the concentration continues to drop to 1.15 mg/m^3 , and when the distance reaches 100 m, the TSP concentration drops to 0.86 mg/m^3 . In the case of watering, the TSP concentration is only 2.01 mg/m^3 at 5 m away from the dust center, 1.40 mg/m^3 at 20 m, and 0.67 mg/m^3 at 50 m. When the distance reaches 100 m, the TSP concentration has been reduced to 0.27 mg/m^3 . Obviously, for TSP at the same location, the concentration value after watering is lower than that without watering, which is consistent with the expectation. Figure 5(a) also shows that the TSP density is 20 m without watering, and it is higher within the scope of 20 m, but after 20 m, it begins to attenuate, showing that dust presents the characteristics of the spatial distribution of the "isolated island," which indirectly indicates that under the premise of not removing dust, adopting watering measures near the center of the dust can obviously suppress dust. In fact, by comparing the two curves in Figure 5(a), it can be found that the TSP concentration values before and after watering are significantly different only within the range of 20 m. After 20 m, the values of the two tend to be close and the attenuation trend slows down, indicating that watering measures have a good suppression effect on dust.

In order to investigate the attenuation trend of TSP concentration values under the two conditions, the ratio of the

relative attenuation of TSP concentration values at two locations to the distance between two locations was defined as the attenuation amplitude per unit distance, and the calculation results are shown in Figure 5(b). As shown in Figure 5(b), the TSP concentration decreases significantly with the increase of the distance when there is no water spraying. The TSP concentration decreases by 4.8% when the distance from the dust center increases by 1 m within the range of 5-20 m, while the attenuation does not exceed 2% when the distance increases by 1 m above 20 m. When the distance is in the range of 50-100 m, the unit distance attenuation of the TSP concentration value is only 0.5%. However, in the case of watering, the attenuation amplitude per unit distance from the dust center is $-2\%/m$, $-1.7\%/m$, and $-1.2\%/m$ in the range of 5-20 m, 20-50 m, and 50-100 m, respectively. The comparison of the two kinds of attenuation trends shows that under the condition of no watering, TSP concentration is relatively high in the range near the center of the dust and reduces with the increase of distance quickly, and once the distance exceeds a certain limit (such as 20 m in this experiment), the TSP concentration value has attenuated to a very low degree and will not have a large attenuation even there is a large distance. However, in the case of water, the attenuation range of TSP concentration in the range of 5-20 m is only 2%, and there is no obvious attenuation, which is in sharp contrast to that in the case of no watering. When the distance is further increased to 100 m, the attenuation amplitude of TSP concentration does not decrease significantly and shows a linear attenuation law in the whole test range.

According to the characteristics of dust emission in the construction process, dust emission includes basic emissions and controllable emissions, which can be calculated by the following formulas.

$$W = W_B + W_C,$$

$$W_B = A \times B \times T, \quad (1)$$

$$W_C = A \times (P_{11} + P_{12} + P_{13} + P_{14} + P_{15} + P_2) \times T,$$

where W is dust emissions (t), W_B is basic emissions (t), W_C is controllable emissions (t), A is factory building area ($10,000 \text{ m}^2$), B is basic emission coefficient ($\text{t}/10,000 \text{ m}^2/\text{month}$), P_{1i} is controllable emission coefficient of primary dust ($\text{t}/75 \text{ m}^2/\text{month}$), P_2 is controllable emission coefficient of secondary dust ($\text{t}/75 \text{ m}^2/\text{month}$), and T is construction period (month).

