建设项目环境影响报告表

项 目 名 称：必欧瀚创新型体外诊断试剂及配套仪器研发生产基地建设项目

建设单位(盖章)：必欧瀚生物技术（合肥）有限公司

编制日期：2017 年 12 月

建设项目环境影响评价资质证书

机构名称：安徽三的环境科技有限公司
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证书编号：国环评证　乙　字第　2138　号
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项　目　名　称：必欧瀚创新型体外诊断试剂及配套仪器研发生产基地建设项目

建　设　单　位：必欧瀚生物技术（合肥）有限公司

评　价　类　别：环境影响报告表

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NO：3DHJ-1702819

必欧瀚生物技术（合肥）有限公司

必欧瀚创新型体外诊断试剂及配套仪器研发生产基地建设项目

环境影响报告表编制人员名单

编制主持人		姓名	职（执）业资格证书编号	登记（注册证）编号	专业类别	本人签名
		郭凯琴	HP0012278	B213800608	社会服务	
主要编制人员情况一览表	序号	姓名	职（执）业资格证书编号	登记（注册证）编号	编制内容	本人签名
	1	郭凯琴	HP0012278	B213800608	4、评价适用标准 5、建设项目工程分析 6、项目主要污染物产生及预计排放情况 7、环境影响分析 8、项目拟采取的防治措施及预期治理效果	
	2	蒋慧婷	HP00018292	B213800508	1、建设项目基本情况 2、建设项目所在地自然环境社会环境简况 3、环境质量状况 9、结论与建议	

Instructions for the Preparation of the Construction Project Environmental Impact Report

The Environmental Impact Report of Construction Project shall be prepared by a qualified unit engaged in environmental assessment.

Position compilation.

1. Project name - refers to the name of the project when it is approved, which should not exceed 30 characters (two

English fields as one Chinese character).

2. Construction location - refers to the detailed address of the project location. Highways and railways should be filled in at the beginning and end.

Stop location.

3. Industry category - fill in according to national standards.

4. Total investment refers to the total investment in the project.

5. Main environmental protection targets - refers to the concentrated residential areas within a certain range around the project area.

Residential areas, schools, hospitals, protected cultural relics, scenic spots, water sources and ecologically sensitive areas, etc.

The protection objectives, nature, scale and distance from the factory boundary should be given as much as possible.

6. Conclusion and Recommendations - Provide the project's clean production, emission standards and total volume control

The analysis conclusions shall be used to determine the effectiveness of pollution prevention and control measures and to explain the environmental impact of this project.

Impact, give a clear conclusion on the environmental feasibility of the construction project. At the same time, it proposes to reduce the environmental impact

other suggestions.

7. Preliminary review opinions - the industry competent department shall fill in the reply opinions. If there is no competent department,

It is not necessary to fill in the items.

8. Approval opinion - approved by the environmental protection administrative department responsible for approving the project.

complex.

Basic information of construction projects

Project Name	BIOHIT innovative in vitro diagnostic reagents and supporting instruments R&D and production base construction project				
Construction Unit	BIOHIT Biotech (Hefei) Co., Ltd.				
Legal representative	Liu Feng		Contact	Wang Li	
Correspondence address	4th Floor, Building D9, Innovation Industrial Park, Hefei High-tech Industrial Development Zone				
Contact number: 15155154681 Fax:			/	Postal code 230000	
Construction site	Northeast corner of the intersection of Kongquetai Road and Chang'an Road, Hefei High-tech Industrial Development Zone				
Project establishment Approval Department	Hefei High-tech Industrial Development Zone Economic Trade Bureau		Approval No. Hegao Jingmao [2017] No. 695		
Nature of construction	New		Industry categories and codes code	Manufacturing of sanitary materials and medical supplies (C2770) Pharmaceutical Equipment Manufacturing (C3544)	
Floor space (square meters)	16680		Green area (square meters)	1668	
Total investment Evaluation	30,000	Of which: Environmental protection investment (10,000 yuan)	195	Environmental protection investment accounts for total investment Proportion	0.65%
expenses (10,000 yuan) (10,000 yuan)	/	Expected start date	December 2018		

Project content and scale:

1. Project Overview

BIOHIT Biotech (Hefei) Co., Ltd. BIOHIT innovative in vitro diagnostic reagents and supporting instruments R&D and production base

The construction site of the project is located at the northeast corner of the intersection of Kongquetai Road and Chang'an Road in Hefei High-tech Industrial Development Zone (north latitude 31°48ÿ29" E, 117°05ÿ50" E) (See attached figure 1: Geographic location map of the construction project).

On December 4, the project was approved for filing by the Economic and Trade Bureau of Hefei High-tech Industrial Development Zone (Hefei High-tech Economic and Trade [2017] No. 695).

The project covers a total area of 16680m2, mainly building four factories, including 1# factory building with 3 floors, 2# testing center with 3 floors, 3# The factory building is 5 stories (partially 4 stories), and the 4# factory building is 4 stories. It is mainly engaged in the production of in vitro diagnostic kits and testing instruments. After the project reaches full capacity, it will produce 75 million test kits and 1,000 test instruments annually. The total investment of the project is RMB 300 million, of which Environmental protection investment is RMB 1.95 million, accounting for 0.65% of the total investment.

The east side of this project is industrial land to be built, the south side is industrial land to be built across Chang'an Road, and the west side is industrial land to be built.

The north side is separated from the planned branch road by the industrial land to be built (see Figure 2: Schematic diagram of the surrounding environment of the construction project and the layout of noise monitoring points for details).

picture).

According to the Environmental Impact Assessment Law of the People's Republic of China, the Regulations on Environmental Protection Management of Construction Projects and other relevant regulations

The construction unit, BIOHIT Biotechnology (Hefei) Co., Ltd., commissioned Anhui San Environmental Technology Co., Ltd. to carry out the project.

Conduct environmental impact assessment. Our company accepts the commission at this stage, and the relevant personnel prepare the project after conducting on-site surveys.

Environmental impact report form is submitted to the environmental protection authorities for approval and management.

2. Main construction content and scale

The diagnostic kits for this project include pepsinogen I kit, pepsinogen II kit, gastrin 17 kit,

There are four types of Helicobacter pylori IgG test kits, which use enzyme-linked immunosorbent assay, chemiluminescence assay, and fluorescence immunochromatography assay respectively.

The four test kits for each process are produced on the same line. The test instruments include fluorescent immunoassay analyzer, chemical

Luminescence testers are mainly produced using assembly technology. The main construction content and scale of this project are detailed in Table 1:

Table **1** List of main construction contents of the project Project contents

Project Category Project Name			The project has a
	ELISA production workshop	Located on the east side of the 2F of Building 4, it mainly uses enzyme-linked immunosorbent assay (ELISA) to produce test kits. The main equipment includes bottle washing and drying machines, filling and capping machines, washing and sealing machines, multi-function enzyme label analyzers, etc.	construction area of about 784m2. After completion and production, it can produce 1 million doses of Pepsinogen I test kits, 1 million doses of Pepsinogen II test kits, 8 million doses of Gastrin 17 test kits, and 2 million doses of Helicobacter pylori IgG test kits annually. The construction area is about 784m2. After completion and production, it can produce 1 million doses of Pepsinogen I test kits, 1
	Chemiluminescence production workshop	Located on the west side of the 2F of Building 4, it mainly uses chemiluminescence to produce test kits. The main equipment includes bottle washing and drying machines, filling and capping machines, washing and sealing machines, multi-functional enzyme label analyzers, etc.	million doses of Pepsinogen II test kits, 4 million doses of Gastrin 17 test kits, and 2 million doses of Helicobacter pylori IgG test kits annually. The construction area is about 1568m2. After completion and production , it can produce 8 million doses of Pepsinogen I test kits, 8 million doses of Pepsinogen II test kits, 31 million doses of Gastrin 17 test kits, and 10 million doses of Helicobacter pylori IgG test
	Fluorescent immunochromatography production workshop	Located on the 3rd floor of Building 4, it mainly uses fluorescent immunochromatography to produce test kits. The main equipment includes XYZ three-dimensional film spraying instrument, Besta cutting and carding machine, dehumidifier, etc.	kits annually.
	Fluorescence immunoassay production workshop	Located on the 2nd floor of the 1st plant, it mainly produces fluorescent immunoassay analyzers. The main processes are assembly and welding. The main equipment includes soldering stations, hot air guns, dielectric strength testers, ground impedance testers, leakage current testers, etc. Located on the 3rd floor of the 1st plant, it mainly	The building area is about 1022m2. After completion and production, it can produce 8,000 fluorescent immunoassay analyzers annually.
	Chemiluminescence tester production workshop	produces chemiluminescence testers. The main processes are assembly and welding. The main equipment includes soldering stations, hot air guns, electric blast drying ovens, dielectric strength testers, ground impedance testers, leakage current testers, etc.	The building area is about 1022m2. After completion and production, it can produce 2000 chemiluminescence testers annually.

Auxiliary Engineering	Air purification system	The air-conditioning room is located on the 1F of the 4# plant. The 3# and 4# plants are each equipped with one central air-conditioning system, for a total of two sets, which are air-cooled.	Maintain constant temperature and humidity in the production workshop, and meet workshop cleanliness requirements
	Pure water preparation system	Located on the 4F of the 4# plant, one set of water purification equipment + one set of reverse osmosis device are installed, with a purification and preparation capacity of 2t/h.	Meet the demand for purified water production
	Duty room	Located on the west side of the 1# plant 1F,	Building area of about 150m2
	Testing Center	located on the 3# testing center 2# and the 5# plant 3#, mainly for product quality testing. Located on the 2#, 3#, and 4# plants,	Building area of about 2500m2
	R&D	mainly for new product development.	Building area of about 3000m2
	The canteen is located on the 1F of the 2# Testing Center and has 4 stoves.		The building area is about 903m2, which can accommodate 180 people for
	The office is located on the 2nd floor of the 2# Testing Center and is used for daily work.		dining. The building area is about 903m2, which can accommodate 80 people for daily office
Storage and transportation engineering	Raw material warehouse	Located on the east side of 1F, Building 1#, it is mainly used to store raw and auxiliary materials for the production workshops of fluorescent immunoassay and chemiluminescence tester.	work. The building area is about 200m2, with a storage period of about two months, and a maximum storage capacity of about 20 401 glues, 20 AB glues, 20 rolls of lead-free welding wire (5kg), 2,000 linear stepper motors, 2,000 sets of filters, 2,000 sets of light-emitting diodes, 5,000 sets of power-generating diodes, 150,000 pieces of resistors, 200,000 pieces of capacitors, 2,000 sets of electronic wires, etc. The building area is about 400m2, with a storage period of about half a month, and a maximum storage capacity of about 350
	Finished product warehouse	Located in the middle of the 1F of Building 1#, it is mainly used to store assembled fluorescent immunoassays and chemiluminescence testers.	fluorescent immunoassay analyzers and 85 chemiluminescence testers. The building area is about 800m2, with a storage period of about three days, and a maximum storage capacity of about 90,000 copies of pepsinogen
		Located on the east side of the 1F of Building 4#, it is mainly used to store Pepsinogen I test kit, Pepsinogen II test kit, Gastrin 17 test kit, Helicobacter pylori IgG test kit, etc. It is a 2~8ÿ cold storage room.	I test kits, 90,000 copies of pepsinogen II test kits, 350,000 copies of gastrin 17 test kits, and Helicobacter pylori IgG. The test kit has a capacity of 120,000 copies and a construction area of approximately 50m2. The storage period is approximately one month. The maximum storage capacity is 10kg of potassium dihydrogen phosphate, 10kg of dipotassium hydrogen phosphate, 10kg of disodium
	Chemical Library	Located on the 1F of Building 4, it is used to store chemicals used in the chemiluminescence production workshop, enzyme-linked immunosorbent assay production workshop, and fluorescent immunochromatography production workshop.	hydrogen phosphate, 10kg of sodium dihydrogen phosphate, 0.5kg of sodium tetraborate, 5L of ethylene glycol, 5L of glycerol, 10kg of sulfuric acid, 0.5kg of potassium permanganate, and 1kg of sodium hydroxide. The construction area is 200m2 and it mainly stores raw materials such as pepsinogen I, pepsinogen II, gastrin 17, Helicobacter pylori IgG, and Bangs fluorescent microspheres. The annual water consumption is 10,042.62 tons.
	cold storage	Located on the west side of the 1F of Building 4, it is used to store raw materials for the chemiluminescence production workshop, enzyme-linked immunosorbent production workshop, and fluorescent immunochromatography production workshop. The refrigeration unit of this cold storage uses R22 as the refrigerant and is	
Public Works	water supply	supplied by the municipal water supply network of the High-tech Zone.	
	Gas supply	The project area is supplied by the municipal pipe network of	/
	drain	the High-tech Zone and adopts a rainwater and sewage separation system. Rainwater is directly discharged into the rainwater pipe, and the canteen wastewater is discharged through the oil-water separator.	Annual displacement: 8454.0105 tons

		After treatment, it is treated in a septic tank together with cleaning wastewater, staff office and domestic wastewater, and workshop utensil washing wastewater, and then discharged into the municipal sewage network together with clean sewage. After being treated by the Hefei Economic Development Zone Sewage Treatment Plant, it is discharged into the Pai River and supplied with electricity by the	
	powered by	municipal power grid of the High-tech Zone.	Annual electricity consumption: 400,000 kWh
	Heating and cooling	The project office uses split air conditioners for cooling in summer and heating in winter. Central air conditioners are installed in Plant 3# and Plant 4#, while Plant 1# and Testing Center 2# do not have air conditioners. The rainwater and sewage pipe network and septic tank are used. The	
Environmental Protection Engineering	Wastewater treatment	waste liquid from enzyme labeling plate washing, residual liquid and initial washing and rinsing waste liquid generated in the workshop, testing room washing waste liquid, and nitrogen-, sulfur-, and boron-containing waste liquid generated from initial washing, activation, and final washing of magnetic microspheres are collected separately and treated as hazardous waste. The canteen wastewater is treated in an oil-water separator and then combined with cleaning wastewater, employee office and domestic sewage, and workshop utensil washing wastewater. After treatment in a septic tank, it is combined with clean sewage and discharged into the municipal sewage network. The welding fume is treated in a welding fume purifier with a treatment efficiency of 85%. The non-methane total hydrocarbons generated	
	Waste gas treatment	in the dispensing process are collected in a gas collection hood and discharged from a 15m high exhaust pipe (1#) after activated	
		carbon treatment, with a collection efficiency of 80% and a treatment efficiency of 90%. The non-methane total hydrocarbons generated in the substrate solution preparation process are collected in a biosafety cabinet and discharged from a 15m high exhaust pipe (1#) after activated carbon treatment. High exhaust stack	
		(2#) discharges, with a collection efficiency of 98% and a treatment efficiency of 90%. Canteen fumes are discharged after being treated by fume purifiers. Low-noise equipment, vibration reduction bases, and sound insulation of factory buildings are purchased. Domestic garbage is bagged and collected separately and handed over to the municipal	
		sanitation department for treatment. Waste packaging materials, waste wiring materials,	
	Noise control	waste quartz sand, waste activated carbon produced by pure water preparation, and waste reverse	
	solid waste disposal	osmosis membranes are collected centrally and recycled by the material company. Unqualified products, waste activated carbon, waste paper towels,	
		enzyme labeling plate cleaning waste liquid, nitrogen-containing, sulfur-containing and boron-containing waste liquid, residual liquid and initial rinse liquid, testing room cleaning waste liquid and other hazardous wastes are temporarily stored in the factory area and then handed over to qualified units for	
		disposal. The hazardous waste warehouse is located in the southwest corner of the 1F of the 4# factory building, covering an area of about 100m2. The chemical warehouse and hazardous waste warehouse are hardened and epoxy resin is brushed on the ground for anti-seepage and anti-corrosion measures.	
	Environmental risk prevention		
		A 120m3 emergency pool is located in the southeast of the plant and a shut-off valve is installed.	

3. Overall layout

This project is located at the northeast corner of the intersection of Kongquetai Road and Chang'an Road in Hefei High-tech Industrial Development Zone.

The project area from south to north is divided into 1# plant, 2# testing center, 3# plant, 4# plant. The layout of each plant is as follows

(See Figure 3: Factory Layout for details):

The west side of the 1F of the 1# plant is the duty room, the middle is the finished product warehouse, the east side is the raw material warehouse, and the 2F is the fluorescent immunoassay production line.

The 3F is the production workshop for chemiluminescence testers;

The 1F of the 2# testing center is a cafeteria, the 2F is an office, and the 3F is a testing center;

The 1F of the 3# plant is for warehousing, the 2-4F are for R&D centers, and the 5F is for testing centers;

The north side of the 1F of the 4# plant is composed of cold storage, finished product storage, and chemical storage from west to east, and the south side is composed of hazardous waste storage,

Air-conditioned room, 2F is the enzyme-linked immunosorbent assay production workshop and chemiluminescence production workshop, 3F is the fluorescent immunochromatography production workshop, 4F

This is the pure water preparation room.

4. Main products and output

The diagnostic kits for this project include pepsinogen I kit, pepsinogen II kit, gastrin 17 kit,

There are four types of Helicobacter pylori IgG test kits, which use enzyme-linked immunosorbent assay, chemiluminescence assay, and fluorescence immunochromatography assay respectively.

The four kits for each process are produced on the same line, including enzyme-linked immunosorbent assay, chemiluminescence assay and fluorescence

The production capacity of immunochromatographic kits is 10 million copies/a, 8 million copies/a, and 57 million copies/a respectively.

500 batches were produced, with 20,000, 16,000 and 114,000 doses respectively. The testing instruments included fluorescent immunoassay analyzers,

Chemiluminescence testers are mainly produced using assembly technology. The specific annual output of in vitro diagnostic kits and test instruments is shown in Table 2:

Table **2** List of main product solutions for construction projects

Product Name			Product	quantity	unit
In vitro diagnosis Cut-off reagent box	peptic protein Proenzyme I Reagent test kit	Enzyme-linked immunosorbent assay	Specifications 96 servings/box Minimum detection limit: no more than 1.9ug/L	100	10,000 servings
		Chemiluminescence detection limit: no more than 1.9ug/L		100	10,000 servings
		Fluorescence immunochromatography minimum detection limit: no more than 1.9ug/L		800	10,000 servings
		total	/	1000	10,000 servings
	peptic protein Proenzyme II Reagent test kit	Enzyme-linked immunosorbent assay minimum detection limit: no more than 1.0ug/L		100	10,000 servings
		Chemiluminescence detection limit: no more than 1.0ug/L		100	10,000 servings
		Fluorescence immunochromatography minimum detection limit: no more than 1.0ug/L		800	10,000 servings
		total	/	1000	10,000 servings
	Gastrin 17 Reagents box	Enzyme-linked immunosorbent assay minimum detection limit: no more than 0.5 pmol/L		600	10,000 servings
		Chemiluminescence detection limit: no more than 0.5pmol/L		400	10,000 servings
		Fluorescence immunochromatography minimum detection limit: no more than 0.5pmol/L		3100	10,000 servings
		total	/	4100	10,000 servings
	Helicobacter pylori Bacillus IgG Reagent test kit	Minimum detection limit of enzyme-linked immunosorbent assay: no more than 15 EIU		200	10,000 servings
		Chemiluminescence detection limit: no more than 15 EIU		200	10,000 servings
		Fluorescence immunochromatography minimum detection limit: no more than 15 EIU		1000	10,000 servings
		total	/	1400	10,000 servings
	total		/	7500	10,000 servings
Tester Device	Fluorescence immunoassay analyzer		/	8000	tower
	Chemiluminescence tester		/	2000	tower
	total		/	10000	tower

Table **3** List of main production process plans for construction projects

Production process	Annual output Production batches Production volume Specifications for each batch				Production time
Enzyme-linked immunosorbent assay	10 million servings/a 500 batches/year 20,000 servings/batch 528g/serving 15 days (cycle production)				
Chemiluminescence	8 million servings/a 500 batches/year 16,000 servings/batch 299g/serving 7 days (cycle production)				
Fluorescence immunochromatography	57 million doses/year 500 batches/year 114,000 doses/batch 265.3g/dose 5 days (cycle production)				

In vitro diagnostic kit function introduction:

Pepsinogen I Kit, Pepsinogen II Kit: Pepsinogen is an inactive precursor of pepsin.

Synthesized by the chief cells of the oxyntic gland, it is divided into two subgroups based on its biochemical properties and immunogenicity.

The same as the pepsinogen I, mainly secreted by the chief cells and mucous neck cells of the fundic glands; components 6 and 7 are called

The development of gastric diseases caused by pepsinogen (PG) can be generally described as: superficial gastritis

——Gastric mucosal erosion and ulcer——Atrophic gastritis——Gastric cancer, it has a good diagnostic and screening effect on diseases.

The Pepsinogen I/II Kit is used to detect the content of Pepsinogen I/II in serum or plasma.