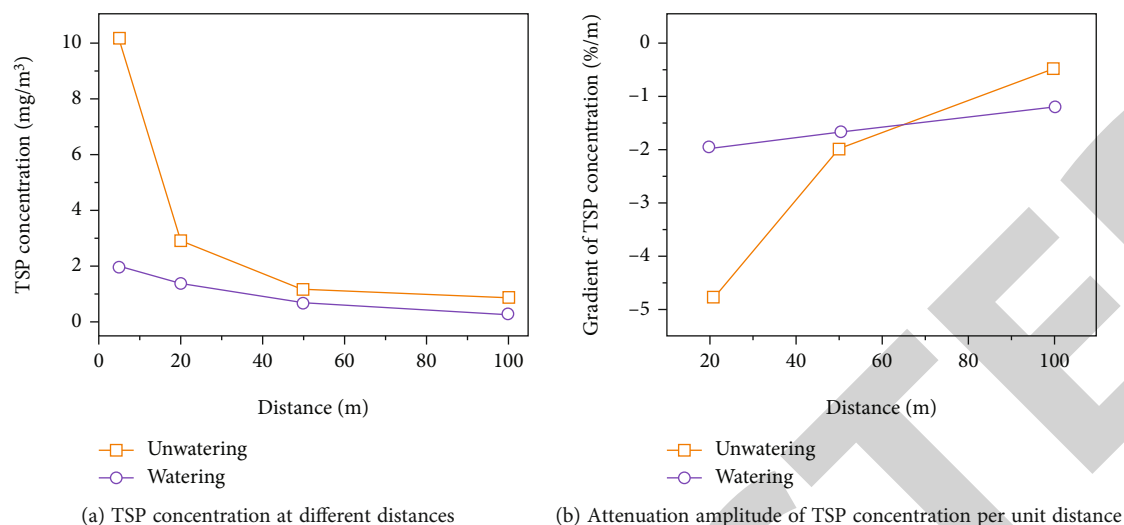


FIGURE 5: Test results of suppressing dust with watering.

TABLE 3: Controllable emission coefficients of dust.

Dust type	Dust suppression measures	Controllable emission coefficient	Emission coefficient value	
			Yes	No
Primary dust	Road hardening	P_{11}	0	0.71
	Boundary fencing	P_{12}	0	0.47
	Bare ground covering	P_{13}	0	0.47
	Easy-to-dust material covering	P_{14}	0	0.25
	Regular inhibitor spraying	P_{15}	0	0.30
Secondary dust	Easy washing for transport vehicles	P_2	1.55	3.10

According to the above calculation formula for dust emissions, the construction area of the production plant is 4195 m² and the construction period is 10 months. According to the table, the basic emission coefficient is 4.80 t/10,000 m²/month, and the controllable emission coefficients of primary dust and secondary dust are shown in Table 3.

According to the coefficients listed in Table 3, adopting reasonable suppression measures for different dust types can reduce corresponding emission coefficients, and thus, the controllable dust emissions obtained by the calculation will be reduced accordingly. The controllable emission coefficients in Table 3 and their contributions to dust emission suppression can directly reflect the effectiveness of dust suppression measures. Among them, road hardening measures are the most effective for the suppression of primary dust, and most of the dust on the ground can be covered under the hardened ground through road hardening, but if road hardening is not adopted, the vehicle traffic and monsoon will obviously cause a lot of dust. The second effective measures are boundary fencing and bare ground covering. For earthworks such as foundation trench excavation and trench excavation, dust exposure is inevitable, and it is feasible to limit exposed dust in a certain area by adopting these two measures. By comparing the controllable emission coefficients of primary dust and secondary dust, it can be seen that the primary dust can be completely eliminated by using

appropriate measures and methods, and for secondary dust, the emission coefficient can be reduced by washing vehicles, but the coefficient cannot be zero; that is, this method cannot completely eliminate the dust. This is because the goods carried by transport vehicles mainly include sand and other construction materials, and the environment where the transport vehicles are located also has a large amount of dust. Therefore, even if the transport vehicles are washed, the dust still cannot be completely eliminated. According to the project design and construction scheme, the plant construction project will adopt a series of suppression measures such as road hardening, boundary fencing, bare ground covering, easy-to-dust material covering, and regular inhibitor spraying, as well as simple washing for transport vehicles; thus, it can be calculated that the dust emissions on the construction site of the production plant are 33 t.

During the construction period, both dust and tail gas are major pollution sources. The tail gas during construction mainly comes from various construction machinery and transportation vehicles. There are many engineering machineries and transportation vehicles in the earthwork and structural construction stage, and the tail gas emissions are relatively concentrated. At this stage, the main air pollutants are NO_x, CO, and total hydrocarbons (THC) in the tail gas [13]. According to the construction plan, four diesel construction equipment and 2 heavy transport vehicles will be

TABLE 4: Comparison of CO and THC concentrations in tail gas.