The advantage of speed avoids the harm of X-rays to the human body and the inconvenience of gastroscopy.

Gastrin 17 Kit: Gastrin is an important gastrointestinal hormone secreted by G cells in the gastric pyloric mucosa.

The gastrin molecules in plasma have various structures, including 17

The small gastrin (gastrin-17) composed of amino acid residues has the strongest activity, accounting for about 2/3 of the total. This kit is suitable for

In vitro quantitative determination of gastrin-17 concentration in human serum or plasma.

Helicobacter pylori IgG kit: Helicobacter pylori IgG ELISA test is an enzyme-linked immunosorbent assay (ELISA).

For the quantitative detection of IgG (immunoglobulin) human antibodies to Helicobacter pylori in plasma and serum.

Intended for use in adult patients with clinical symptoms of gastritis to assist in the diagnosis of Helicobacter pylori infection. For in vitro diagnostic use.

The main antibodies and antigens in this project are provided by BIOHIT Finland, and the production and development of antibodies and antigens are not involved.

All the raw materials used are inactive zymogens, non-toxic and non-pathogenic.

5. List of main equipment

The main production equipment of this project is shown in Table 4:

Table **4** List of main equipment for construction projects

Serial number	Device Name	model	quantity	unit
Enzyme-linked immunosorbent assay production line, chemiluminescence production line				

1	Purification air conditioner	KZW2114DH(TMC2 026BHX)	1	tower
2	Purification air conditioner	KZW1209DH(TSD75 JRDI)	1	tower
3	air compressor	GAe26P-8.5	1	tower
4	Reverse osmosis device	2T/H	1	set
5	Bottle washing and drying machine	XXC1248	1	tower
6	Filling and capping machines	ZLY102	2	tower
7	Filling and capping machines	ZLY104	2	tower
8	Washing and sealing machine	ARE1396	1	tower
9	Multifunctional ELISA analyzer	MB-580	1	tower
10	electronic balance	TLE4002E /02	1	tower
Fluorescence immunochromatography production line				
1	Purification air conditioner	TSD150CRI	1	tower
2	XYZ 3D Scribing and Sputtering Instrument	HM3230	1	tower
3	Besta card cutting and card binding machine	/	2	tower
Quality Inspection Center				
1	Purification air conditioner	KZW0906DV(TSD10 0JRI)	1	tower
2	Purification air conditioner	KZW0906DV(TSD50 CRI)	1	tower
3	Purification air	TSD50CRI	1	tower
4	conditioning electric constant temperature blast drying oven	DHG-9240A	1	tower
5	Mold incubator, electric	MJ-250	1	tower
6	constant temperature incubator,	DHP-9272A	1	tower
7	digital constant temperature water	HH-S6	1	tower
8	bath, fully automatic enzyme plate	PW-812	1	tower
9	washer, watertight constant temperature	GHP-270	1	tower
10	incubator,	MX-F	1	tower
11	oscillator, refrigerator	ZBM1380HPA	1	tower
R&D				
1	Oscillator	MX-M	1	tower
2		BCD-539WT	1	tower
3	Refrigerator Constant Temperature	SHZ-82	1	tower
4	Water Bath Oscillator Vortex Oscillator	MX-F	1	tower
5	Luminescence meter	LUMIART-II-1(Full move)	1	tower
6	Electronic moisture-proof box	CTA1436AFD	1	tower
7	dehumidifier	ST-890B	1	tower
8	Electric blast drying oven	GZX-9240MBE	1	tower
9	Vortex mixer	MX-F	1	tower

10	magnetic stirrer	MS-H-Pro+	1	tower
11	Off-type shaker	SK-L180-Pro	1	tower
12	Laminating instrument	LM5000	1	tower
13	Luminescence meter	LUMIART-II-1 (Fully Automatic)	1	tower
14	Biological safety	BSC-1300ÿB2	1	tower
15	cabinet, fluorescence inverted	IX73	1	tower
16	microscope, clean bench	SW-CJ-2FD	1	tower
17	CO2 Incubator	HERACELL150i	1	tower
18	Clean bench,	SW-CJ-2FD	1	tower
19	refrigerator,	BCD-571WDPF	1	tower
20		REC5004V	1	tower
twenty one		AKTAprime plus	1	tower
twenty two	chromatography cabinet, purifier,	JY98-IIIDN	1	tower
twenty three	ultrasonic cell	5021824	1	tower
twenty four	disruptor,	888	1	tower
25	enzyme-labeled analyzer,	HPX-9162MBE	1	tower
26	plate washer, electric	90-3	1	tower
27	constant temperature	90-3	1	tower
28	incubator, magnetic stirrer, magnetic stirrer, fully automatic flake ice maker	IMS-40	1	tower
29	Vertical automatic pressure steam sterilizer Electric blast	GR110DA	1	tower
30	drying oven Electric	GZX-9140MBE	1	tower
31	constant temperature incubator	HPX-9162MBE	1	tower
32	ALLEGRAX-15R centrifuge, 230V, 12A, 50Hz, refrigerated high-speed centrifuge,		1	tower
33	electrophoresis instrument	Legend Micro 21R	1	tower
34	power supply,	DYY-6C	1	tower
35	constant	DYY-6C	1	tower
36	temperature	MQD-B2T	1	tower
37	shaker, gene	ETC811	1	tower
38	amplification instrument, chemiluminescence imager	5300	1	tower
39	Luminescence meter	LUMIART-II-1 (Fully Automatic)	1	tower
40	Gel Image System Biosafety Cabinet	Tanon-1600	1	tower
41		BSC-1000ÿB2	1	tower
42	refrigerator	BCD-649WE	1	tower
43	refrigerator	BCD-649WE	1	tower
44	Oil-free vacuum	TS-02P	1	tower
45	pump	BCD-571WDPF	1	tower
46	refrigerator clean bench	SW-CJ-2FD	1	tower

47	Magnetic stirring heating mantle	CLT-1A	1	tower
48	Semi-automatic (automatic) shell pressing machine	YK725	1	tower
49	Microcomputer automatic cutting machine	ZQ2000	1	tower
50	XYZ 3D Scribing and Sputtering Instrument	HM3230	1	tower
51	Manual roller paper cutter	RPT-380	1	tower
52	3D Rotating Mixer	RH-18	1	tower
53	centrifuge	D3024R	1	tower
54	Mixer	MX-T6-S	1	tower
55	electronic balance	ME204E /02	1	tower
56	Fluorescence immunoassay analyzer	HIT-91A	1	tower
57	Fluorescence immunoassay	HIT-91A	1	tower
58	analyzer laboratory pH meter	PHSJ-4F	1	tower
59	electronic balance	ME303/02	1	tower
60	Fluorescence immunoassay	ESLF50-MB-3102	1	tower
61	electronic balance	HZT-A500	1	tower
62	Semi-automatic chemiluminescence analyzer	CIA60	1	tower
63	Fully automatic chemiluminescence analyzer	CIA600	1	tower
64	cell counter	Countess	1	tower
65	pH meter,	FE28	1	tower
66	fluorescent immunoassay quantitative	Getein 1100	1	tower
analyzer, fluorescent immunoassay production line, chemiluminescence tester production line				
1	Oscilloscope	DSOX2014A	1	tower
2	Multimeter	UT890	3	indivual
3	multimeter	17B CAT ÿ 600 Fu	2	indivual
4	Dielectric strength tester	GPT-9603	1	tower
5	Ground impedance tester	GCT-9040	1	tower
6	Leakage current tester	GLC-9000	1	tower
7	Power	GPD-4303S	2	tower
8	supply	/	5	indivual
9	Thermohygrometer Moisture proof box	CTA1436AFD	2	tower
10	Vernier caliper	Digital Caliper 0-150mm	1	Bundle
11	Electric blast drying oven	GZX-9140MBE	2	tower
12	Soldering station	PS-900	8	tower
13	heat gun	L502850	2	tower
14	LED tester	LED626	1	tower
15	electric screwdriver	OS-500	10	Bundle
16	Button hand	B6512	1	Bundle

17	Small grinder	DREMEL 3000	1	tower
18	Manual Phillips screwdriver	/	20	Bundle
19	Hexagon screwdriver	/	10	set
Environmental protection equipment				
1	Mobile welding fume purifier	2000m3 /h	8	tower
2	Oil fume purifier	8000m3 /h	1	tower
3	Fume hood	/	1	set
4	Biological safety cabinets	2000m3 /h	1	tower
5	Activated carbon adsorption device	/	2	set
6	exhaust pipe	15m	2	root

6. Consumption of main raw and auxiliary materials and energy consumption

The main raw and auxiliary material consumption and energy consumption of this project are detailed in Table 5:

Table **5** List of raw materials and consumption of construction projects

name		Specification	Annual consumption quantity	Maximum storage Stock	unit	use
Pepsinogen I kit, Pepsinogen II kit, Gastrin **17** kit, Helicobacter pylori **IgG** kit						
Original material	Pepsinogen I	Glass bottle: 3ml/bottle Plastic bottle: 125ml/ Bottle, 15ml/bottle	10	/	g	Detection antigen
	Pepsinogen II	Glass bottle: 3ml/bottle Plastic bottle: 125ml/ Bottle, 15ml/bottle	10	/	g	Detection antigen
	Gastrin 17	Glass bottle: 3ml/bottle Plastic bottle: 125ml/ Bottle, 15ml/bottle	20	/	g	Detection antigen
	Helicobacter pylori IgG	Glass bottle: 3ml/bottle Plastic bottle: 125ml/bottle	15	/	g	Detection of antibodies
	Bangs fluorescent microsphere plastic bottle: 125ml/bottle 5 magnetic			/	g	Linked Antibodies
	beads plastic bottle: 125ml/bottle 5			/	g	Linked Antibodies
auxiliary material	963U reaction plate	Plastic bottles (capacity per bottle (varies)	70	/	10,000 yuan	Enzyme reaction carrier
	Protein Protectant	Plastic bottles (capacity per bottle (varies)	15	/	kg	Preparation of enzyme-labeled antibody standard solution and detergent
	BSA	Plastic bottles (capacity per bottle (varies)	1	/	kg	Preparation of coupling, blocking, and final washing Buffer, microspheres, sample dilution Release
	Trehalose	Plastic bottles (capacity per bottle (varies)	200	/	g	Preparation of microsphere diluent
	Tween-20	Plastic bottles (capacity per bottle (varies)	1	/	kg	Prepare initial wash buffer and final wash buffer buffer
	Luminol	25g/bottle	200	10	g	Luminescent substrate

	phosphoric acid Salt	Potassium dihydrogen phosphate, chemically pure (500g/bottle) 150		10	kg	buffer solution
		Potassium dihydrogen phosphate, chemically pure (500g/bottle) 150		10	kg	buffer solution
		Disodium hydrogen phosphate, chemically pure (500g/bottle) 150		10	kg	buffer solution
		Sodium dihydrogen phosphate, chemically pure (500g/bottle) 150		10	kg	buffer solution
	Sodium tetraborate 500g/bottle Ethylene glycol		1	0.5	kg	Prepare coupling buffer
	500ml/bottle		60	5	L	Protein Protectant
	Glycerol	500ml/bottle	30	5	L	Protein Protectant
	98% chemically pure sulfuric acid (500g/bottle) 145.5			10	kg	Prepare stop solution
	potassium permanganate	500g/bottle	15	500	g	For the detection of easily oxidizable substances in purified water Test
	35% hydrochloric acid	500ml/bottle	1.5	1	L	Adjust reagent pH
	Sodium hydroxide	500g/bottle	2.5	1	kg	Adjust reagent pH
	65% nitric acid	2.5L/bottle	1.5	2.5	L	Passivation of pure water pipelines
	95% ethanol	500ml/bottle	100	10	L	Preparation of luminescent substrate
Fluorescence immunoassay analyzer, chemiluminescence tester						
Original material	401 glue	20g/stick	60	20	branch	Used to bond parts during assembly pieces
	AB glue	35g/stick	60	20	branch	Used to bond parts during assembly pieces
	Lead-free solder wire	Diameter 0.5mm 0.25kg/roll	12.5	5	kg	For welding parts
	Linear stepper motor	/	10000	2000 push measurement module scans		
	filter,	/	10000	2000 sets for selecting the required radiation band		
	photodiode, light	/	10000	5000 sets of light sources		
	emitting diode,	/	10000	2000 sets of excitation light sources		
	circuit board, semi-	/	20000	2000 blocks drive instrument operation		
	finished	/	1000000 150000 Piece voltage divider effect			
	product, chip	/	1200000 200000 Filtering and coupling			
	resistor,	/	30,000	3000 sets of control current, amplified signal		
	chip capacitor, diode, transistor	/	30,000	3000 sets of control current, amplified signal		
	MOS tube	/	30,000	3000 sets of control circuits		
	chip	/	150,000	3000 sets of control circuits		
	socket	/	20000	2000 sets connected to external		
	Digital circuit board	/	10000	2000 yuan		All operation and control circuits Base
	USB board	/	10000	2000 yuan		All operation and control circuits Base
	Machined	/	10000	2000 sets of instrument internal structure of the main body		
	plastic housing	/	10000	2000 sets of instrument internal structure of the main body		
	Electronic wire	/	10000	2000 sets		Load the entire instrument's internal structure Structure

	Pushbutton switch	/	10000	2000 sets		Connecting modules
	USB cable	/	3000	1000 sets of control module operation switches		
	Scanner	/	10000	2000 pieces		Connecting the computer and the instrument
	Hub	/	10000	2000		Scan QR code information
	Thermal Printer (Optional)	/	10000	2000 expansion USB connection ports		
	Plastic packaging boxes	/	2000	500	tower	Print
Energy consumption						
water		/	10042.62	/	ton	/
electricity		/	40	/ Wandu		/

Note: The main antibodies and antigens in this project are provided by BIOHIT Finland. The production and development of antibodies and antigens are not involved. All the materials are inactive zymogens, non-toxic and non-pathogenic.

Properties of raw and auxiliary materials:

Fluorescent microspheres: provided by Bangs. This project does not involve the production and development of fluorescent microspheres.

Refers to microspheres with fluorescent substances on their surface (including surface coating) or microspheres with fluorescent substances in their internal structure (such as embedding or polymerization)

The microspheres can emit fluorescence when stimulated by external energy.

Can be any shape, usually spherical. Fluorescent microspheres have good thermal stability, dispersibility, biocompatibility, high

Fluorescence stability and surface modifiability. We can provide a variety of fluorescent materials with different particle sizes, different colors, and different fluorescence fluxes.

Optical microspheres can be widely used in biological detection, disease diagnosis, immunoassay, liquid chip technology, high-throughput drug screening

(HTS) and other biomedical fields.

Phosphate: The phosphate used in the project is mainly sodium dihydrogen phosphate, which is used to prepare phosphate buffer with a pH between 8.0 and 8.5.

Solution. Colorless crystals or white crystalline powder. Odorless, salty, sour taste, density 1.949g/cm3, melting point 60ÿ, very easy to

Soluble in water, insoluble in alcohol, slightly soluble in chloroform. It is easy to agglomerate in moist air, dehydrates to anhydrous at 100ÿ, and dehydrates to anhydrous at 190-210ÿ.

It generates sodium pyrophosphate and decomposes into sodium metaphosphate at 280-300ÿ. It is slightly toxic and irritating to eyes and skin.

The product is non-flammable and irritating.

Sodium citrate: molecular formula C6H5Na3O7·2H2O, molecular weight 294.10, relative density 1.875 (23.5ÿ) g/cm3,

Colorless crystal or white crystalline powder, salty and refreshing, non-toxic, soluble in glycerin, hardly soluble in alcohol and other

Organic solvent, deliquescent, slightly weathered in hot air, loses crystal water and decomposes above 150ÿ.

Protein protective agent: The protein protective agent used in this project is a mixture of polysaccharide and albumin in a certain proportion.

Sugar is a widely used protein protectant, and albumin is a classic and excellent protein stabilizer with no toxicity or

Disease nature.

BSA (bovine serum albumin): is an albumin found in bovine serum, containing 583 amino acid residues and a molecular weight of

The product is 66.430 kDa, with an isoelectric point of 4.7. It is white crystals or off-white freeze-dried powder. It is soluble in water. It is difficult to salt out.

When the solution is heated to 60-70ÿ, the protein will coagulate and precipitate. Melting point: 240ÿ245ÿ, usually in blocking solution, sample diluent,

BSA is added to the enzyme conjugate diluent to increase the protein concentration in the solution and protect the enzyme.

It can stop enzyme decomposition and non-specific adsorption, reduce the denaturation of some enzymes, and reduce some adverse environmental factors such as heating.

It plays a stabilizing role in the denaturation caused by surface tension and chemical factors.

Trehalose: also known as trehalose, muscarinic acid, etc. It is a safe and reliable natural sugar. Trehalose can be used in research

Preservation of biological reagents, such as various enzymes, cell membranes, organelles, antibodies, antigens and viruses.

98% sulfuric acid: chemical formula H2SO4, molecular weight 98.08, colorless oily liquid, boiling point 338ÿ, relative density 1.84.

It can be dissolved in water in any proportion, and releases a lot of heat to make the water boil. It has strong acidity, dehydration and strong oxidizing properties.

It is moderately toxic. Store in a cool, ventilated warehouse. The temperature should not exceed 35ÿ and the relative humidity should not exceed 85%.

Keep the device sealed. Keep away from fire and heat sources. Smoking is strictly prohibited in the workplace. Keep away from flammable and combustible materials. Prevent steam from leaking into the workplace.

Avoid contact with reducing agents, alkalis, and alkali metals. Be careful when handling to prevent damage to packaging and containers.

Equip appropriate types and quantities of firefighting equipment and emergency leak handling equipment. Empty containers may contain hazardous substances.

When diluting or preparing solutions, the acid should be added to the water to avoid boiling and splashing.

35% hydrochloric acid: chemical formula HCl, transparent, colorless or yellow, with pungent odor and strong corrosiveness. Easily soluble in water,

Ethanol, ether and oil can react with some active metal powders to release hydrogen. When they come into contact with cyanide, they can produce highly toxic cyanide.

Hydrogen gas. It reacts with alkali to produce a neutralization reaction, releasing a large amount of heat.

Sodium hydroxide: Pure product is a white translucent crystalline solid, which is highly corrosive and hygroscopic. It can be used as a drying

It is highly soluble in water and the solution is strongly alkaline. It reacts with acid to neutralize and release heat. It is corrosive to aluminum, zinc and tin when exposed to moisture.

It emits flammable and explosive hydrogen gas.

65% nitric acid: Chemical formula: HNO3, a strong oxidizing and corrosive acid, melting point: -42°C, boiling point: 78°C,

It is easily soluble in water. At room temperature, pure nitric acid solution is colorless and transparent. Nitric acid is unstable and will decompose and release nitrogen dioxide when exposed to light or heat.

The nitrogen dioxide produced by decomposition dissolves in nitric acid, making the appearance light yellow. It should be stored in a brown bottle in a dark place away from light.

Avoid contact with reducing agents.

95% ethanol: The chemical formula is CH3CH2OH (C2H6O or C2H5OH) or EtOH, which is a saturated

It is a flammable, volatile, colorless, transparent liquid at room temperature and pressure. Its aqueous solution has a wine aroma.

The smell is slightly pungent and has a winey smell and a spicy, slightly sweet taste.

401 glue: It is a low viscosity glue, the main components are epoxy resin and modified epoxy resin. This product is particularly suitable for

Compared with other standard grade cyanoacrylate adhesives, this product cures quickly and is less dependent on

It is suitable for rapid bonding of most metals, plastics or elastic materials, especially for bonding

Porous or absorbent materials.

AB glue: Component A is modified epoxy resin, component B is modified amine, with quick-drying properties, after A\B is mixed, 25

It dries in 5 minutes at a temperature of 10000ÿ. The higher the temperature, the shorter the drying time. It can bond plastic to plastic, plastic to metal, metal to

For metal, peeling after bonding requires a knife or hot melt separation. Plastic to plastic bonding effect is excellent.

Lead-free solder wire: 0.5mm in diameter, it contains carbon, manganese, silicon, aluminum, copper, calcium, rare earth metals and iron.

During welding, the welding wire is added to the surface and gaps of the electronic components as a filler metal, fixing the electronic components to become a welding

The main component of the connection.

R22 refrigerant: chemical name: difluorochloromethane, molecular formula: CHClF2, relative density : 1.174g/cm3, critical temperature:

96.2ÿ, melting point -160ÿ, boiling point -40.8ÿ, it is a medium and low temperature refrigerant, it has good stability to metals and is non-corrosive.

However, when R22 contains water, copper plating is likely to occur. R22 has a certain degree of corrosion to natural rubber and plastic organic materials.

The material can be chlorohydrin rubber. Mainly used in air conditioners, heat pump water heaters, dehumidifiers, cold storage, industrial refrigeration, commercial

Refrigeration, supermarket display cabinets and other refrigeration equipment.

7. Public works

Water supply: The water supply for this project is provided by the municipal water supply network of the High-tech Zone, with an annual water consumption of 10,042.62 t/a;

Drainage: The project area adopts a rainwater and sewage separation system. Rainwater is directly discharged into the municipal rainwater pipe network, and restaurant wastewater is discharged through the oil and water pipe network.

After pre-treatment in the separator, it is pre-treated in the septic tank together with the workshop utensil washing wastewater, cleaning wastewater, and staff office and domestic sewage.

The clean sewage is discharged into the municipal sewage network, and then into the Hefei Economic Development Zone Sewage Treatment Plant for treatment to meet the standards before being discharged into the Pai River;

Power supply: The power supply for this project is provided by the municipal power grid of the High-tech Zone, with an annual power consumption of 400,000 kWh;

Heating and cooling: The project office uses split air conditioners for cooling in summer and heating in winter.

Central air conditioning, 1# plant and 2# testing center are not equipped with air conditioning;

Gas supply: The gas supply for this project is provided by the municipal pipeline of the High-tech Zone.

8. Work system and labor quota

The project has a labor quota of 180 people, working in a single shift, 8 hours a day, and 250 working days per year.

9. Compliance with industrial policies

This project Pepsinogen I kit, Pepsinogen II kit, Gastrin 17 kit, Helicobacter pylori IgG

The test kit belongs to the "encouraged category" in the "Guiding Catalogue for Industrial Structure Adjustment (2011 Edition)" (revised in 2013) of the National Development and Reform Commission.

In the second item of the thirteenth item “Medicine”, “Development and production of new diagnostic reagents”, fluorescent immunoassay analyzers, chemical

Luminescence tester does not belong to the encouraged, restricted and eliminated items, and can be regarded as permitted.

Industry policy requirements.

10. Analysis of site selection rationality

(1) This project is located at the northeast corner of the intersection of Kongquetai Road and Changan Road in Hefei High-tech Industrial Development Zone.

According to the Planning (Single Unit) Design Conditions Notice (Compliance High-tech 2017049), the project land use nature is industrial.

The high-tech zone leads the development of four major high-tech fields: electronic information, optomechanical integration, bioengineering and new medicine, and new materials.

This project mainly produces pepsinogen I kit, pepsinogen II kit, gastrin 17 kit,

Helicobacter pylori IgG test kit is in line with the new pharmaceutical industry, one of the leading industries in the High-tech Zone. Therefore, this project is in line with the overall

Planning and reasonable site selection.

(2) Environmental impact requirements

A. This project is not located in a drinking water source protection area, scenic spot, nature reserve, historical and cultural relics protection area,

Environmentally sensitive areas such as basic farmland protection areas.

B. The current environmental quality of the area where the project is located is good, and the environmental carrying capacity can meet the needs of project construction.

C. There are no major sources of danger within the immediate vicinity of this project.

(3) Construction conditions

A. The project's terrain is not very undulating and there are no hidden dangers of geological disasters.

B. The project is located in a convenient location with sufficient transportation and sufficient local supply of building materials.

Both can meet the needs.

C. The municipal infrastructure in the proposed project area is complete, and the water supply, drainage, power supply, telecommunications, etc. can meet the needs of project construction.

Based on the above analysis, the project site is reasonable.

Existing pollution and major environmental issues related to this project:

The construction site of this project is located at the northeast corner of the intersection of Kongquetai Road and Chang'an Road in Hefei High-tech Industrial Development Zone.

As this is a new project, the project site was originally a vacant lot with wild vegetation such as low shrubs growing on it, and there are no remaining environmental problems.

Brief description of the natural and social environment of the construction project

location Brief description of the natural environment (topography, landform, geology, climate, meteorology, water system, soil and vegetation, etc.):

1. Geographical location

The construction site of this project is located at the northeast corner of the intersection of Kongquetai Road and Chang'an Road in Hefei High-tech Industrial Development Zone.

2. Topography, landforms, and geology

Hefei's terrain is a typical Jianghuai hilly area, with four gullies and two ridges. The overall terrain is high in the northwest and low in the southeast.

The ground elevation is 20-35 meters (Yellow Sea elevation), belonging to the second terrace, most of which are farmland, with a few natural villages, not affected by

Flood impact. The engineering geological conditions are good, the surface is upper Pleistocene alluvial-diluvial clay, and the soil bearing capacity is 2.5-3.5kg/cm2.

The underground bedrock is 10-15 meters deep and is Tertiary red sandstone. There are no active geological faults within the development zone construction land.

7 degrees. The topography, landform and geology of the base: The overall terrain is long and narrow, irregular, with four depressions.

3. Weather conditions

The project area belongs to the subtropical monsoon humid climate zone, with four distinct seasons, mild climate, abundant sunshine and rainfall.

It is characterized by abundant rainfall and a long frost-free period. The annual average temperature is 16ÿ, the extreme maximum temperature is 41.0ÿ, and the extreme minimum temperature is -20.6ÿ.

The average annual precipitation is 998.4 mm, and the average annual wind speed is 2.8 m/s.

The average annual precipitation in Hefei is 998.4 mm, the maximum precipitation is 1541.96 mm (1954), and the minimum precipitation is

The annual precipitation is 573.0 mm (1978/year). The annual precipitation distribution is obviously uneven, with the highest precipitation from June to August, about

The annual average evaporation is 42% of that in previous years, and the average annual evaporation is 1495.1 mm.

The main wind direction in Hefei is east (E) throughout the year, southeast (SE) and east (S) in summer, and northeast in winter.

The wind is from the northeast and northwest. The maximum wind speed over the years is 21.3 m/s, and the average wind speed over the years is 2.8 m/s.

4. Regional surface water system

Hefei is located in the middle of the Jianghuai hills. The Jianghuai watershed runs through the entire city from west to east, dividing the province into two parts: the Yangtze River and the Huai River.

Large river basin. The main surface water systems in the project area are Paihe River and Chaohu Lake.

(1) Pai River: The Pai River basin has an area of 571 km2, an annual runoff of 290,000 m3 /km2, and an average annual water inflow of 1.88

The upper reaches are hilly areas at the northern foot of Fanghu, where the riverbed is deep and the slope is steep, with severe downcutting. The middle and lower reaches are alluvial plains.

The river is mainly 30-70m wide and 5-7m high. The whole river can be divided into the upper, middle and lower sections.

60km, the average gradient of the river channel is 1.18%.

(2) Chaohu Lake: Chaohu Lake is a lake in the lower reaches of the Yangtze River, located in the central part of Anhui Province. It consists of Hefei, Chaohu, Feidong, Feixi,

Lujiang is surrounded by two cities and three counties. It is 54.5 kilometers long from east to west and 15.1 kilometers wide on average from north to south. The longest lakeshore is over 181 kilometers.

The largest water area is about 825 square kilometers, the maximum volume is 4.81 billion cubic meters, and the maximum depth is 0.98 to 7.98 meters. It is China's

One of the five largest freshwater lakes. The lake is mainly fed by surface runoff, with a drainage area of 12,938 square kilometers and a catchment area including

Hefei, Chaohu, Feidong, Feixi, Lujiang, Shucheng, Wuwei and other two cities and five counties. There are 35 rivers along the lake. Among them, the largest

The rivers in the area include Hangbu River, Baishitian River, Pai River, Nanfei River, Yongyang River, Zhegao River, Zhao River, etc.

It flows into the lake, then out of the lake at Chengguan, Chaohu City, flows southeast through Yuxi River to Yuxikou and flows into the Yangtze River.

5. Vegetation and biodiversity

The vegetation type of Hefei is a mixed forest of deciduous, evergreen broad-leaved and coniferous trees. Affected by the monsoon climate, water, heat,

The light sources are relatively abundant, which is suitable for the production of various vegetation. However, due to the influence of long-term human production activities, the original vegetation is difficult to see.

The artificial vegetation mainly includes Ailanthus altissima, Canadian poplar, Yuanban, Paulownia, Acer truncatum, Metasequoia glyptostroboides, Ligustrum lucidum, Robinia pseudoacacia, etc.

Vegetation includes rice, wheat, soybeans, cotton, peanuts, rapeseed, and various fruits and vegetables.

After on-site investigation, there are no nationally or locally protected plant species within the construction project evaluation area, and there are no

No rare animals or plants under national or local protection were found in sensitive areas such as forests, wetlands or nature reserves.

Environmental quality status

The current environmental quality status and main environmental problems in the area where the construction project is located (ambient air, surface water, underground Water, acoustic environment, ecological environment, etc.):

1. Current Environmental Quality in the Project Area

The construction site of this project is located at the northeast corner of the intersection of Kongquetai Road and Chang'an Road in Hefei High-tech Industrial Development Zone.

1. Current status of air quality

The project site belongs to the second-class ambient air functional area, and the ambient air quality is in accordance with (GB3095-2012) "Ambient Air Quality StandardsÿSecondary Standards. Monitoring factors are SO2, NO2, PM2.5, PM10, and the current data of ambient air quality is quoted Air quality data from the Hefei High-tech Zone monitoring station released by the Hefei Environmental Protection Bureau on November 15, 2017. The monitoring results are shown below. surface:

Table **6** Regional atmospheric pollutant concentration values **Unit: ug/m3**

pollutants	**SO2**	**NO2**	**PM10**	**PM2.5**
24-hour average	15	46	83	57
GB3095-2012 Secondary Standard 24-hour average value	150	80	150	75

The table above shows that the 24-hour average concentration of SO2, NO2, PM2.5 and PM10 in the ambient air of the project area meets Secondary standard requirements in GB3095-2012 "Ambient Air Quality Standards".

2. Current status of water environment quality

According to the environmental quality data released by the Hefei Environmental Protection Bureau (this reference is made to the data released on the website of the Hefei Environmental Protection Bureau in September 2017), Hefei City Environmental Quality Briefing, Paihe River monitored 8 sections (including the tributary Banjiu River section at Ningxi Railway, Wangjianggou section, section, Kulu River Shushan section, Kulu River Gaoxin section, Yuexiao River section), but Wangjiangou section is under monitoring due to river channel reconstruction. There is no water at the measuring point, and there is no monitoring data this month. The downstream section of Feixi Fertilizer Plant is a national test section. The monitoring results show that The downstream section of Feixi Fertilizer Plant (the main pollution indicators are chemical oxygen demand and biochemical oxygen demand), and the Shushan section of the tributary Kulu River (Main pollution indicators are permanganate index, ammonia nitrogen, total phosphorus), section of the tributary Banjiu River at Ningxi Railway (main pollution The main pollution indicators are chemical oxygen demand), the tributary Yuexiao River section (the main pollution indicators are permanganate index, ammonia nitrogen, and total phosphorus),

The water quality of the tributary Kulu River Gaoxin section (the main pollution indicators are permanganate index and ammonia nitrogen) is Class IV, which is slightly polluted.

The water quality of the tributary Shutou River in Shushan section and the downstream section of the sewage treatment plant in the Economic Development Zone is Class V, which is severely polluted.

The main pollutants exceeding the standard in the Heshushan section are ammonia nitrogen and total phosphorus. The main pollutants exceeding the standard in the downstream section of the Economic Development Zone Wastewater Treatment Plant are

Ammonia nitrogen. The main reason for exceeding the standard is the discharge of sewage along the river. The water quality of Pai River does not meet the "Surface Water Environmental Quality Standards"

(GB3096-2002) Class IV standard requirements.

3. Current status of acoustic environment quality

According to the sound environment quality data of Anhui Environmental Testing Center Co., Ltd. from December 3, 2017 to December 4, 2017

Monitoring data and the acoustic environment quality status of each boundary of the project area are shown in the following table:

Table **7** Summary of project boundary noise monitoring results

Noise monitoring points	Noise level **dB(A)**			
	2017.12.03		**2017.12.04**	
	Daytime	at night	Daytime	at night
1# (Eastern Boundary)	56.0	46.2	56.3	46.7
2# (Southern Boundary)	55.8	46.0	55.4	46.3
3# (west boundary)	56.3	46.5	56.6	46.9
4# (Northern Boundary)	55.7	46.0	55.3	45.5
Category 3 standards in GB3096-2008	65	55	65	55

As can be seen from the table above, the daytime and nighttime noise levels at all boundaries of the project area meet the "Noise Environment Quality Standard" (GB3096-2008).

Medium 3 standard, good sound environment quality.

II. Major Environmental Issues in the Project Area

The construction site of this project is located at the northeast corner of the intersection of Kongquetai Road and Chang'an Road in Hefei High-tech Industrial Development Zone.

Main environmental issues in the region:

The water quality of some areas of Paihe River in the project area does not meet the requirements of Level IV in the Environmental Quality Standards for Surface Water (GB3096-2002).

Class standards.

The construction of this project will inevitably increase the pollution load in the area, so environmental protection work must be strengthened after the project is completed and put into use.

to reduce the impact on the surrounding environment.

Main environmental protection targets (list and protection level)

There are no natural reserves, scenic spots, cultural relics and other environmentally sensitive objects that require special protection within the assessment area.

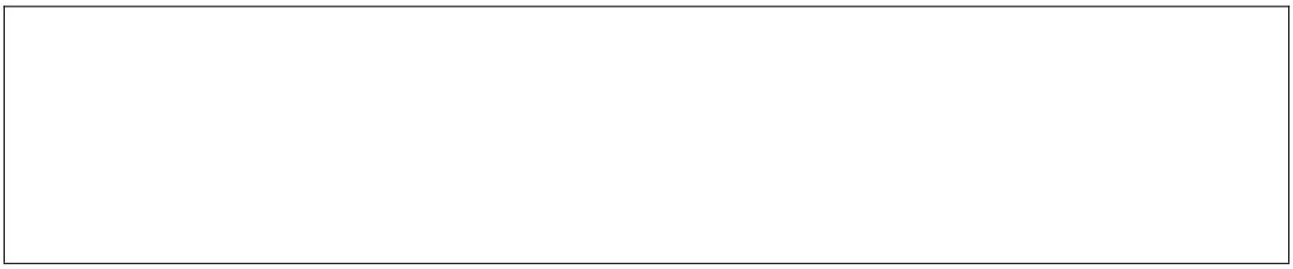
There are no environmentally sensitive points around the project, and the implementation of this project will not change the existing functions of the regional environment.

The protection objectives are as follows:

1. Protect the existing water environment function of the surface water body Paihe River from being degraded;
2. The ambient air function in the evaluation area will not be reduced;
3. The acoustic environment meets the Class 3 standards in GB3096-2008 "Acoustic Environment Quality Standards".

Table **8** Main environmental protection objectives of this project

Environmental factors	Protected Objects name	position	With this project Boundary distance (m)	scale	Environmental functions
Air environment	Tianbuying Village Group W		600	About 20 households, 80 people	(GB3095-2012) Ambient Air Quality Standard Secondary Standard in the Standard
	Hefei Chengxiqiao School W High-tech Zone		1100	About 1,400 teachers and students	
	Chengxiqiao Elderly Care Service Center	SW	1000	About 200 people	
	Zaoshuke Villager Group SW Chendaying		920	About 18 households, 72 people	
	Villager Group S		1100	About 35 households, 140 people	
	Xutang Village Group SW Chengxiqiao		1300	About 25 households, 100 people	
	Village Group SW		1700	About 14 households, 56 people	
	Daweizi Village Group SW		2000	About 15 households, 60 people	
	Chengxiqiao Kindergarten W Sunjinggang		1400	About 120 teachers and students	
	Village Group NW Xiangyang Village Group		1300	About 12 households, 48 people	
	NW Ruixiaoying Village Group NW		1800	About 8 households, 36 people	
			1800	About 15 households, 60 people	
	Changning Home	NE	2200 About 2500 households, 7500 people		
surface water environment	Paihe	SW	1700	Small rivers	GB3838-2002 Surface Water Environment Quality Standards Class IV standard
Acoustic Environment	Project Area	/	/	/	(GB3096-2008) Noise Environment Quality Standard 3 categories of standards in the



Evaluation criteria

ring

territory

quality

quantity

Standard

allow

1. Ambient air shall comply with the secondary standard in GB3095-2012 "Ambient Air Quality Standard"; non-methane

Total hydrocarbons shall comply with the standard values specified in the detailed explanation of GB16297-1996 "Integrated Emission Standards of Air Pollutants"

2.0mg/m3.

Table **9** Ambient Air Quality Standards

pollutants	Concentration limits of various pollutants (ug/m3)			in accordance with
	1- hour average	daily average	annual average	
SO2	500	150	60	GB3095-2012 Ambient Air Quality Standard Secondary Standard in the Standard
NO2	200	80	40	
PM2.5	—	75	35	
PM10	—	150	70	
non-methane total hydrocarbon	2000			GB16297-1996 "Comprehensive List of Air Pollutants" The implementation standards are specified in the detailed explanation of the Emission Standards

2. Surface water in Paihe River shall comply with Class IV standards in GB3838-2002 "Surface Water Environmental Quality Standards";

Table **10** Surface water environmental quality standards

index	Class IV standard value	unit	in accordance with
pH	6-9	dimensionless	GB3838-2002 Surface Water Environmental Quality Category IV in the "Quantity Standard" Water quality standards
COD	ÿ30	mg/l	
BOD5	ÿ6		
NH3-N	ÿ1.5		
TP	ÿ0.3		
Petroleum	ÿ0.5		

3. The acoustic environment in the project area shall comply with Category 3 standards in GB3096-2008 “Ambient Acoustic Quality Standards”.

Table **11** Regional acoustic environment noise standards

Applicable areas	Standard value (Leq: dB(A))		in accordance with
	Daytime	at night	
Category 3 areas	65	55	3 types of standards in (GB3096-2008)

1. The project wastewater COD, BOD5, SS, and NH3-N emissions shall be taken over by the Hefei Economic Development Zone Wastewater Treatment Plant.

The discharge of TP, acute toxicity and unit product standard discharge volume shall comply with the "Water Pollution Control Standard for Mixed Preparation Pharmaceutical Industry"

The pollutant emission limits in the Pollutant Emission Standard (GB21908-2008); the sewage treatment plant in Hefei Economic Development Zone

Water Implementation DB34/2710-2016 "Discharge of Major Water Pollutants from Urban Wastewater Treatment Plants and Industrial Sector in Chaohu Basin"

The standards for urban sewage treatment plants in the "Limits of Pollution Control Values" (if no specified indicators are specified, the Level A standard of GB18918-2002 shall apply);

Table **12** Project Wastewater Discharge Standards

Pollutants **COD BOD5 SS NH3-N TP**						Plants and animals Oil	Acute toxicity **(HgCl2** Toxic equivalent)	Unit product Baseline drainage **Volume (m3 /t)**
Hefei Economic Development Zone sewage Treatment plant takeover standards	330	160 200		20 — — —				—
GB21908-2008 standard	60	15	30	10	0.5 — 0.07			300
Wastewater discharge from this project Implementation limits	330	160 200		20	0.5	100	0.07	300
DB34/2710-2016 Wastewater treatment in urban areas Factory standard (not specified) Indicator Execution GB18918-2002 Grade A standard) (mg/l)	50	10	10 5 (8) 0.5			1	—	—

2. The non-methane total hydrocarbon emissions generated by the project shall comply with GB16297-1996 "Comprehensive Emission Standard of Air Pollutants"

Secondary standard, welding fume emissions comply with GB16297-1996 "Comprehensive Emission Standard of Air Pollutants" without group

Organization emission monitoring concentration limits;

Dirt

dye

thing

Row

put

Standard

allow

Table **13** Non-methane total hydrocarbon emission standards

Pollutant name	Maximum allowable emission concentration **Degrees (mg/m3)**	Maximum allowable emissions Rate **kg/h**	Monitoring concentration of fugitive emissions **Limit (mg/m3)**	Remark
Non-methane hydrocarbons	120	10	4.0	15-meter-high exhaust stack

Table **14** Welding fume emission standards

Pollutant name	Concentration limit for unorganized monitoring at factory boundary (mg/m3)
particulate matter	1.0

The cooking fume emissions from restaurants shall comply with GB18483-2001 “Catering Fume Emission Standard” (Trial);

Table **15** Maximum allowable emission concentration of cooking fume and minimum removal efficiency of cooking fume purification facilities in catering units

scale	Small	Medium and large	
Standard number of stoves	ÿ1, <3	ÿ3, <6	ÿ6
The total projected area of the corresponding exhaust hood and stove (m2)	ÿ1.1, <3.3	ÿ3.3, <6.6	ÿ6.6
Maximum allowable emission concentration (mg/m3)	2.0		
Minimum removal efficiency of purification facilities (%)	60	75	85

3. The factory boundary environmental noise emissions shall comply with GB12348-2008 "Industrial Enterprise Factory Boundary Environmental Noise Emission Standard"

Medium 3 category standards;

Table **16** Environmental noise emission standards for industrial enterprises **Unit: dB (A)**

Standard Name	Daytime and nighttime
Category 3 standards in the "Environmental Noise Emission Standards for Industrial Enterprises" (GB12348-2008)	55

4. General industrial solid waste shall comply with the "General Industrial Solid Waste Storage and Disposal" (GB18599-2013 revised)

Pollution Control Standards for Hazardous Wastes (GB18597-2001) and Pollution Control Standards for Hazardous Waste Storage

The relevant provisions of the "Standard" and its 2013 amendment.

total

COD: 0.423 tons/year, NH3-N: 0.042 (0.068) tons/year, VOCs: 0.00084 tons/year, particulate matter:

0.0000015 tons/year

(According to DB34/2710-2016 Standard for Urban Wastewater Treatment Plants, the total amount of indicators is included in the Hefei Economic Development Zone Wastewater Treatment Plant

Quantity control indicators

Total factory volume)

Brief description of the construction

project engineering analysis process (diagram):

The production process flow chart is as follows:

The diagnostic kits for this project include pepsinogen I kit, pepsinogen II kit, gastrin 17 kit,

There are four types of Helicobacter pylori IgG test kits, which use enzyme-linked immunosorbent assay, chemiluminescence assay, and fluorescence immunochromatography assay respectively.