Running state	Neural gear	Moving at a constant speed		Speed up		Braking deceleration
		Fast	Slow	Fast	Medium	
CO concentration	High	Extremely low	Low	High	Low	Low
THC concentration	High	Extremely low	Low	Medium	Low	Low

used during the construction period, and the estimated daily diesel consumption is 140 kg, so the daily emissions of NO_x , CO, and THC in tail gas are 5.35 kg, 3.7 kg, and 1.1 kg, respectively. The construction equipment has only two states, running and stopping. The concentration of fuel exhaust gas in the running state is almost unchanged, while that in transport vehicles is different in different running states. Table 4 shows the qualitative comparison of CO and THC concentrations in different running states of vehicles.

As can be seen from the comparison in Table 4, the concentration of exhaust gas of the two fuels is the highest when the vehicle is in neutral gear, higher in the process of fast acceleration, and lower in the process of uniform speed and braking deceleration. Based on this conclusion, transport vehicles should avoid being in neutral for a long time when in use and fast acceleration operation should be minimized when driving in order to reduce the concentration of CO and THC and decrease the air pollution caused by exhaust gas. At the same time, considering the short construction period of the production plant, the construction machinery equipment and heavy transport vehicles can be stopped after the completion of the main building construction, so the impact of the exhaust gas of these construction machineries on the atmosphere is temporary and will not cause obvious air pollution on the macro.

2.2. Water Pollution Analysis. In the main aquifer in the region where manufacturing plant is located, quaternary loose sediments are shallowly buried and rich in groundwater, which is the main aquifer in the region. Beneath it are interbedded sandstone and mudstone deposited in Tertiary river and lake facies, which are weak in water content and can be regarded as the bottom water-repellent layer. The characteristics of the aquifer are as follows based on its formation age, genetic type, buried distribution, and water abundance.

2.2.1. Middle and Lower Pleistocene Confined Water Aquifers of the Quaternary System. The Middle and Lower Pleistocene aquifers are widely distributed and stable in the region and superimposed on the Neogene strata. The lithology is mainly brown-yellow sand and sandy pebbles and contains a large number of clay layers, with a burial depth of 70-80 m and a thickness of 55-70 m. The layer is not rich in water because there are subclay, silty subclay lenses, or interlayers.

2.2.2. The Upper Pleistocene Alluvial Phreatic Aquifer and Microconfined Water Aquifer. The Upper Pleistocene aquifer is the second aquifer in this region, which overlays the Middle Pleistocene and is mainly composed of gray-yellow and brown-yellow sand and gravel and contains a small amount of clay. The burial depth is 25-30 m, and the average thick-

TABLE 5: pH of groundwater of manufacturing plant's location.

	Test point					
	1	2	3	4	5	6
Groundwater level (m)	45	42	48	45	44	45
Measure value	7.02	6.98	6.85	7.11	7.08	7.05
Standard limit	6.5-8.5					
Standard index	0.01	0.01	0.1	0.07	0.05	0.03
Over standard rate	0	0	0	0	0	0

ness is 60-70 m. The water inflow of a single well in this layer is 530 t/d, and the permeability coefficient is 2.44 m/d. Groundwater is mainly replenished by lateral runoff and infiltration of upper water.

2.2.3. Quaternary Holocene Alluvial Phreatic-Microconfined Aquifer. The Holocene series is widely distributed, but its genesis and lithofacies are relatively simple, mainly alluvial bed facies. The lithologic surface is composed of yellow and yellow-brown subsandy soil, gray-black, and gray-brown subclay, with a thickness of 5-10 m. The thickness gradually increases from south to north and from west to east. Beneath it is brown-yellow, yellow-brown fine sand, medium-coarse sand, and sand and gravel layers, with a thickness of about 20 m and a burial depth of about 20 m, which is the first aquifer in this area. The groundwater depth is 1.5-3.0 m. The water inflow of a single well in this layer is 560 t/d and the permeability coefficient is 2.25 m/d. The supply of the groundwater is mainly paddy field water infiltration, supplemented by underground runoff and atmospheric precipitation recharge.