The four test kits for each process are produced on the same line. The test instruments include fluorescent immunoassay analyzer, chemical

Luminescence testers are mainly produced using assembly technology.

The main antibodies and antigens in this project are provided by BIOHIT Finland, and the production and development of antibodies and antigens are not involved.

All the raw materials used are inactive zymogens, non-toxic and non-pathogenic.

1. ELISA process flow

Enzyme-linked immunosorbent assay mainly includes the preparation of phosphate buffer solution, enzyme-linked reaction plate coating, enzyme-linked antibody standard solution preparation, labeling

Preparation of standard solution, positive control, reaction termination solution and final assembly process, specific process flow chart and introduction

as follows:

1. Preparation process of phosphate buffer solution

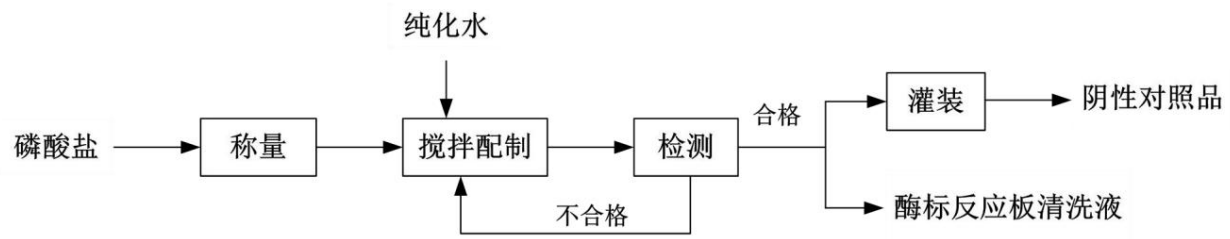


Figure **1** Flow chart of the preparation process of phosphate buffer solution

Brief description of the process:

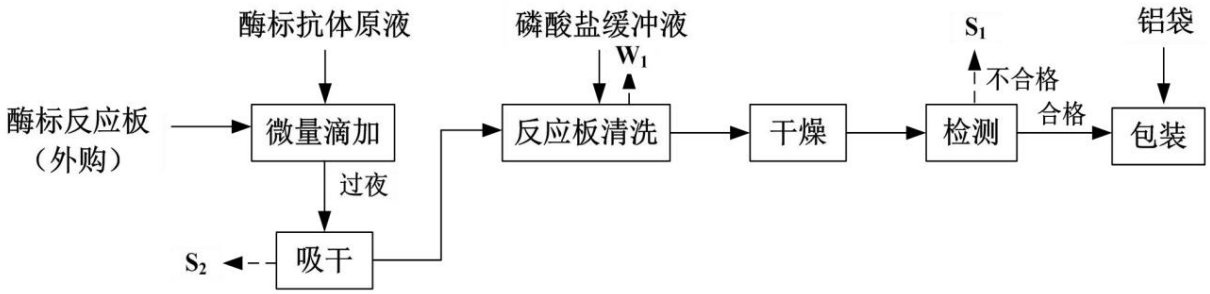
In the buffer solution preparation room, weigh the phosphate according to the calculated weight, and add the weighed phosphate to the purified

The pH value of the solution was measured by stirring the water and the amount of phosphate was adjusted to control the pH value of the solution between 8.0 and 8.5.

Then, the phosphate buffer solution was divided into 50-100 ml plastic bottles according to the requirements to prepare the negative control.

Other buffer solutions are placed in reagent bottles for rinsing enzyme-labeled reaction plates.

2. ELISA reaction plate coating process



Note: W1—waste liquid from ELISA plate cleaning; S1—unqualified products; S2—waste paper towels

Figure **2** Flow chart of enzyme-labeled reaction plate coating process

Brief description of the process:

ÿ Purchase a 96-well ELISA reaction plate from a qualified domestic manufacturer and add 100 ÿl of the original

The material (anti-pepsinogen I or anti-pepsinogen II or gastrin 17 antibody or Helicobacter pylori IgG antigen) was incubated at room temperature.

Keep overnight. The raw materials used in this process are provided by BIOHIT Finland.

ÿ Take it out the next day and dry it with ordinary napkins, then wash the enzyme with phosphate buffer solution with a pH between 8.0-8.5

The plate was labeled 5 times, each time using 10 ml, and the last time it was washed once with a buffer solution containing a protein protectant, using a volume of

10 ml. This step produces ELISA plate washing waste and waste paper towels.

ÿ After cleaning the above ELISA plate, place it in a 37ÿ drying room to dehumidify and dry it. After passing the test, place it in an aluminum bag and seal it.

After sealing, labels are affixed for factory inspection. This process produces unqualified products.

The enzyme-labeled reaction plate used in this project is a special detection kit enzyme-labeled reaction plate. The reaction plate is directly sealed after being coated.

The whole process does not involve biochemical, biological or enzyme reactions. The test kits produced by the project are sold to hospitals and then the patients are

An immune reaction will only occur during the post-venous blood test, and no biological or biochemical reactions will occur within the project plant.

3. Preparation process of enzyme-labeled antibody standard solution

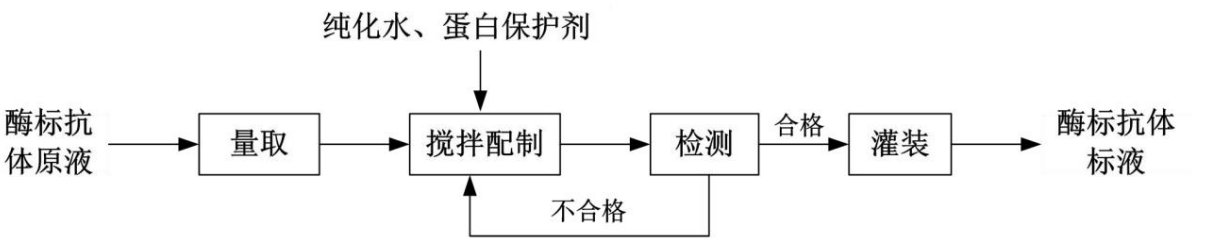


Figure **3** Flow chart of the preparation process of enzyme-labeled antibody standard solution

Brief description of the process:

Enzyme label stock solution (anti-pepsinogen I or pepsinogen II or gastrin 17 antibody) provided by BIOHIT Finland

or Helicobacter pylori IgG antibody) was diluted to a specific concentration in a certain ratio, and a certain amount of protein protective agent was added.

After passing the test, it is packaged into small plastic bottles, 10ml per bottle.

4. Standard solution preparation process

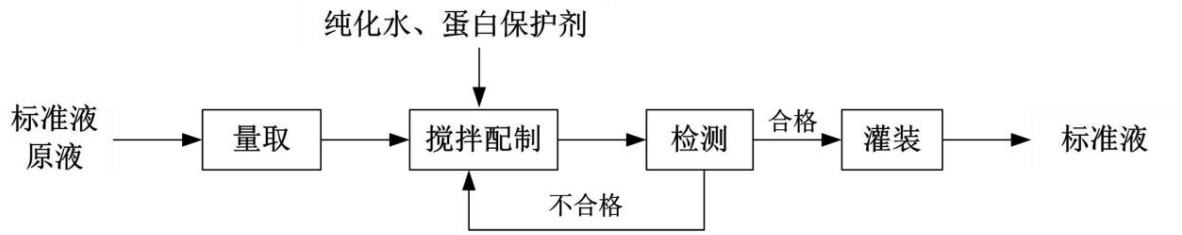


Figure **4** Flow chart of standard solution preparation process

Brief description of the process:

Standard solution materials (anti-pepsinogen I or anti-pepsinogen II or anti-gastrin 17) provided by BIOHIT Finland

After the antigen or Helicobacter pylori IgG antibody is diluted in a certain proportion, a certain amount of protein protective agent is added, and the samples are separated after passing the test.

Packed in small plastic bottles, 1 to 2 ml each, and labeled.

5. Preparation process of positive control

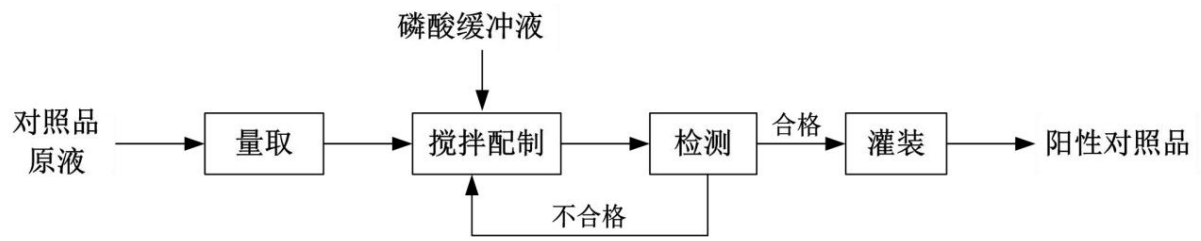


Figure **5** Process flow chart for the preparation of positive control substances

Brief description of the process:

Reference material provided by BIOHIT (anti-pepsinogen I or anti-pepsinogen II or anti-gastrin 17

pylori IgG antibody) by adding phosphate buffer solution with a pH between 8.0 and 8.5 to dilute in a certain proportion

Then divide it into 1 to 2ml plastic bottles and label them.

6. Preparation process of reaction termination solution

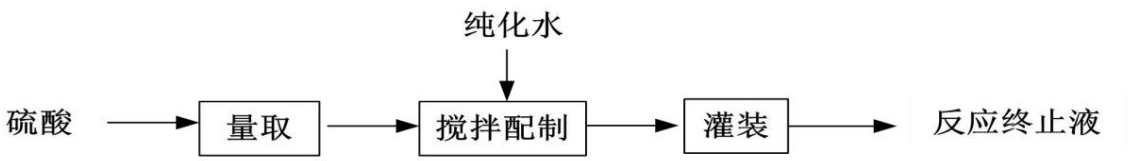


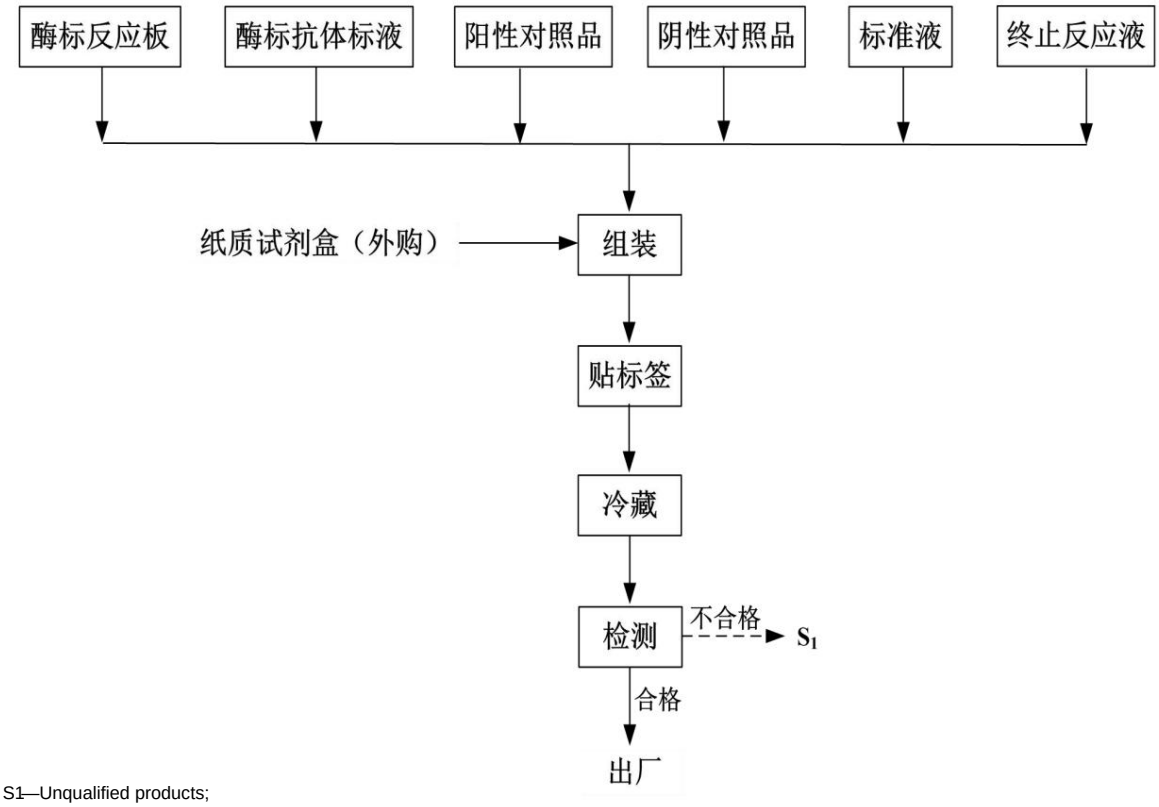
Figure **6** Process flow chart for preparing reaction termination solution

Brief description of the process:

After the purchased chemically pure sulfuric acid (concentration of 98%) is measured according to the requirements, it is diluted to 0.1% by adding purified water and packaged in

Put the corresponding label in the 10ml plastic bottle.

7. Final assembly process



Note: S1—Unqualified products;

Figure **7** ELISA assembly process flow chart

Brief description of the process:

The enzyme-labeled reaction plate prepared above (anti-pepsinogen ÿ or pepsinogen ÿ or gastrin 17 antibody or Helicobacter pylori E. coli IgG antigen); enzyme-labeled antibody standard solution; positive control, negative control, standard solution, and termination reaction solution are assembled in Place the test kit in a paper container and label it with the production date, batch number, expiration date, etc. and store it at 2-8°C. In the cold storage room, according to the anti-pepsinogen I or pepsinogen II or gastrin 17 antibody or Helicobacter pylori IgG antibody The quality standard of the kit is tested and it can be shipped only after it meets the quality standards. This process will not produce unqualified products.

The heat source used in the bottle washing and drying machine used in the production process is electric heating.

2. Chemiluminescence process

The chemiluminescence method mainly includes the preparation of phosphate and borate buffer solutions, magnetic microsphere coating, enzyme-labeled antibody solution preparation, The process flow of preparation, calibration solution and quality control product preparation, substrate solution preparation and final assembly is as follows:

1. Preparation process of phosphate and borate buffer solutions

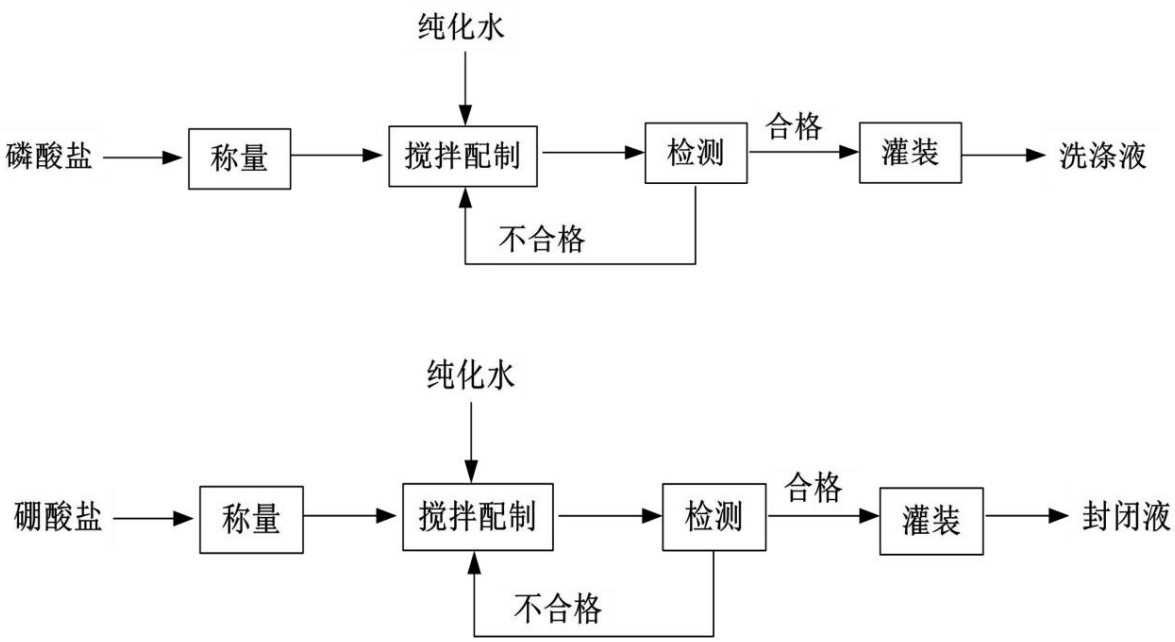


Figure **8** Flow chart of the preparation process of phosphate and borate buffer solutions

Brief description of the process:

In the buffer solution preparation room, weigh the phosphate and borate according to the calculated weight.

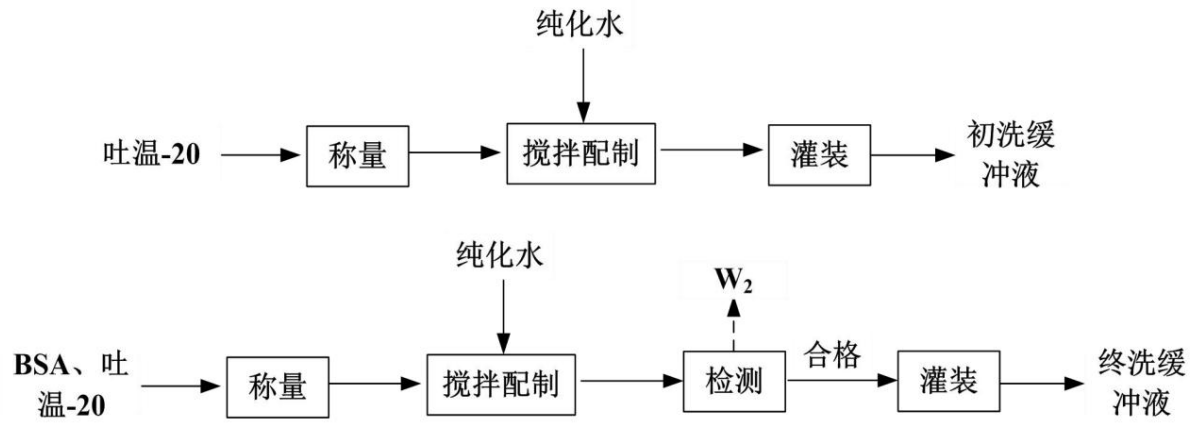
Phosphate and borate were added to purified water and stirred to mix, and the pH value of the solution was measured. The phosphate buffer solution was adjusted by micro-adjustment.

The pH value of the solution is controlled between 8.0 and 8.5 by adding phosphate, and the borate buffer solution is adjusted by adding boric acid in small amounts.

The amount of salt can be adjusted to control the pH value of the solution to 9.0, and then the phosphate buffer solution and borate buffer solution are added as required.

Dispense into 50-100 ml plastic bottles.

2. Preparation process of initial wash buffer and final wash buffer



Note: W2——waste liquid containing nitrogen and sulfur

Figure **9** Process flow chart for preparing initial wash buffer and final wash buffer

Brief description of the process:

In the buffer solution preparation room, weigh Tween-20 according to the calculated weight, and add the weighed Tween-20 to the pure

Add water and stir to mix thoroughly. Dispense the initial wash buffer into 50-100 ml plastic bottles as required.

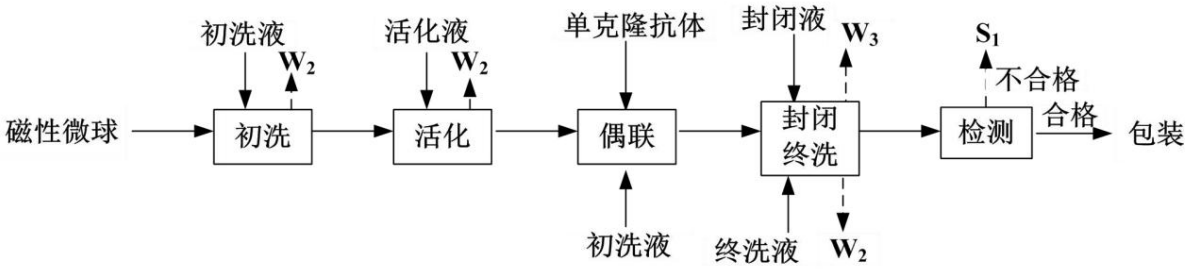
In the buffer solution preparation room, weigh BSA and Tween-20 according to the calculated weight.

Tween-20 was added to purified water and stirred to mix, the pH value of the solution was measured, and the pH value of the solution was adjusted and controlled with sodium hydroxide.

Between 7.3-7.5, unqualified products are treated as waste liquid, and the final wash buffer of qualified products is packaged in 50-100

This process produces nitrogen- and sulfur-containing waste liquid in a plastic bottle of 100 ml.

3. Magnetic microsphere coating process



Note: W2 - waste liquid containing nitrogen and sulfur; W3 - waste liquid containing boron; S1 - unqualified product

Figure **10** Magnetic microsphere coating process flow chart

Brief description of the process:

Take a certain amount of magnetic microspheres provided by Bangs Company into a 2mL centrifuge tube, add the initial wash buffer, vortex and mix thoroughly.

Place it in a centrifuge and centrifuge it. After the centrifugation is completed, the supernatant is discarded. This process produces nitrogen-containing and sulfur-containing waste liquid;

Add activation solution to the precipitation in the previous step, vortex mix, start activation reaction at room temperature, after the reaction is completed,

Centrifuge and discard the supernatant; add coupling buffer to the precipitate in the previous step, add the corresponding antibody according to the amount, vortex to mix, and simmer at room temperature.

The coupling reaction is started under the environment, and the supernatant is discarded by centrifugation after the reaction is completed. This process produces nitrogen-containing and sulfur-containing waste liquid;

Add blocking buffer to the precipitation in the previous step, vortex mix, and perform blocking reaction at room temperature.

After the end, centrifuge and discard the supernatant; add the final wash buffer to the precipitate in the previous step, vortex mix, centrifuge and discard the supernatant.

Producing waste liquid containing nitrogen, sulfur and boron;

Finally, the entire coupling process of the fluorescent microspheres is completed, and after passing the test, they are packaged and temporarily stored. This process produces unqualified products.

4. Enzyme-labeled antibody solution preparation process

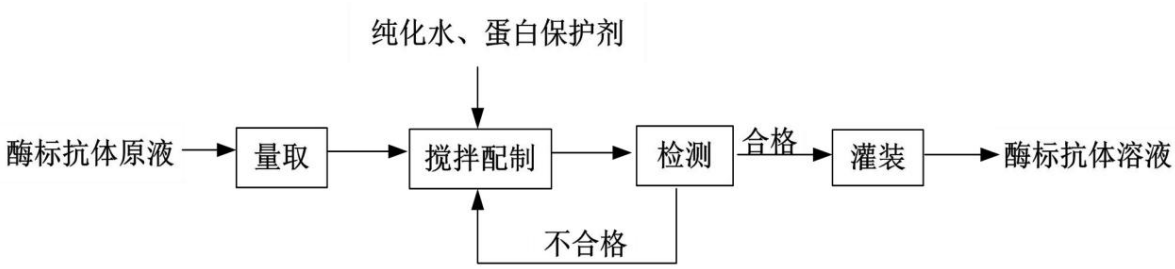


Figure **11** Flow chart of the preparation process of enzyme-labeled antibody solution

Brief description of the process:

Raw materials provided by BIOHIT (anti-pepsinogen I or pepsinogen II or gastrin 17 antibody or

Helicobacter pylori IgG antibody) was diluted to a specific concentration in a certain ratio and a certain amount of protein protective agent was added.

After passing the test, it is packaged into small plastic bottles, 10ml per bottle.

5. Preparation process of calibration solution and quality control product

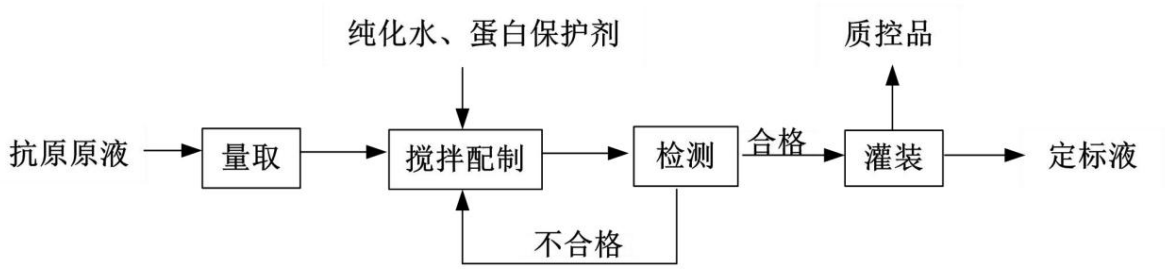


Figure **12** Process flow chart for preparing calibration solutions and quality control products

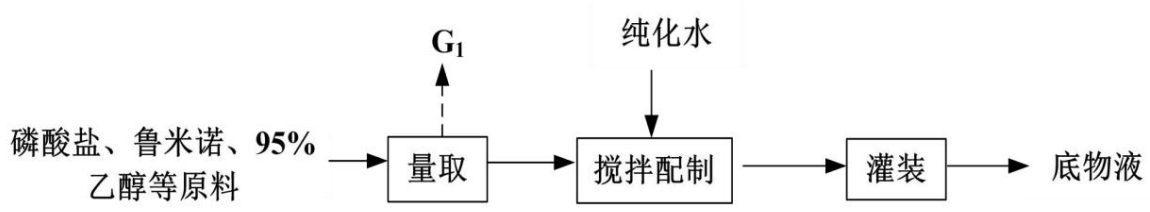
Brief description of the process:

The stock solution (anti-pepsinogen I or pepsinogen II or gastrin 17 antigen or pylori) provided by BIOHIT Finland

Helicobacter pylori IgG antibody) was diluted in a certain proportion and added with a certain amount of protein protective agent. After passing the test, it was packaged in small

In plastic bottles, 1 to 2 ml each, and label them.

6. Substrate solution preparation process



Note: G1 - non-methane total hydrocarbons

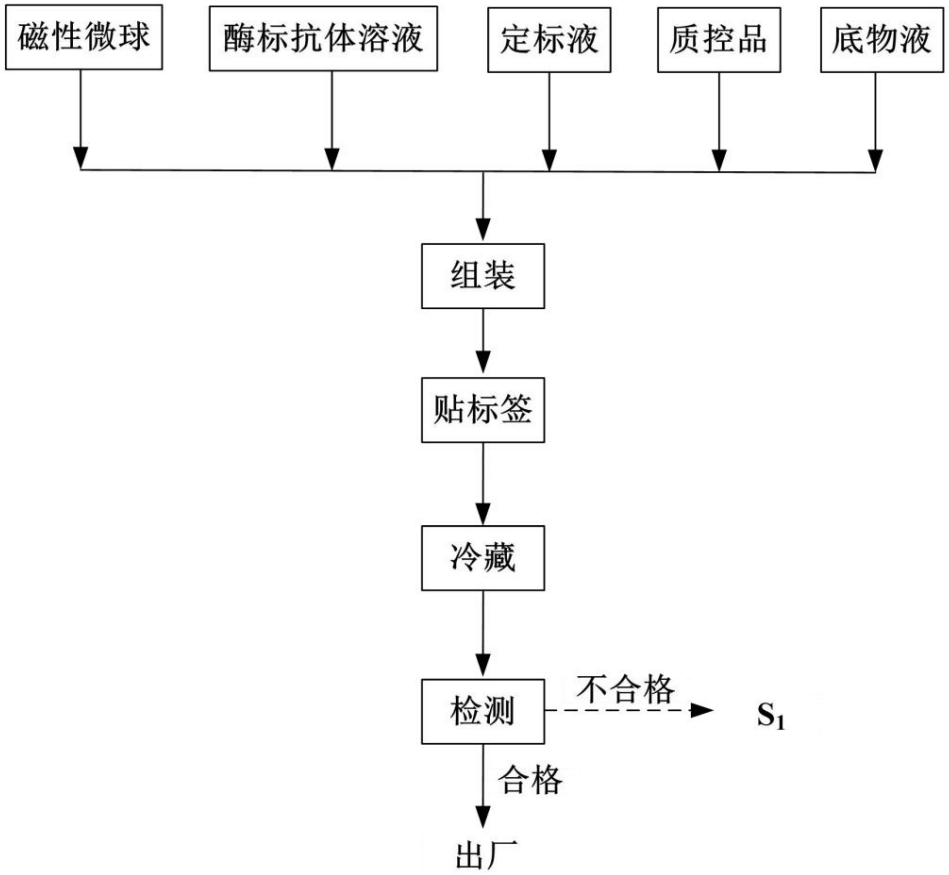
Figure **13** Flow chart of substrate solution preparation process

Brief description of the process:

After purchasing raw materials such as phosphate, luminol, and 95% ethanol, weigh them as required and add purified water to dilute them to a certain concentration.

Then it is divided into 10ml plastic bottles and labeled accordingly. This process produces non-methane total hydrocarbons.

7. Final assembly process



Note: S1——Unqualified products

Figure **14** Chemiluminescence assembly process flow chart

Brief description of the process:

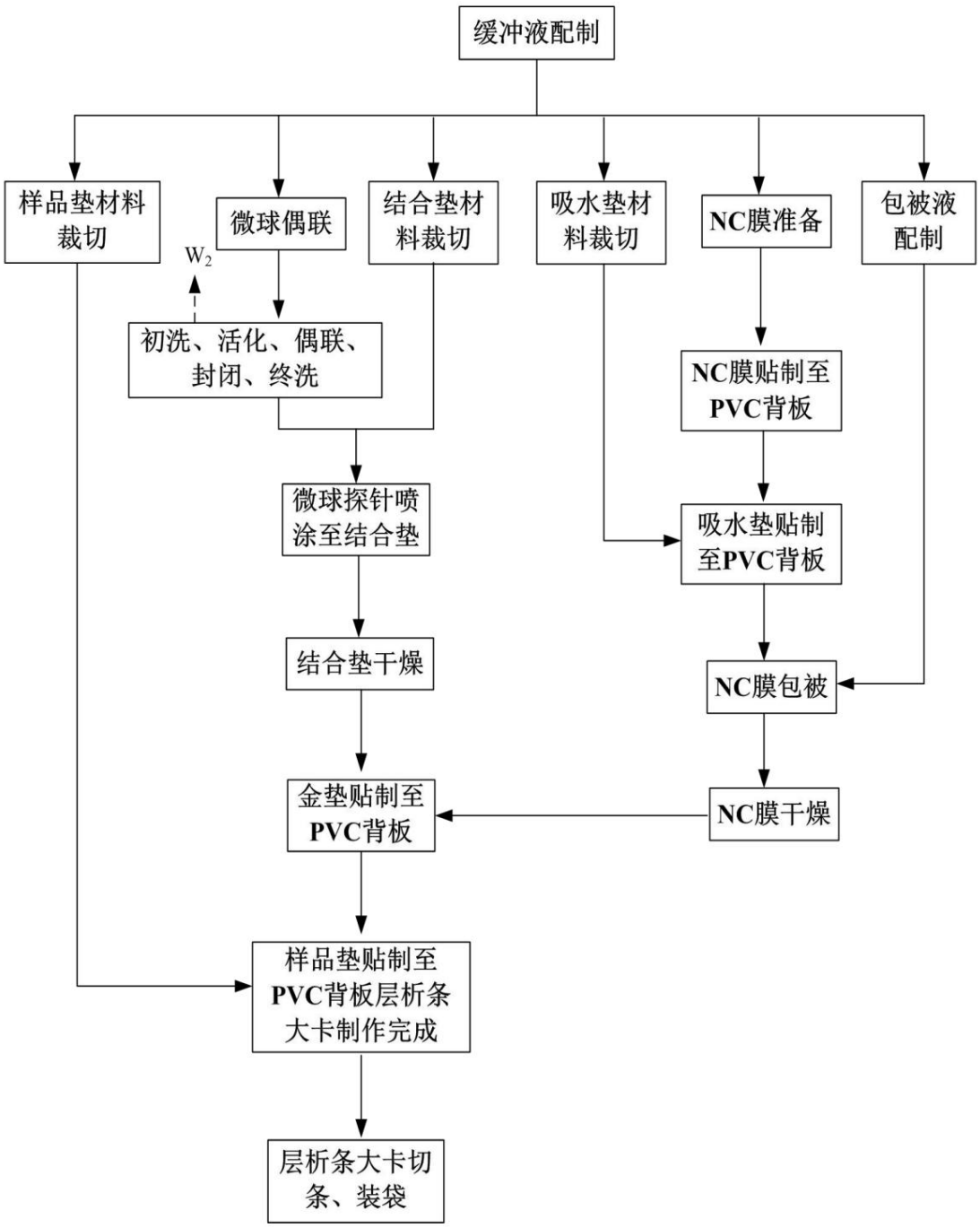
The magnetic microspheres, enzyme-labeled antibody solution, calibration solution, quality control solution, substrate solution, stabilizer and the like prepared above are assembled into a

Place the test kit in a paper container and label it with the production date, batch number, expiration date, etc.

The quality of the test kit is tested in a cold room at 2-8ÿ and can only be shipped after passing the test.

Qualified products. The heat source used by the bottle washing and drying machine used in the chemiluminescence production process is electric heating.

3. Fluorescence immunochromatography process



Note: W2 - waste liquid containing nitrogen, sulfur and boron

Figure **15** Fluorescence immunochromatography process flow chart

Process description:

First, prepare the buffers in the process as required, including: basic buffer, initial wash buffer, coupling buffer

Flushing buffer, blocking buffer, final wash buffer, microsphere diluent, coating buffer, sample diluent.

The coupling of fluorescent microspheres includes the following steps in sequence: initial washing, activation, coupling, blocking and final washing, and finally the solution is fixed to volume and stored at 4°C.

Initial wash: Take a certain amount of microspheres into a 2mL centrifuge tube, add initial wash buffer, vortex mix and centrifuge.

After centrifugation, discard the supernatant.

Activation: Add EDC/NHS to the precipitate in the previous step, vortex mix, and start the activation reaction at room temperature.

After completion, centrifuge and discard the supernatant.

Coupling: Add coupling buffer to the precipitate in the previous step, add the corresponding antibody according to the amount, vortex mix, and

After the reaction was completed, the supernatant was discarded by centrifugation.

Blocking: Add blocking buffer to the precipitation in the previous step, vortex mix, and perform blocking reaction at room temperature.

After the reaction is completed, centrifuge and discard the supernatant.

Final wash: Add final wash buffer to the precipitate in the previous step, vortex mix, centrifuge and discard the supernatant.

The whole process of coupling of the microspheres was stored at 4 ° C. The coupled microspheres were sprayed on the glass fiber by the instrument, and then

Cut the glass fiber sprayed with coupling microspheres as the binding pad, immediately put it into the 37ÿ oven to dry, and then seal it and store it away from light.

At room temperature.

Prepare the NC membrane and stick it to the corresponding position of the PVC backboard as required. Prepare the coating buffer and the corresponding antibodies of the C&T line.

After the film was cut with the instrument, it was immediately placed in a 37°C oven to dry for 1 hour. After drying, it was sealed and stored in the dark at room temperature.

Cut the sample pad and absorbent pad materials as required. After completion, take out the various parts of the test strip and press

Assemble in the following order: PVC backing (NC membrane) - conjugate pad - sample pad - absorbent pad.

Adjust the parameters of the strip cutting machine as required and cut the assembled chromatography plate into strips.

Prepare the plastic card, place the cut chromatography paper strips in the correct position, manually press the card and place it on the shell pressing machine for transmission

Bring the pressure shell.

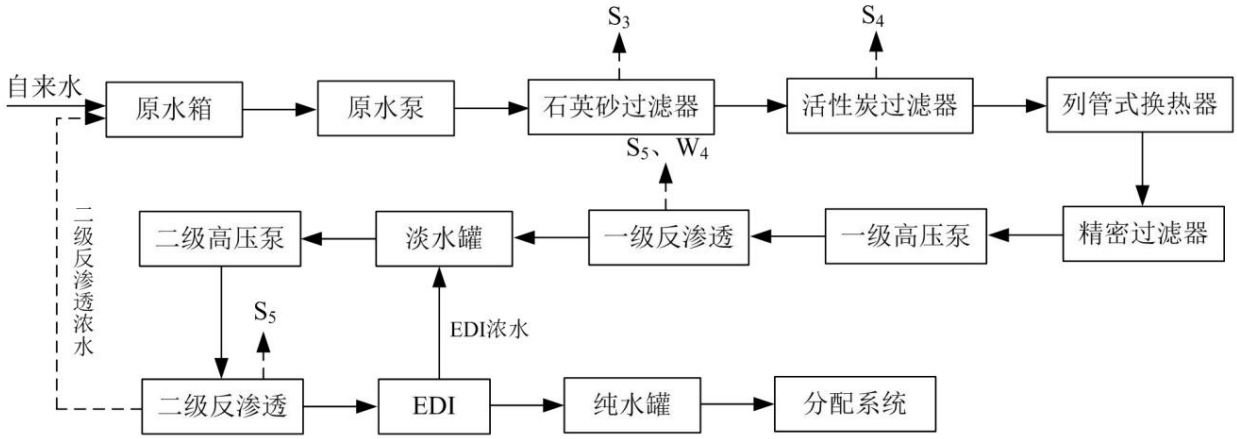
Put the completed plastic card shell into an aluminum foil bag, put a bag of desiccant into it, and finally put it into the laminator to seal it.

The chromatography test strips are completed.

The working principle of the membrane spraying instrument used in fluorescence immunochromatography is: the motor is used to control the syringe pump, and the X, Y, Z

The motors in three directions of the axis are controlled to achieve the predetermined spraying (marking) effect under the premise of specified height and distance.

4. Pure Water Preparation Process



Note: S3—waste quartz sand S4—waste activated carbon produced by pure water preparation S5—waste reverse osmosis membrane W4—clean sewage

Figure **16** Pure water preparation process flow chart

Process description:

The purified water system includes the purified water preparation system and the delivery system. The raw water of our company's purified water is from Hefei Water Supply Group.

Supply of tap water.

Filtration: The process of preparing purified water in the purified water system is that the raw water flows into the raw water tank, is pressurized by the raw water pump, and then enters the

Enter the quartz sand filter and activated carbon filter for purification. This process produces waste quartz sand and pure water to produce waste activated carbon;

Reverse osmosis: The water enters the precision filter through the shell and tube heat exchanger, and is pressurized by the first-stage high-pressure pump and sent to the first-stage reverse osmosis

After passing through the first-stage reverse osmosis device, it enters the fresh water tank, and then passes through the second-stage booster pump and the second-stage reverse osmosis device.

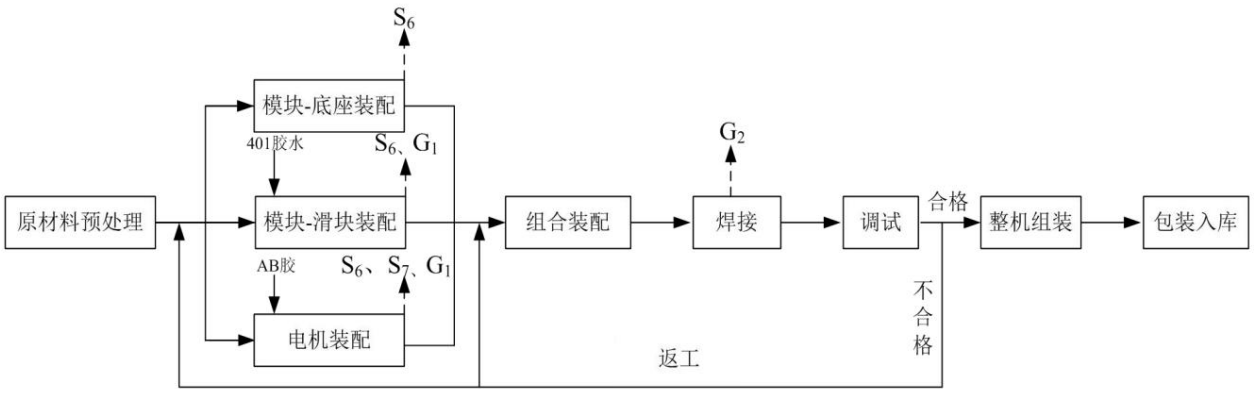
Remove organic matter, colloids and dissolved solids from the water, and the first-level reverse osmosis concentrated water is discharged into the municipal sewage network as clean sewage.

The secondary reverse osmosis concentrated water returns to the raw water tank, and the solid waste generated in this process is the discarded reverse osmosis membrane;

EDI: Enters the EDI device to further remove electrolytes, then enters the purified water storage tank, and the EDI concentrated water returns to the fresh water tank.