To explore the pH value of groundwater of the region where manufacturing plant is located and its overstandard condition, six test points were selected around the factory of manufacturing plant, and then, the standard index method (the formula below) was used to calculate the standard pH index of groundwater at each point.

$$S_{\text{pH},j} = \frac{7.0 - \text{pH}_j}{7.0 - \text{pH}_{\text{sd}}} \left(\text{pH}_j \leq 7.0 \right), \quad (2)$$

$$S_{\text{pH},j} = \frac{\text{pH}_j - 7.0}{\text{pH}_{\text{su}} - 7.0} \left(\text{pH}_j > 7.0 \right),$$

where $S_{\text{pH},j}$ is the standard index of groundwater pH at a certain point, pH_j is the measured value of groundwater pH at a certain point, and pH_{su} and pH_{sd} are the upper and lower limits of pH in the standard, respectively. Specific test and calculation results are shown in Table 5.

Table 5 shows that the pH of groundwater at each point is within the standard limit value (6.5-8.5). Meanwhile, to

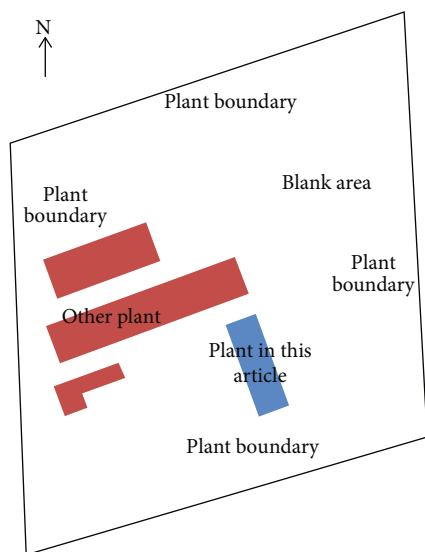


FIGURE 6: The schematic diagram of the plant and its surrounding buildings.

more intuitively reflect the degree of exceeding or reaching the standard of measured values, the measured values are used to calculate the standard index of each point. According to the definition of the standard index method, if the standard index is greater than 1, the index exceeds the standard, and the larger the value is, the more serious it is. Conversely, if the standard index is less than 1, it is qualified, and the smaller the value, the closer it is to the median of the standard limit. According to the calculation results shown in Table 5, the pH of the groundwater at the six points does not exceed the standard, and the largest standard index is 0.1 of point 3, which is still 90% lower than the judgment basis 1, indicating a high standard.

The wastewater produced during the construction period includes construction wastewater and domestic sewage [14]. The construction of the production plant will use a variety of construction machinery, and taking into account the actual construction characteristics, these engineering machineries in use need to be cleaned, and the cleaning operation will produce wastewater containing oil substances and suspended solids. The amount of wastewater produced every day is 0.5 m^3 , and the construction waste cannot be discharged outside. After oil separation and precipitation treatment, it can be used for inhibition of dust in the construction area, which will not affect the construction area and the surrounding water environment and continue to produce construction wastewater after construction [15]. The domestic sewage comes from the domestic water of the construction personnel. According to the construction plan, the number of people participating in the construction of the production plant is 30, and according to the fact that the amount of water per person a day is 25 L, the daily water consumption during the construction period is 0.75 m^3 . According to the situation that the wastewater quantity is 80% of the total water consumption, the domestic sewage quantity is 0.6 m^3 per day. The main components in domestic sewage include ammonia nitrogen compounds and all

TABLE 6: Intensity and distance limits of different noise sources.

Name of noise sources	Intensity of noise source (dB)	Minimum interference radius of different limits (m)	
		70 dB (day)	55 dB (night)
Electric saw	103	45	251
Bending machine	90	50	281
Carpenter's plane	87	21	119
Concrete mixer	87	21	119
Electric welding machine	86	32	177
Concrete pump truck	85	28	158
Excavator	81	18	100
Steel bar shearing machine	77	16	88

kinds of organic matters, which will be finally discharged to the sewage treatment plant after being treated by the existing septic tank in the factory of manufacturing plant, without any pollution to the water environment of the construction area and its surroundings.