Then it enters the pipeline and circulates to various water use points.

5. Fluorescence Immunoassay Analyzer Assembly Process



Note: S6—waste packaging materials G1—non-methane total hydrocarbons G2—welding fumes S7—waste wiring harness materials

Figure **17** Fluorescence immunoassay analyzer assembly process flow chart

Process description:

Raw material pre-processing: outsource the purchased electronic materials, mainly including resistors, capacitors, diodes, transistors, MOS Tubes, chips, sockets, digital circuit board substrates, USB circuit board substrates are outsourced for processing into digital circuit boards and USB circuit boards; Clean and partially polish machined parts;

Module-base assembly: Fix the side pieces, springs and other parts of the machined parts to the module-base with screws. This process produces Raw and waste packaging materials;

Module-slider assembly: The filter and the slit in the machined part are manually glued using 401 glue. 401 glue is used for The amount is 1.2 kg and is fixed in the corresponding position of the slider. This process produces waste packaging materials and non-methane total hydrocarbons;

Motor assembly: After processing the wires, crimping terminals, and inserting HDR plugs, manually use AB glue to glue the motor head and The annual consumption of AB glue for linear stepper motor shaft pasting is 2.1kg. This process generates waste packaging materials, waste wiring materials, non-Total methane hydrocarbons;

Assembly: Assemble the semi-finished products such as module-base, module-slider, motor, etc. together and use screws to After fixing, install the light emitting diode and photodiode in the corresponding position, and install the main circuit in the machined part. Road plate shielding cover and detector shielding cover;

Soldering: Solder the above-mentioned LEDs, photodiodes and main circuit board shielding cover with a hot air gun or soldering station. Welding, the project has a total of 8 welding stations, each welding station is equipped with a mobile welding fume purifier, a total of 8 mobile Dynamic welding fume purifier, the annual consumption of lead-free welding wire is 12.5kg. This process produces welding fume and noise;

Debugging: debug the assembled and welded fluorescence immunoassay analyzer. If the debugging is qualified, assemble the whole machine. If the debugging is unqualified,

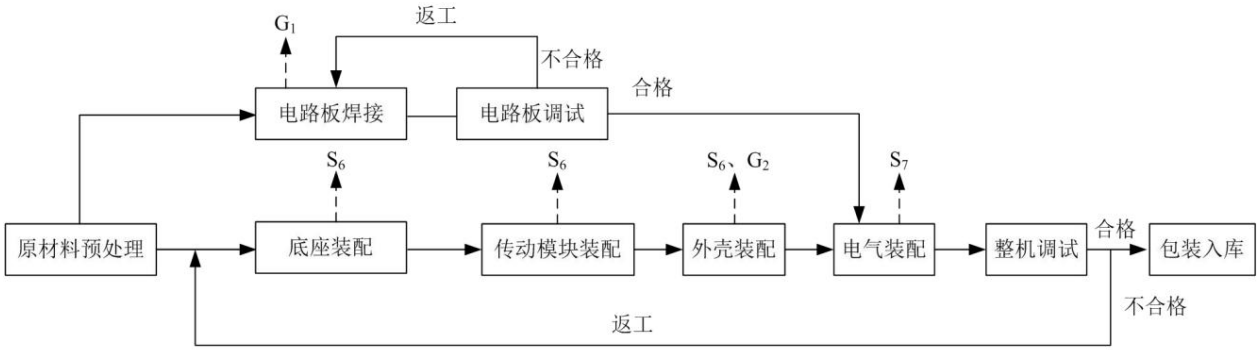
After the instrument was reworked and re-debugged, the failure rate of the initial debugging was 5%;

Assembly of the whole machine: Place the debugged fluorescence immunoassay analyzer into the plastic housing and fix it with screws;

Packing and storage: Pack the assembled fluorescence immunoassay analyzer and accessories (including USB cable, scanner,

hub) are packed into packaging boxes one by one, then packed into cartons for sealing and storage.

6. Assembly process of chemiluminescence tester



Note: S6—waste packaging materials G2—welding fume S7—waste wiring harness materials

Figure **18** Fluorescence immunoassay analyzer assembly process flow chart

Process description:

Raw material pre-processing: outsource the purchased electronic materials for processing, mainly for cleaning machine parts addition and local polishing;

Base assembly: calibration, drilling, tapping and fixing of the instrument base and main frame, installation of feet and other parts,

This process generates waste packaging materials;

Transmission module assembly: Install 6 motors, gears, screws, belts and other transmission accessories in sequence, and adjust each motor

The operation of the machine generates waste packaging materials.

Enclosure assembly: Install the enclosure parts of the electrical control room and the measuring room. This process generates waste packaging materials.

Circuit board welding: Use hot air gun, soldering station, etc. to weld the main control board, TIP head monitoring board, and circuit adapter board.

There are 8 welding stations in total, each welding station is equipped with a mobile welding fume purifier, a total of 8 mobile welding

Fume purifier, the annual consumption of lead-free welding wire is 12.5kg. This process produces welding fume and noise;

Circuit board debugging: debug the main control board, TIP head monitoring board, and line adapter board to ensure that each circuit board can function properly.

Normal operation, electrical assembly after qualified debugging, rework and re-debugging of instruments that failed debugging;

Electrical assembly: installation and fixation of circuit boards, photoelectric detectors, various sensors, routing of various wiring harnesses, ensuring wiring

Uniform and beautiful, this process produces waste wire harness materials.

Machine debugging: Test each component of the instrument separately to ensure that each action can be completed accurately, in place and in time.

There are no abnormal sounds or conditions; each photoelectric detector is accurately positioned and the feedback signal is normal; the sensor feedback signal is normal;

When testing the entire machine, the use of standard samples can achieve the expected accuracy.

Packaging and warehousing: The assembled chemiluminescence tester and accessories (including power cord, scanner, etc.)

They are packed into packaging boxes one by one, then packed into cartons, sealed and put into storage.

Main pollution processes and source strengths:

1. Construction Period

1. Exhaust gas

The main sources of waste gas pollution during the construction period of this project are construction dust, construction machinery and equipment, and exhaust gas emitted by vehicles.

2. Wastewater

The wastewater during the construction period of this project mainly comes from surface runoff from rainstorms, groundwater, construction wastewater, and domestic sewage of construction workers.

water.

3. Noise

The noise during the construction period of this project mainly comes from construction machinery noise, construction operation noise and transportation vehicle noise.

4. Solid waste

The solid waste during the construction period of this project mainly includes domestic waste generated by construction workers and various construction waste.

2. Operation Period

1. Wastewater

The project wastewater mainly includes workshop utensil washing wastewater, staff office and living sewage, cleaning wastewater and catering wastewater,

Sewage pollution factors include COD, BOD5, SS, NH3-N, TP, animal and vegetable oils, etc.

2. Exhaust gas

The project's waste gases mainly include welding smoke, non-methane total hydrocarbons and canteen fumes.

3. Noise

The noise of the project is mainly caused by air-cooled air conditioner outdoor unit, air compressor, filling and capping machine, washing and sealing machine, automatic enzyme

Standard plate washer, oscillator, dehumidifier, electric blast drying oven, hot air gun, mobile welding fume purifier and other equipment

The noise level generated by the operation is 70~90dB(A).

4. Solid waste

The solid waste generated by this project mainly includes office and domestic waste, waste packaging materials, waste wiring materials, waste quartz

Sand and pure water preparation produces waste activated carbon, waste reverse osmosis membrane and other general solid wastes, as well as unqualified products and waste gas treatment

Produces waste activated carbon, waste paper towels, enzyme plate cleaning waste liquid, nitrogen-containing, sulfur-containing and boron-containing waste liquid, residual liquid and initial rinse liquid,

Hazardous wastes such as testing room cleaning waste liquid.

Generation and expected emissions of major pollutants from the project

content / type	Emission sources (serial number)	pollutants name	Production concentration and yield (unit)		Emission concentration and emission volume (unit)	
big gas Dirt dye thing	Welding fume in production workshop		0.1kg/a		0.015kg/a	
	1# exhaust pipe	Non-methane Total hydrocarbons	Organized 0.0352 mg/m3 0.0264 kg/a	0.00352 mg/m3 0.00264 kg/a		
			Unorganized 0.0066kg/a Organized		0.0066kg/a	
	2# exhaust pipe	Non-methane Total hydrocarbons	23.226mg/m3 69.678kg/a 2.3226mg/m3 Unorganized 1.422kg/a			6.9678kg/a
			1.422kg/a			
	canteen	Canteen fume 7.875mg/m3		0.0945t/a	1.575mg/m3	0.0189t/a
water Dirt dye thing	Staff Office	COD	264.28mg/l	2.234t/a	50mg/l	0.423t/a
		BOD5	159.44mg/l	1.348t/a	10mg/l	0.085t/a
		SS	109.78mg/l	0.928t/a	10mg/l	0.085t/a
		NH3-N	15.93mg/l	0.135t/a	5(8)mg/l	0.042 (0.068) t/a
		TP	0.30mg/l	0.003t/a	0.5mg/l	0.003t/a
		Animal and	15.93mg/l	0.135t/a	1mg/l	0.008t/a
solid body Waste thing	vegetable oils, office waste, and household waste		22.5		/	
	Production	Waste packaging materials	0.5			
		Waste wiring harness materials	0.02			
		Waste quartz sand	0.001			
		pure water preparation produces waste active sex carbon	0.001			
		Waste gas treatment of waste	0.2			
		reverse osmosis membranes produces waste sex carbon	0.27			
		Unqualified product	0.06			
		waste paper	0.26			
		towel enzyme labeling plate	6			
		cleaning waste liquid contains nitrogen, sulfur and Boron waste liquid	0.1105			
		The noise of residual liquid and initial	4			
		rinse liquid testing room cleaning	1.52			
noise Voice	waste liquid project is mainly caused by air-cooled air conditioner outdoor unit, air compressor, filling and capping machine, washing and sealing machine, automatic enzyme labeling machine, etc. Washer, oscillator, dehumidifier, electric blast drying oven, hot air gun, mobile welding fume purifier and other equipment are running The noise level is 70~90dB(A).					
That he	/					

Main ecological impacts:

The project construction site is located at the northeast corner of the intersection of Kongquetai Road and Chang'an Road in Hefei High-tech Industrial Development Zone, which is not a sensitive or fragile ecosystem.

There are no rare animals or plants in the area where the construction project is located, so the construction of this project will have little impact on the local ecological environment.

Environmental impact analysis during construction period:

This project is located at the northeast corner of the intersection of Kongquetai Road and Chang'an Road in Hefei High-tech Industrial Development Zone.

The main impacts on the environment are the noise generated by construction machinery, domestic sewage generated in temporary living areas for construction workers, and construction dust.

These impacts are local and short-term in nature and will not cause long-term impacts.

During the construction phase of this project, environmental protection work should be done seriously to effectively reduce the environmental impact caused by the construction.

1. Water Environment Impact Analysis

Wastewater during the construction period mainly comes from surface runoff from rainstorms, wastewater from washing construction waste soil transport vehicles, construction wastewater,

Construction wastewater includes muddy water generated during excavation, cooling water and washing water from mechanical equipment operation;

Live sewage includes washing water of construction workers, canteen wastewater and toilet flushing water; surface runoff from rainstorms washes away floating soil and construction sand.

Stone, garbage, and abandoned soil will not only carry a large amount of mud and sand, but also carry various pollutants such as oil, cement, and chemicals.

The wastewater from washing construction waste transportation vehicles contains a large amount of pollutants such as sediment.

Storm surface runoff, construction waste transport vehicle cleaning wastewater and construction wastewater can be collected into sedimentation tanks.

The amount of water used for construction is difficult to predict. The average number of construction workers in this project is about 50 people, and the water used by construction workers is 50L/

The total domestic water consumption is 2.5m3 /d. If the domestic sewage is calculated as 80% of the water consumption, the discharge of domestic sewage is

2m3 /d, the construction period is 1 year, and the construction days are calculated based on 300 working days per year, so the total domestic sewage discharged during the construction period is 600m3.

Live sewage is pre-treated in the septic tank of the construction camp (the construction camp is located on the south side of the project area) and then connected to the Chang'an Road municipal sewage pipe

The sewage is then sent to the Hefei Economic Development Zone Wastewater Treatment Plant for treatment.

Wastewater treatment measures during construction period:

(1) During the construction period, the main roads will be paved with concrete, drainage ditches (pipes) will be laid around the site, and

Temporary sedimentation tank, rainwater containing SS and trace oil and construction wastewater from vehicles transporting construction waste entering and leaving the construction site are discharged into

The sedimentation tank shall be reused after sedimentation and clarification treatment and shall not be discharged directly into the Pai River;

(2) During the construction period, a certain amount of muddy water will be generated during the piling stage. According to the analog monitoring survey, SS is

1000~3000mg/l, wanton discharge will cause blockage of surrounding rivers, so the wastewater must be discharged into sedimentation tanks for sedimentation and clarification.

The water shall be reused after cleaning and treatment and shall not be discharged directly into the Pai River;

(3) Temporary living facilities such as temporary grease traps and septic tanks shall be built at the construction camp, and domestic sewage shall be treated in the septic tanks.

After reaching the takeover standard, it will be discharged into the Chang'an Road municipal sewage network and then into the Hefei Economic Development Zone sewage treatment plant for treatment. It shall not be discharged directly into the sewage pipe network.

Enter the Pai River;

(4) Construction water is a major consumer of urban water, mainly used for domestic water and engineering water.

It is used for engineering maintenance. During engineering maintenance, about 70% of the water is lost, and it carries with it sediment and debris. If it is not handled properly,

It will pollute the environment and must be treated in a sedimentation tank before being reused to avoid polluting the environment and clogging the sewage pipes.

In summary, after the above-mentioned prevention and control measures are implemented, it is expected that the discharge of wastewater from the project construction will have little impact on the water environment of the receiving water body.

II. Analysis of atmospheric environmental impact

During the construction period, motor vehicles are frequently used to transport raw materials, equipment and construction machinery. The operation of these vehicles and equipment will

It emits a certain amount of CO, NO2 and incompletely burned hydrocarbons, and also produces dust that pollutes the atmospheric environment.

1. Construction dust

The main air pollutants during the construction period are dust generated during the transportation and unloading of construction materials;

Dust generated during construction; Dust generated by temporary material storage yards; Cement dust generated by mixing a small amount of cement, etc.

The adverse impact on the regional air environment, combined with the Air Pollution Prevention and Control Action Plan and the Anhui Province Air Pollution Prevention and Control Action Plan,

According to the relevant provisions of the "Hefei City Dust Pollution Prevention and Control Management Measures" and the characteristics of this construction project, the evaluation should be carried out.

The construction unit is requested to adopt the following preventive strategies and measures:

ÿSprinkling water to suppress dust

When transporting earthwork, keep the earthwork below the level of the vehicle compartment baffle to reduce spillage and the risk of sand, gravel and water spilling on the construction site.

Mud and other materials should be cleaned up in time, and gravel piles and construction roads should be sprinkled with water regularly to suppress dust. Table 17 shows the construction site sprinkler dust suppression test.

Results. The test showed that sprinkling water 4-5 times a day can reduce the amount of dust by about 70%, and the TSP pollution caused by dust is far less than

The distance can be reduced to 20-50m, so this project can reduce construction dust by sprinkling water to suppress dust.

Table **17** Results of water sprinkling and dust suppression test during construction period

Distance (m)		**5**	**20**	**50**	**100**
TSP hourly concentration (mg/m3)	No watering	October 14th	2.89	1.15	0.86
	watering	2.01	1.40	0.67	0.60

ÿ Closed construction

Fences or walls are set up in the direction of the construction site that affects the surrounding area to close the construction site and reduce dust and exhaust gas from the construction site.

Diffusion range.

ÿSpeed limit

Most of the dust on the construction site comes from construction vehicles. Under the same clean conditions, the slower the speed, the more dust will be generated.

The smaller the amount. Construction vehicles on this site need to slow down after entering the construction site to reduce dust on the construction site. It is recommended to

The driving speed should not exceed 5 km/h. The amount of dust generated at this time can be reduced to 1/3 of that at normal driving speed (15 km/h).

ÿ Keep the construction site road clean

In order to reduce construction dust, the construction site, access roads and construction vehicles must be kept clean.

Clean the site, clean the construction vehicles in time, prohibit overloading, prevent spillage and other effective measures to keep the site road clean and reduce

Less construction dust.

ÿOther measures

In addition, in order to reduce construction dust, attention should be paid to reducing the surface bare soil during construction, and backfilling and tamping should be carried out in time after excavation.

Be practical and carry out excavation and backfilling in a planned manner.

After strictly implementing the above regulations and measures, the impact of dust generated during the construction period of this project is within an acceptable range.

2. Fuel exhaust

During the construction process, there are many fuel-fired equipment, which produces a lot of fuel exhaust gas.

The construction unit should do a good job of maintenance and care for the machinery to avoid incomplete combustion of oil in the diesel engine.

A lot of black smoke; overloading of vehicles and use of inferior fuels are prohibited; vehicle exhaust emissions are supervised and managed.

Strictly implement automobile pollution control measures and automobile emission monitoring system.

3. Analysis of acoustic environment impact

During the construction period of this project, the noise mainly comes from construction machinery noise, construction operation noise and transportation vehicle noise.

The noise source intensity of the main construction machinery and equipment is shown in Table 18.

Table **18** Noise source intensity of construction machinery and equipment

Name of construction equipment	**10m** from the sound source	Name of construction equipment	**10m** from the sound source
electric excavator	75~83	Concrete vibrator	75~84
wheel loader	85~91	Static pile driver	68~73
bulldozer	80~85	jackhammer	83~87
Woodworking chainsaw	90~95	Marble machine, angle grinder	84~90
Electric hammer	95~99	air compressor	83~88

The types of material transport vehicles and their sound level values are shown in Table 19.

Table **19** Noise from transportation vehicles

Construction phase	Transport Contents	Vehicle type **sound source intensity (dB (A))**	
Main project	Steel bars and commercial concrete	Truck	80-85
Decoration Project	Light trucks with various decoration materials and necessary equipment		75-80

Construction machinery is relatively large in size and its operation noise is also high. In the actual construction process, various machines are often used at the same time.

When working at the same time, the sound energy of various noise sources will be superimposed on each other, and the noise level will be higher. According to analogy investigation, the superimposed noise

Increase by 3-8dB(A), generally not exceeding 10dB(A).

The point sound source diffusion model can be used to predict the impact of construction machinery noise:

$$LL_{p2\ p1} = 20\lg \frac{r_1}{r_2}$$

Where:

Lp1, Lp2 ——the sound pressure levels at distances r1 and r2 respectively ;

r1, r2 are the distances between the prediction point and the sound source.

From this formula, we take the electric hammer and woodworking saw, which are the equipment with the highest noise values, and calculate the noise attenuation with distance.

See Table 20. As can be seen from the table, the noise of construction machinery is attenuated slowly in open areas due to its high sound level.

A distance of 200m may still exceed the standard.

Table **20** Construction machinery noise attenuation distance (m)

No.	Construction machinery	Sound level (dB(A))								
		10	50	100	150	200	250	300	400	500
1	Electric hammer	99	85	79	76	73	71	69	67	65
2	Woodworking Electric Saw	95	81	75	72	69	67	65	63	61

From the table above, we can see that the noise emission standards for construction sites can only be met at a distance of 300 meters from the electric hammer.

(GB12523-2011) Nighttime noise limit: 55dB(A). A woodworking electric saw must be 200m away to reach the operating noise limit.

Therefore, during the project construction, effective measures must be taken to reduce the impact of construction noise on the environment.

ÿConstruction units should adopt advanced construction technology and give priority to low-noise equipment. Appropriately set up

Barriers are used to reduce the impact of noise on the surrounding environment and control the noise level at the construction site to not exceed the "Construction Site Environmental Noise Emissions"

Release Standard (GB12523-2011);

ÿ Reasonably adjust the construction period. It is recommended to arrange the construction phase with heavy noise during the daytime and not during lunch break to reduce the impact on the weekly

Nighttime construction is prohibited. If it is necessary to carry out construction at night due to production process requirements or other special needs, the noise level should not exceed 200.

For construction that meets noise standards, the construction unit should apply to the relevant departments before construction and can only carry out night construction after approval;

ÿ The construction unit should reasonably arrange the working position of the construction machinery and try to avoid construction during sensitive periods.

If necessary, mobile noise barriers should be installed for construction machinery to reduce the impact of construction noise;

ÿ The number of noisy construction machines operating simultaneously should be reduced to minimize the impact of sound source superposition.

At the same time, the maintenance of construction machinery should be strengthened during construction to avoid the increase of mechanical noise due to poor equipment performance.

Operate mechanical equipment in accordance with regulations, and follow operating regulations during the disassembly of baffles and brackets to reduce collision noise.

4. Solid Waste Impact Analysis

The solid waste during the construction period of this project mainly includes domestic waste generated by construction workers and various construction waste.

Domestic waste generated during the construction period will be collected and transported away by the sanitation department.

The construction waste generated during the construction of this project mainly includes earthwork generated by excavation of land, project excavation, construction process

The waste soil generated during the process should be handled and disposed of in accordance with the provisions of the "Hefei City Appearance and Environmental Sanitation Management Regulations".

The construction waste admission and disposal procedures must be handled at the municipal environmental sanitation administrative department by the construction unit or contractor and

The Municipal Appearance Bureau's Construction Waste Management Office will contact the relevant department for transportation. The transportation of construction waste will strictly comply with the provisions of the "Hefei Municipal Construction Waste Management Measures."

Environmental impact analysis during operation period:

1. Water Environment Impact Analysis

1. Water supply and drainage

Water supply: This project is supplied by the municipal water supply network of the High-tech Zone. The water used in the project mainly includes water for pure water preparation, water for cleaning utensils, and water for

Water for washing, cleaning, drinking water, office and living water for employees, drinking water for dining, and landscaping.

(1) Water for pure water preparation

This project is calculated based on the production water consumption per 100 people.

The production capacity of the test kits produced by chromatography process is 10 million copies/a, 8 million copies/a, and 57 million copies/a respectively.

500 batches of 20,000, 16,000, and 114,000 doses will be produced respectively. The specific types of diagnostic kits produced will be determined according to the order requirements.

Please confirm that all water used in the production process is purified water. The project's reverse osmosis purified water yield is approximately 0.6, and the specific water consumption is as follows:

The water consumption during the ELISA production process is as follows:

Water used to prepare negative control = 100 ml/100 servings × 10 million servings/a = 10 t/a

Preparation of other solutions = 25ml/100 servings × 10 million servings/a = 2.5t/a

Water used to clean the ELISA plate = 10 ml/100 servings × 6 times × 10 million servings/a = 6 t/a

The water consumption during the chemiluminescence production process is as follows:

Prepared solution = 100ml/100 servings × 8 million servings/a = 8t/a

The water consumption during the fluorescent immunochromatography production process is as follows:

Prepared solution = 50ml/100 servings × 57 million servings/a = 28.5t/a

The purified water consumption in the production process is 55t/a and the tap water consumption is 91.67t/a.

(2) Water for washing utensils

According to the "Biohit Biotech (Hefei) Co., Ltd. Gastric Mucosal Serum Detection Kit Project" (Huang Gaoshen [2016]

098) is currently in actual operation, and the utensils used must be cleaned and disinfected after each batch of production.

The utensils involved in the process are mostly glass and stainless steel utensils with smooth surfaces. The residual liquid is poured out and rinsed for the first time (the residual liquid

and the initial rinse solution are temporarily stored in a hazardous waste collection barrel) and then enter the cleaning process. Each batch of cleaning water requires about 0.5t.

Producing 150,000 servings, a total of 500 batches, 500 cleanings, no cleaning agents used in the cleaning process, annual consumption is 0.5t/batch x 500 batches

/a=250t/a.

(3) Cleaning water

The cleaning water consumption of the workshop and office area of this project is calculated as 1L/m2·d. The cleaning area is about 20637m2.

The clean water consumption is 20.637t/d, and the annual water consumption is 5159.25t/a.

(4) Water for employees' office and daily use

The project has 180 employees. They eat in the factory but do not stay overnight. The living water standard for employees is 60L/

If calculated based on person·d, the daily water consumption is 10.8t/d and the annual water consumption is 2700t/a.

(5) Dietary and drinking water

The number of employees in this project is 180. The standard of employee dining and drinking water is calculated as 40L/person·d, so the daily water consumption is

7.2t/d, annual water consumption is 1800t/a.

(6) Water used for greening

The greening water consumption of this project is 0.1L/m2·d. The greening area is 1668m2, so the daily greening water consumption is 0.1668t/d.

The annual water consumption is 41.7t/a.

Therefore, the daily water consumption of the project is 40.17048t/d, and the annual water consumption is 10042.62t/a (calculated based on 250 working days per year).

Water consumption is shown in Table 21:

Table **21** Water consumption list of construction projects

project	Water consumption standards	**Water consumption (t/d)**	**Water consumption (t/a)**
Pure water preparation water	/	0.36668	91.67
Utensil washing water	/	1	250
Cleaning water	1L/m2·dÿ20637m2ÿ	20.637	5159.25
Office and living water for employees	60L/person·d (180 people)	10.8	2700
Dietary drinking water	40L/person·d (180 people)	7.2	1800
Greening water	0.1L/m2·dÿ1668m2ÿ	0.1668	41.7
total		40.17048	10042.62

Drainage: The project area adopts a rainwater and sewage diversion system, with rainwater entering the municipal rainwater pipe network; wastewater includes enzyme labeling plate cleaning

Waste liquid, nitrogen-containing, sulfur-containing and boron-containing waste liquid generated by initial washing, activation and final washing of magnetic microspheres, and waste water from washing utensils (residual liquid

and initial rinse solution, test room cleaning wastewater and workshop utensil cleaning wastewater), cleaning wastewater, employee office and domestic sewage and

Catering wastewater, including enzyme labeling plate cleaning wastewater, nitrogen-containing, sulfur-containing and boron-containing wastewater, residual liquid and initial rinse liquid and detection room

All cleaning waste liquids are collected and temporarily stored in the waste liquid reservoir and not discharged. The catering waste water is pre-treated by the oil-water separator and then separated from the workshop utensils.

Washing wastewater, cleaning wastewater, and staff office and domestic sewage are pre-treated in septic tanks and discharged into municipal sewage together with clean sewage.

The wastewater is then discharged into the Pai River after being treated and meeting standards at the Hefei Economic Development Zone Wastewater Treatment Plant. See Figure 19 for the water balance diagram.

The discharge of project equipment washing wastewater, cleaning wastewater, and staff office and living sewage is calculated based on 85% of the water consumption.

The amount of wastewater discharged is 33.816042t/d, and the annual amount of wastewater discharged is 8454.0105t/a.

in:

Wastewater from enzyme-linked immunosorbent assay (ELISA) plate cleaning is only produced in the ELISA process, with a total output of 10 million copies/year.

Current status of the Gastric Mucosal Serum Detection Kit Project of Biotechnology (Hefei) Co., Ltd. (Huangao Shen [2016] No. 098)

In this case, the enzyme-labeled reaction plate coating process needs to be cleaned 6 times. The amount of each test kit for 100 people is 10ml.

The amount of waste liquid generated from standard plate cleaning is: 10ml/100 people × 6 times × 10 million people/a = 6t/a, 0.024t/d.

Nitrogen, sulfur and boron-containing waste liquids are only produced in the chemiluminescence process and fluorescent immunochromatography process, with a total output of

65 million doses/year, according to the Gastric Mucosal Serum Detection Kit Project of BIOHIT Biotechnology (Hefei) Co., Ltd. (Environmental

Gaoshen [2016] No. 098) Current actual waste generation situation: nitrogen-containing waste liquid generation is 0.0006ml/person, sulfur-containing waste liquid generation is 0.0006ml/person,

The amount of waste liquid produced is 0.0005ml/person, and the amount of waste liquid containing boron is 0.0006ml/person, so the amount of waste liquid containing nitrogen, sulfur and boron is 0.0005ml/person.

The amount of liquid produced is (0.0006+0.0005+0.0006) ml/person × 65 million people/a = 0.1105t/a, 0.000442t/d;

According to the "Biohit Biotech (Hefei) Co., Ltd. Gastric Mucosal Serum Detection Kit Project" (Huang Gaoshen [2016]

098) According to the current actual operation, the amount of residual liquid and initial rinse liquid generated is about 8L/batch, so the amount of this part of waste liquid generated is:

8L/batch×500 batches/a=4t/a, 0.016t/d.

According to the "Biohit Biotech (Hefei) Co., Ltd. Gastric Mucosal Serum Detection Kit Project" (Huang Gaoshen [2016]

098) Waste generation in the testing room. After each batch of testing, the testing utensils and instruments must be cleaned.

The production volume is about 3.8L/batch, and the annual production volume is: 3.8L/batch × 500 batches/a = 1.52t/a, 0.00608t/d.

The project water balance diagram is as follows, including the enzyme plate cleaning waste liquid, nitrogen-containing, sulfur-containing and boron-containing waste liquid, residual liquid and primary lubrication waste liquid.

Washing liquid and laboratory cleaning waste liquid are temporarily stored in the hazardous waste warehouse and then handed over to qualified units for disposal:

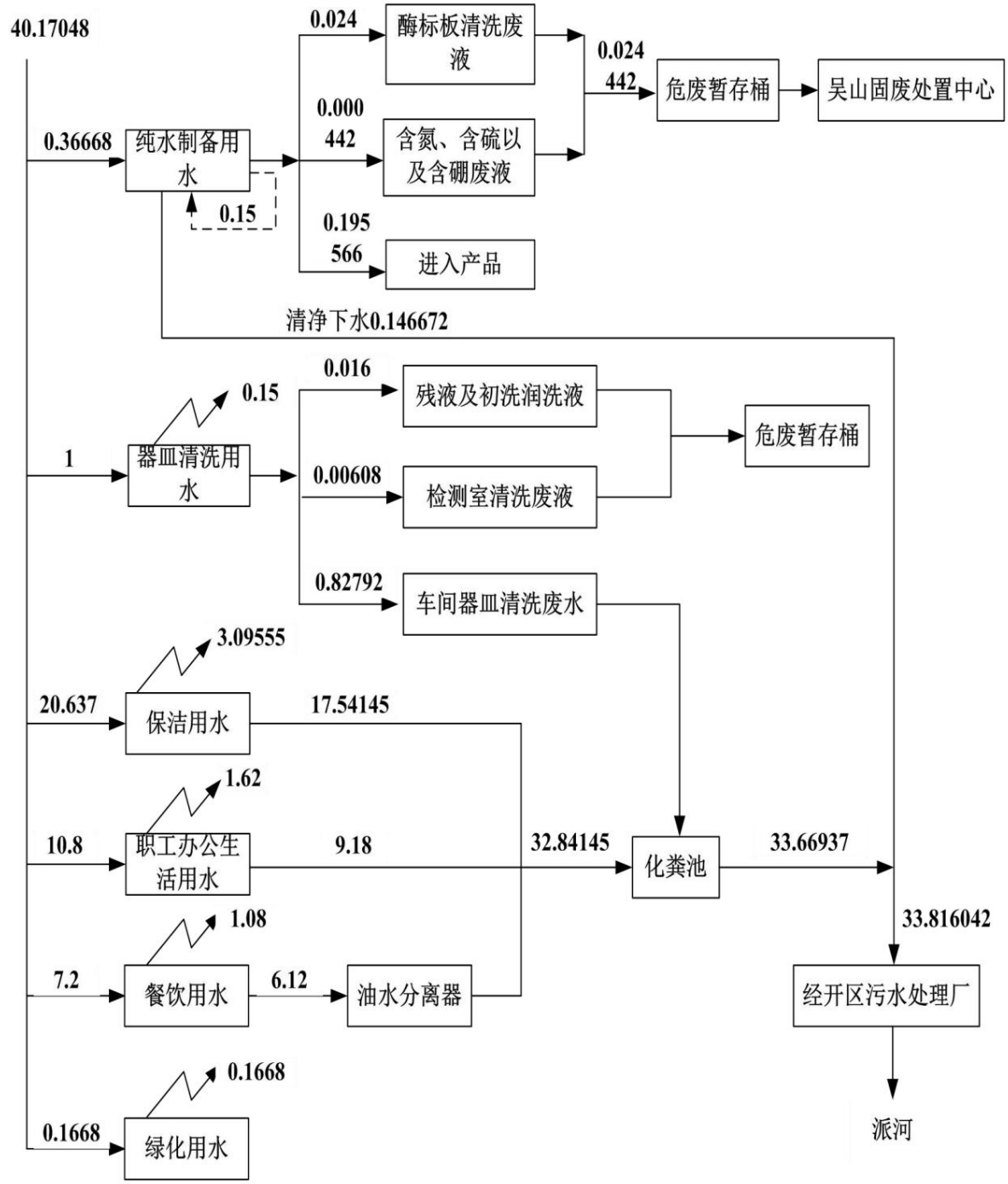


Figure **19** Water balance diagram of construction project **(unit: t/d)**

2. Types of wastewater pollutants and their discharge

According to the characteristics of the construction project, the wastewater entering the municipal sewage network of this project is mainly staff office sewage, cleaning sewage Wastewater, workshop utensil washing wastewater, catering wastewater, clean sewage, by analogy, the main pollutants in wastewater are COD, BOD5, SS, NH3-N, TP, animal and vegetable oils, etc. The project wastewater is pre-treated and taken over by the Hefei Economic Development Zone Wastewater Treatment Plant. After the pollutant emission limits in the standards and the "Water Pollutant Emission Standard for Mixed Preparation Pharmaceutical Industry" (GB21908-2008),

The sewage is then sent to the Hefei Economic Development Zone Wastewater Treatment Plant for treatment and discharged into the Pai River after reaching the standards. The sewage quality is shown in the table below:

Table **22** Wastewater Pollutant Generation Status **Unit: mg/l**

Wastewater sources	Wastewater volume **(t/d)**	Pollutants (unit: mg/l)						
		COD BOD5 SS NH3-N TP					Plants and animals Oil	Unit product Baseline drainage **Volume (m3 /t)**
Workshop utensil cleaning waste water	0.82792	300	170	**/**	**/**	0.12	**/**	**/**
Office and domestic sewage 9.18		280	200	120	30	1.6	**/**	**/**
Cleaning wastewater 17.54145 250			160	80	**/**	0.1	**/**	**/**
catering wastewater	6.12	350	180	150	28	**/**	50	**/**
Pre-processed by oil-water separator Treated catering waste water	6.12	260	150	90	28	/	28	**/**
Pre-treated in septic tank Mixed wastewater after	33.66937 265		160	110	16	0.3	16	**/**
Clean sewage 0.146672 Pre-		100	30	60	**/**	**/**	**/**	**/**
treated mixed Wastewater concentration	33.81604 2	264.28 159.44 109.78			15.93	0.30	15.93	0.37
Pollutant generation (t/a)	8454.010 5	2.234	1.348	0.928	0.135	0.003	0.135	**/**
Implementation standards of this project/		330	160	200	20	0.5	100	300

Note: ELISA plate cleaning waste liquid, nitrogen-containing, sulfur-containing and boron-containing waste liquid, residual liquid and initial rinse liquid, and detection room cleaning waste liquid are collected separately It is then disposed of as hazardous waste and not discharged.

As can be seen from the table above, the COD concentration of the main pollutants in the pre-treated mixed wastewater of the construction project is:

264.28mg/l, BOD5: 159.44mg/l, SS: 109.78 mg/l, NH3-N: 15.93mg/l, TP: 0.3mg/l,

Vegetable oil: 15.93mg/l, unit product standard discharge volume: 0.37m3 /t, the concentration of major pollutants in wastewater reaches Hefei Economic Development Zone

The district sewage treatment plant takeover standards and the "Mixed Preparation Pharmaceutical Industry Water Pollutant Discharge Standard" (GB21908-2008)

Pollutant emission limits can be met and the wastewater can be treated in municipal sewage treatment plants, without the need for the construction unit to build additional sewage treatment facilities.

Pollutant generation COD: 2.234t/a, BOD5: 1.348t/a, SS: 0.928t/a, NH3-N: 0.135t/a, TP: 0.003t/a,

Animal and vegetable oils: 0.135t/a.

3. Wastewater pollution prevention and control measures

(1) Destination of wastewater discharge

According to the calculation of the construction project, the catering wastewater is pre-treated by the oil-water separator and then mixed with the workshop utensil washing wastewater, cleaning wastewater,

The staff office and domestic sewage are pre-treated in the septic tank and then combined with the clean sewage to produce concentrated

COD : 264.28 mg/l, BOD5: 159.44 mg/l, SS: 109.78 mg/l, NH3-N: 15.93 mg/l, plants and animals

Oil: 15.93mg/l, meeting the Economic Development Zone sewage treatment plant takeover standards and sewage comprehensive discharge level 3 standards COD: 330mg/l,

Requirements : BOD5: 160mg/l, SS: 200 mg/l, NH3-N: 20mg/l, animal and vegetable oil: 100mg/l;

The annual production volume of the product of this project is: 528g/person × 10 million people + 299g/person × 8 million people + 265.3g/person

×57 million people = 22794.1t, the annual wastewater discharge is 8454.0105m3, so the unit product baseline discharge volume of this project is

0.37m3 /t, meeting the requirements of the Discharge Standard of Water Pollutants for Mixed Preparation Pharmaceutical Industry (GB21908-2008) for medium-ton products.

The water volume does not exceed 300m3.

In summary, the wastewater of this project can reach the acceptance standard of Hefei Economic Development Zone Wastewater Treatment Plant and the "Mixed Preparation Pharmaceutical" after pretreatment.

The pollutant emission limits in the Industrial Water Pollutant Discharge Standard (GB21908-2008) are used to treat sewage in Hefei Economic Development Zone.

The project does not require the construction of additional sewage treatment facilities.

(2) Brief introduction of the sewage treatment plant in Hefei Economic Development Zone

Hefei Economic Development Zone Wastewater Treatment Plant is located on Qingluan Road, Hefei Economic and Technological Development Zone. Its service scope includes the Economic Development Zone.

The area north of Tangkou Road and west of Shixin Road covers a total area of 25.74 km2, and also includes the new administrative district, Taohua Industrial Park, Chang

An Industrial Park, and part of the southern end of the High-tech Development Zone. The design scale of the first phase is 100,000 m3 /d. Currently, the second phase

The project has also been completed, and it can treat 200,000 m3 of wastewater per day. After the completion of the third phase of the sewage treatment plant in Hefei Economic Development Zone, the sewage treatment

The effluent discharge from the treatment plant shall comply with the Class A standard in Table 1 of the Pollutant Discharge Standard for Urban Wastewater Treatment Plants (GB18918-2002).

The four main indicators are stricter than the Class A effluent discharge standards, namely total phosphorus, total nitrogen, ammonia nitrogen, chemical oxygen demand,

The concentration values of the four main indicators are no higher than 0.3, 5, 1.5 and 30 mg/L respectively, reaching the Class IV standard of surface water environment quality.

The sewage pipe network in Hefei Economic and Technological Development Zone is fully connected, with a total length of 90 km.

The trunk line is about 23 km long and the branch line is 67 km long. The trunk line has been connected to Feixi County, Taohua Industrial Park, Government Affairs District, and High-tech Zone.

etc., solving the problem of industrial wastewater treatment within the development zone.

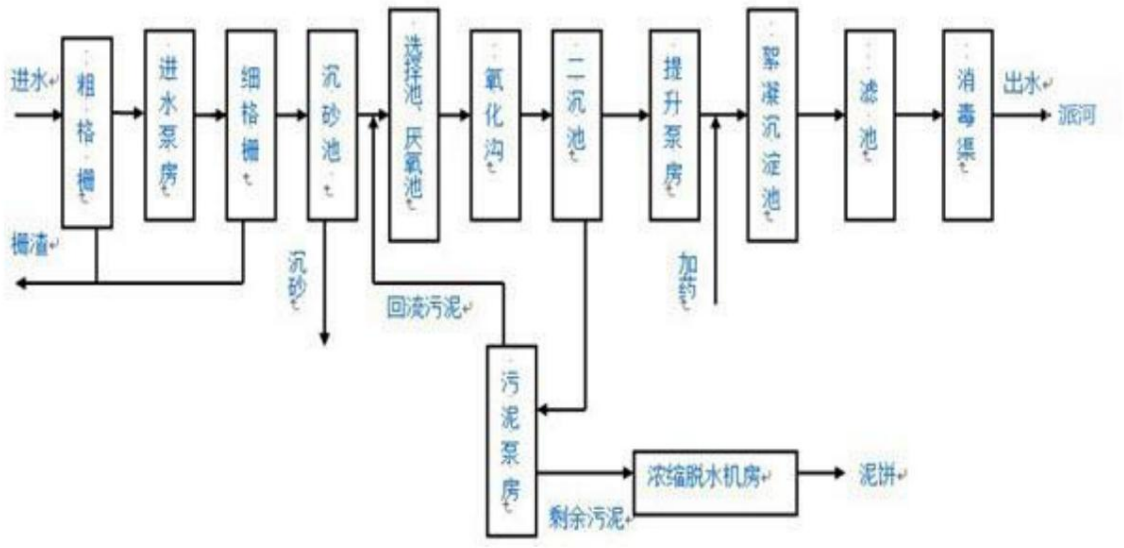


Figure **20** Wastewater treatment process flow chart of Hefei Economic Development Zone Wastewater Treatment Plant

(3) Brief introduction to the characteristics of wastewater treatment process of Hefei Economic Development Zone Wastewater Treatment Plant:

Carrousel 2000 oxidation ditch is a patented technology of DHV Company in the Netherlands.