2.3. Noise Pollution Analysis. During the construction period, the noise mainly comes from the use of construction machinery and the operation of transport vehicles, and some noise will also be generated during construction [16]. There are many kinds and quantities of noise sources, including fixed and mobile noise sources in space, continuous noise sources, and instantaneous noise sources in time. The intensity of these noise sources is high, which will affect the construction area and its surrounding environment to a certain extent. Figure 6 is schematic diagram of the surrounding area of the plant, and Table 6 shows various noise sources and their minimum interference radii at different limits.

Based on relevant standards, the construction noise limit is 70 dB during the day and 55 dB at night. Based on the data in Table 6, to guarantee that all noises are reduced to the limit of 70 dB during daytime construction of the production plant, the maximum value of each minimum interference radius under 70 dB should be taken as the construction plant boundary; that is, the minimum distance between the construction plant boundary and the noise source should be 50 m. Similarly, in order to meet the requirement of 55 dB of construction noise at night, the minimum distance between the construction site and the noise source should be 281 m. The construction site of the project is a rectangular area of $96 \text{ m} \times 58 \text{ m}$, and the location of some noise sources during the construction is not fixed, with a certain fluidity. Therefore, there are different degrees of excessive noises in both daytime and night construction, and the excessive noises in night construction are particularly serious. According to the standard requirements and combined with the actual situation, the production plant construction project

is only conducted in the day. Meanwhile, the construction area is surrounded by other production plants, which have higher noise during daytime production, so the production plant will not cause a significant noise impact on the surrounding environment during daytime construction.

2.4. Solid Waste Pollution Analysis. The solid waste generated by the construction of the production plant is divided into two categories: domestic waste and construction waste [17]. As mentioned above, there are 30 people participating in the construction of the production plant, and the amount of household waste generated by the construction workers is calculated as 0.7 kg per person per day, so the daily production of household waste is 21 kg. The domestic garbage generated during the construction is uniformly collected by manufacturing plant and then regularly handed over to the local municipal sanitation department for unified treatment.

Construction waste will be generated during the construction of the production plant, which mainly comes from the waste stone soil generated by leveling the construction site and digging foundation pits or ditches. During the construction of the plant, 0.5–1.0 kg construction waste will be generated per square meter, and the amount of construction waste is related to the construction type, construction level, and management level. Combined with the actual construction situation of the production plant, the output of construction waste is set as 1.0 kg/m². The construction area of the production plant is 4195 m², so the total construction waste generated during the construction period is about 4.2 t. For construction waste, what should be considered first is to recycle the usable part and send the unusable part to the construction waste landfill [18, 19].

3. Conclusion

An environmental impact assessment was carried out on the construction projects of several newly built plants, and the following conclusions were drawn: (1) dust and tail gas are major air pollution sources. Measures such as road hardening, boundary fencing, and bare ground covering can be taken to reduce dust emissions, and the spread of dust can be effectively inhibited by watering. The average wind speed in August is 2.50 m/s, and the precipitation in July is 186.4 mm, so summer is the best time for construction. (2) The amount of wastewater produced every day is 0.5 m³, which can be used for dust suppression. The daily amount of sewage during the construction period is 0.6 m³, which can be directly discharged to the pipe network without polluting the local water environment. (3) The minimum boundary distance between day construction and night construction is 50 m and 281 m, respectively. The noise generated in the construction process slightly exceeds the standard, but the construction area is within the parts production area, which can be ignored. (4) The total amount of construction waste generated during the construction period is about 4.2 t, and the daily production of domestic waste is 21 kg. Except for the recyclable part, the rest will be treated in a centralized manner, so as not to pollute the surrounding environment.

In general, natural resources themselves have dual attributes of resources and environment. Each category of natural resources is the material basis for the survival of human beings and other living things. When exploited, they show the property of resources. As an important part of ecosystem, natural resources not only have the function of ecosystem service supply but also are sensitive to external disturbance, presenting their environmental attributes. Therefore, it is necessary to fully grasp the environment as a resource attribute and the resource as an environment attribute.

As the ecological balance only “naturally” exists on the premise of weak human intervention, under the background of strong intervention of human activities such as the development and utilization of natural resources, it is suggested that the category of environmental impact assessment should be expanded in natural resource management and the evaluation of negative effects of ecological management activities in industrial construction on biodiversity.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The author declares no conflict of interest.

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