A sewage treatment process with good phosphorus and nitrogen removal effects is formed by adding an anaerobic tank and an anoxic tank.

It combines the advantages of A/O method and oxidation ditch method. It uses delayed aeration activated sludge that combines complete mixing type and plug flow type.

The unique pool type and corresponding aeration equipment layout form an anoxic-anaerobic-aerobic process flow, namely A2/A1/O

Process. It has good effluent quality, strong resistance to shock load, not prone to sludge swelling, high efficiency of phosphorus and nitrogen removal, and sludge

The effluent can meet the requirements of the Chaohu Basin Urban Wastewater Treatment Plant and Industrial Wastewater Treatment Plant.

The urban sewage treatment plant standards in the "Emission Limits of Major Water Pollutants in the Industrial Sector" (DB34/2710-2016) (no specific regulations are given)

The standard shall comply with GB18918-2002 Level A standard).

(4) Feasibility analysis

ÿThe pollutant concentration of the total outlet wastewater of this project meets the takeover standard requirements of the Hefei Economic Development Zone Wastewater Treatment Plant;

ÿThe project site is within the water collection area of the sewage treatment plant in the Economic Development Zone. The sewage pipes in the area where the project is located are

The network is under construction. After completion, the sewage pipe network in the enterprise factory area will be connected to the municipal sewage pipe network. The wastewater discharged by the project can be discharged into the

The wastewater is then sent to the Hefei Economic Development Zone Wastewater Treatment Plant for treatment.

4. Pollutant emissions

After taking the above-mentioned wastewater pollution prevention and control measures, the discharge of wastewater pollutants from the project is shown in Table 23:

Table **23** Summary of wastewater discharge from construction projects **Unit: mg/l**

Types of wastewater	Wastewater volume	Pollutant concentration (mg/l)					
		COD	**BOD5**	**SS**	**NH3-N**	**TP**	animal and vegetable oil
Pollutant generation (t/a)	8454.0 105	2.234	1.348	0.928	0.135	0.003	0.135
Urban Wastewater Treatment in Chaohu Basin Major water pollution in factories and industrial sectors Emission Limits of Pollutants (DB34/2710-2016) Zhongcheng Town Wastewater treatment plant standards (not specified) Indicators implement GB18918-2002 Grade A Standard)	— 50		10	10	5 (8)	0.5	1
Pollutant reduction (t/a) — 1.811			1.263	0.843	0.093 (0.067)	0	0.127
Pollutant emissions (t/a)	8454.0 105	0.423	0.085	0.085	0.042 (0.068)	0.003	0.008

Note: The values outside the brackets are control indicators when the water temperature is greater than 12ÿ, and the values inside the brackets are control indicators when the water temperature is ÿ12ÿ.

As can be seen from the table above, after being treated by the Hefei Economic Development Zone Wastewater Treatment Plant, the main pollutants in the wastewater discharged from the construction project are

COD, BOD5, SS, NH3-N, TP, animal and vegetable oils can all meet the requirements of the Chaohu Basin Urban Sewage Treatment Plant and Industrial

Standards for urban sewage treatment plants in the "Emission Limits of Major Water Pollutants in Industries" (DB34/2710-2016) (no specified indicators)

Implementation of GB18918-2002 Level A standard) requirements, major pollutant emissions COD: 0.423t/a, BOD5: 0.085t/a,

SS: 0.085t/a, NH3-N: 0.042 (0.068)t/a, TP: 0.003t/a, animal and vegetable oil: 0.008t/a.

The drinking water is pre-treated by the oil-water separator and then mixed with the workshop utensil washing wastewater, cleaning wastewater, and staff office and living wastewater.

Septic tank pretreatment, together with clean sewage discharged into the municipal sewage network, into the Hefei Economic Development Zone sewage treatment plant after treatment to meet the standards

The wastewater is discharged into the Pai River. The discharge volume is small and the composition is simple, which will not reduce the existing water environment function of the surface water Pai River.

2. Air Environment Impact Analysis

The waste gas generated by this project is mainly welding smoke generated during welding, non-methane total hydrocarbons generated during the dispensing process,

Non-methane total hydrocarbons and canteen fumes generated during the preparation of substrate liquid.

1. Canteen fumes

During the cooking and processing process, food will evaporate oil, organic matter and thermal decomposition or cracking products, thereby producing oil smoke.

The restaurant waste gas in this project mainly comes from fuel combustion and oil smoke. The back hall stove uses natural gas as fuel, which is a clean energy.

It has high combustion efficiency, low pollutant content in the exhaust gas produced during combustion, and little impact on the environment. This environmental assessment mainly considers oil

The impact of smoke and exhaust gas on the surrounding environment. According to relevant data and survey statistics, the general consumption of cooking oil is 7kg/100 people·d (180

People, 250 days), the volatilization of oil smoke is about 3% of the edible oil consumption. The oil smoke purifier installed in this project will

The project is equipped with 4 stoves, and the fan air volume is 8000m3 /h (calculated based on 1500 hours of use per year).

The oil fume removal rate is 80%.

The cooking fumes are discharged after being treated by a fume purifier.

The emission of cooking fume waste gas from this project is shown in the following table:

Table **24** Summary of cooking fume generation and emission Oil fume

Number of people dining **(person/ day)** 180	Edible oil consumption **(kg/d)** 12.6	volatile amount Oil fume	generation Oil fume emission 0.0945	**(kg/d) (t/a) (t/a)** 0.378 0.0189	Oil fume emission concentration **(mg/m3)** 1.575

The cooking fume generated by this project is discharged after being treated by the fume purifier. The fume emission concentration complies with GB18483-2001

The "Food Industry Oil Fume Emission Standards" (Trial) require that oil fume emissions have little impact on the regional air environment.

2. Welding fume

During the welding process, a certain amount of welding fume will be generated. The main pollutants of welding fume are smoke, CO, NOX and O3.

Harmful gases. The main components of toxic and harmful gases in welding fume are CO, CO2, O3, NOx, CH4, etc.

CO accounts for the largest proportion. Since the amount of toxic and harmful gases produced is small and the gas composition is complex, it is difficult to quantify.

Environmental impact assessment only conducts qualitative analysis, while welding fume is analyzed quantitatively. Welding fume mainly comes from lead-free welding wire, with a small amount from

Since the workpiece to be welded.

The materials used in the welding process of this project are mainly lead-free welding wire, and the annual consumption of lead-free welding wire is about 12.5kg.

According to the relevant information in "Advances in Environmental Pollution and Control Technology in Welding Workshops", the smoke emissions generated by lead-free welding wire are about 6-8kg/t

Lead-free solder wire (considering the maximum environmental impact, this environmental assessment takes 8kg/t), the annual consumption of lead-free solder wire is 12.5kg, welding fume

The amount generated is 0.1kg/a, so the total amount of welding fume generated in this project is 0.1kg/a.

The welding fume of this project is treated by mobile welding fume purifier. There are 8 welding stations in the project.

The workstation is equipped with a mobile welding fume purifier, the processing efficiency of the mobile welding fume purifier is 85%, and the mobile welding

The outlet flow of the smoke purifier is 2000m3 /h. The annual working time of the project is 250 days. The average working time of welding process is 8 hours per day.

The unorganized emission of smoke is 0.015kg/a and the emission rate is 0.0000075kg/h.

Working principle of mobile welding fume purifier: the internal high pressure fan forms a negative pressure area at the mouth of the suction arm,

The smoke and dust enter the main body of the purifier through the suction arm under the action of negative pressure. A flame arrester is installed at the air inlet. Sparks are

The welding smoke enters the purification chamber of the purifier equipment, and the high-efficiency filter filters the tiny welding smoke particles in the

Purifier equipment purifies the room.

Table **25** Summary of unorganized emission of welding fume

Source strength location pollutant name	Production (kg/a)	Emissions (kg/a)	Emission parameters			Emission method
			Length (m)	Width (m)	Height (m)	
Emission concentration limit of welding	0.1	0.015	92	20	6	Fugitive Emissions
fume from production line for this project (mg/m3)		1.0				

Use the estimation model in the list of recommended models in the Technical Guidelines for Environmental Impact Assessment - Atmospheric Environment (HJ2.2-2008)

The downwind axis concentration of pollutants emitted by the pollution sources of this project is calculated using the formula, and the corresponding concentration percentage is calculated.

The welding fume prediction results of source intensity parameters are shown in the table below:

Table **26** List of source strength parameters of unorganized waste gas pollution sources

Pollutant Name	Unorganized Emission Area	Emission Height (m)	Emission Amount (kg/a)	Emission Rate (kg/h)	
welding fume	92m×20m	6	0.015	0.0000075	

Table **27** Calculation results of welding fume unorganized emissions using estimation model

Downwind direction from the source center Distance D/m	Fugitive emissions	
	Downwind predicted concentration (mg/m3)	Concentration percentage
10	2.70E-06	0.0006
100	5.20E-06	0.00116
200	2.00E-06	0.00044
300	1.00E-06	0.00022
400	6.00E-07	0.00013
500	4.00E-07	9.00E-05
600	3.00E-07	7.00E-05
700	2.00E-07	4.00E-05

800	2.00E-07	4.00E-05
900	2.00E-07	4.00E-05
1000	1.00E-07	2.00E-05
1100	1.00E-07	2.00E-05
1200	1.00E-07	2.00E-05
1300	1.00E-07	2.00E-05
1400	1.00E-07	2.00E-05
1500	1.00E-07	2.00E-05
1600	1.00E-07	2.00E-05
1700	1.00E-07	2.00E-05
1800	1.00E-07	2.00E-05
1900	1.00E-07	2.00E-05
2000	1.00E-07	2.00E-05
2100	0	0
2200	0	0
2300	0	0
2400	0	0
2500	0	0
East factory boundary (5m)	2.50E-06	0.00056
South factory boundary (10m)	2.70E-06	0.0006
West factory boundary (5m)	2.50E-06	0.00056
North factory boundary (150m)	3.20E-06	0.00071
The maximum concentration and	5.50E-06	0.00122
maximum ground distance in	85	

the downwind direction can be seen from the above table: the maximum ground concentration of the unorganized emission of smoke dust in this project is 5.50E-06mg/m3, and the maximum ground concentration is 2.50E-06mg/m3.

The maximum ground concentration of smoke dust at the east factory boundary is 2.50E-06mg/m3, and the maximum ground concentration accounts for 0.00122% of the standard rate.

The maximum ground concentration of smoke dust at the south factory boundary is 2.70E-06 mg/m3, and the maximum ground concentration accounts for 0.0006% of the standard rate.

The maximum ground concentration of smoke dust at the west factory boundary is 2.50E-06mg/m3, and the maximum ground concentration rate is 0.00056%.

The maximum ground dust concentration is 3.20E-06mg/m3, and the maximum ground concentration rate is 0.00071%, both of which meet the requirements of the Air Pollution Control Law.

The limit of unorganized emission concentration in the Comprehensive Emission Standard of Pollutants (GB16297-1996) is 1.0 mg/m3, which has an impact on the atmospheric environment.

Smaller.

The calculation model of atmospheric protection distance in the estimation model shows that the unorganized emission of welding fume in this project has no atmospheric

Environmental protection area, no atmospheric environment protection range needs to be set.

3. Non-methane hydrocarbons

During the assembly process of the project's fluorescent immunoassay analyzer, some parts need to be manually glued with 401 glue and AB glue.

The main components of the 401 glue used in this project are epoxy resin and modified epoxy resin, and the main components of AB glue are modified epoxy resin.

Resin, modified amine, room temperature curing organic waste gas volatility is about 1% of the raw materials, the annual usage of 401 glue in this project is

The annual usage of AB glue is 2.1kg, so the amount of organic waste gas generated in the dispensing process is 0.033kg/a.

The number of days is 250 days, and the average working time of the dispensing process is 1 hour per day, so the annual working time is 250 hours.

A gas collecting hood (collection efficiency 80%) is installed, with a matching fan, the fan air volume is 3000m3 /h, and the collected exhaust gas is adsorbed by activated carbon.

After treatment by the device (treatment efficiency 90%), it is discharged from the 15m high exhaust pipe (1#), and the organized generation of non-methane total hydrocarbons is

0.0264kg/a, generation rate 0.0001056kg/h, generation concentration 0.0352mg/m3, organized emission 0.00264kg/a,

The emission rate is 0.00001056kg/h, the emission concentration is 0.00352mg/m3, the unorganized emission is 0.0066kg/a, and the emission

Rate 0.0000264kg/h.

During the production of the chemiluminescence kit, 95% ethanol is required to prepare the substrate solution, with an annual consumption of 79 kg.

The volatile ethanol is calculated as non-methane hydrocarbons. The maximum possible volatility is 90%, and the non-methane hydrocarbon production is 71.1 kg/a.

The annual working days of the project are 250 days. The average working hours of the substrate preparation process are 6 hours per day, so the annual working hours are 1500 hours.

The preparation process is carried out in a biosafety cabinet. Non-methane total hydrocarbons are collected from the biosafety cabinet and adsorbed by activated carbon and then passed through a 15m

The high exhaust pipe (2#) is discharged, the collection efficiency of the biosafety cabinet is 98%, the air volume is 2000m3 /h, and the activated carbon treatment efficiency is

90%, the total organized production of non-methane hydrocarbons is 69.678 kg/a, the production rate is 0.046452 kg/h, and the production concentration is

23.226mg/m3, organized emission volume 6.9678kg/a, emission rate 0.0046452kg/h, emission concentration 2.3226mg/m3,

The unorganized emissions are 1.422kg/a and the emission rate is 0.000948kg/h.

(1) Organized non-methane hydrocarbons

Table **28** Summary of Organized Emissions of Non-Methane Hydrocarbons

pollution sources	Pollutant name	Exhaust volume **(m3 /h)**	Concentration and Generation Rate **(mg/ m3 (kg/** h3))	Production volume **(kg/a)**	Disposal measures	Treatment **efficiency** (%)	Emission concentration **(mg/ m3)**	Emission rate **(kg/h)**	Emissions **(kg/a)**
1# exhaust pipe	Non-methane hydrocarbons	3000	0.0352	0.0001 056	0.0264	Activated carbon adsorption + 15-meter high	90	0.0035 2	0.0000 1056	0.0026 4
2# exhaust pipe	Non-methane hydrocarbons	2000	23.226	0.0464 52	69.678	exhaust pipe Activated carbon + 15-meter high exhaust pipe	90	2.3226	0.0046 452	6.9678

Use the estimation model in the list of recommended models in the Technical Guidelines for Environmental Impact Assessment - Atmospheric Environment (HJ2.2-2008)

The concentration of pollutants emitted by the pollution sources of this project on the downwind axis is calculated using the formula, and the corresponding concentration percentage is calculated.

The forecast results are shown in the table below:

Table **29** List of source strength parameters of organized emission pollution sources

Pollution source pollutants	chimney high	Air outlet temperature	Equivalent export direct path	Pollutant emissions rate
1# exhaust pipe non-methane total hydrocarbons	15m	3000m3 /h	30ÿ	0.4m	0.00001056 kg/h
2# exhaust pipe non-methane total hydrocarbons	15m	2000m3 /h	30ÿ	0.4m	0.0046452kg /h

Table **30** Calculation results of total organized non-methane hydrocarbons using estimation model

Distance (m)	1# exhaust pipe has organized emissions		2# exhaust pipe has organized emissions	
	Concentration (mg/m3)	Standard rate (%)	**Concentration (mg/m3)**	Standard rate (%)
10	0	0	1.65E-05	0.00367
100	3.00E-07	1.00E-05	2.36E-05	5.24E-03
200	3.00E-07	1.00E-05	7.60E-06	1.69E-03
300	3.00E-07	1.00E-05	3.70E-06	8.20E-04
400	2.00E-07	1.00E-05	2.20E-06	4.90E-04
500	2.00E-07	1.00E-05	1.50E-06	3.30E-04
600	2.00E-07	1.00E-05	1.10E-06	2.40E-04
700	2.00E-07	1.00E-05	9.00E-07	2.00E-04
800	2.00E-07	1.00E-05	7.00E-07	1.60E-04
900	1.00E-07	0	6.00E-07	0.00013
1000	1.00E-07	0	5.00E-07	0.00011
1100	1.00E-07	0	4.00E-07	9.00E-05
1200	1.00E-07	0	4.00E-07	9.00E-05
1300	1.00E-07	0	3.00E-07	7.00E-05
1400	1.00E-07	0	3.00E-07	7.00E-05
1500	1.00E-07	0	3.00E-07	7.00E-05
1600	1.00E-07	0	2.00E-07	4.00E-05
1700	1.00E-07	0	2.00E-07	4.00E-05
1800	1.00E-07	0	2.00E-07	4.00E-05
1900	1.00E-07	0	2.00E-07	4.00E-05
2000	1.00E-07	0	2.00E-07	4.00E-05
2100	1.00E-07	0	2.00E-07	4.00E-05
2200	0	0	2.00E-07	4.00E-05
2300	0	0	1.00E-07	2.00E-05
2400	0	0	1.00E-07	2.00E-05
2500	0	0	1.00E-07	2.00E-05
Maximum landing distance	103		103	
Maximum landing concentration	3.00E-07	1.00E-05	1.48E-04	3.29E-02

From the table above, we can see that the maximum landing distance of non-methane total hydrocarbons in the 1# exhaust pipe of this project is 103 meters, and the maximum landing concentration is

3.00E-07mg/m3, the maximum ground concentration rate is 1.00E-05%, the maximum landing distance of non-methane total hydrocarbons in 2# exhaust pipe

The maximum ground concentration is 1.48E-04mg/m3, and the maximum ground concentration rate is 3.29E-02%, both meeting the

The secondary standard in GB16297-1996 "Comprehensive Emission Standard of Air Pollutants" has little impact on the surrounding environment.

Table **31** Summary of non-methane hydrocarbon unorganized emissions

Source strength location pollutant name	Production (kg/a)	Emissions (kg/a)	Emission parameters			Emission method
			Length (m)	Width (m)	Height (m)	
Dispensing process non-methane total hydrocarbons	0.0066	0.0066	92	20	4	Fugitive Emissions
substrate liquid Production process Total non-methane hydrocarbons	1.422	1.422	80	25	4	Fugitive Emissions
Emission concentration limit for this project (mg/m3)		4.0				

Use the estimation model in the list of recommended models in the Technical Guidelines for Environmental Impact Assessment - Atmospheric Environment (HJ2.2-2008)

The downwind axis concentration of pollutants emitted by the pollution sources of this project is calculated using the formula, and the corresponding concentration percentage is calculated.

The prediction results of non-methane total hydrocarbons based on source intensity parameters are shown in the table below:

Table **32** List of source strength parameters of unorganized waste gas pollution sources

Pollutant Name	Unorganized Emission Area	Emission Height (m)	Emission Amount (kg/a)	Emission Rate (kg/h)	
Non-methane total hydrocarbons	92m×20m	4	0.0066	0.0000264	
Non-methane total hydrocarbons	80m×25m	4	1.422	0.000948	

Table **33** Calculation results of non-methane total hydrocarbon unorganized emissions using estimation model

Downwind direction from the source center	Unorganized emissions from the dispensing process		Unorganized emissions from the substrate liquid preparation process		
Distance D/m	Downwind forecast Degree (mg/m3)	Concentration percentage Concentration (mg/m3)	Downwind direction from the source center Distance D/m	Downwind forecast	Concentration standard Rate%
10	1.65E-05	0.0005069	1.13E-01	3E-01367	
100	2.36E-05	5.24E-03	100	0.0007669	1.70E-01
200	7.60E-06	1.69E-03	200	0.0002632	5.85E-02
300	3.70E-06	8.20E-04	300	0.0001305	2.90E-02
400	2.20E-06	4.90E-04	400	7.94E-05	1.76E-02
500	1.50E-06	3.30E-04	500	5.44E-05	1.21E-02
600	1.10E-06	2.40E-04	600	4.02E-05	8.93E-03
700	9.00E-07	2.00E-04	700	3.12E-05	6.93E-03
800	7.00E-07	1.60E-04	800	2.52E-05	5.60E-03
900	6.00E-07	0.00013	900	2.09E-05	4.64E-03
1000	5.00E-07	0.00011	1000	1.77E-05	3.93E-03
1100	4.00E-07	9.00E-05	1100	1.53E-05	3.40E-03
1200	4.00E-07	9.00E-05	1200	1.34E-05	2.98E-03
1300	3.00E-07	7.00E-05	1300	1.19E-05	2.64E-03
1400	3.00E-07	7.00E-05	1400	1.06E-05	2.36E-03
1500	3.00E-07	7.00E-05	1500	9.60E-06	2.13E-03
1600	2.00E-07	4.00E-05	1600	8.80E-06	1.96E-03
1700	2.00E-07	4.00E-05	1700	8.00E-06	1.78E-03
1800	2.00E-07	4.00E-05	1800	7.40E-06	1.64E-03
1900	2.00E-07	4.00E-05	1900	6.80E-06	1.51E-03

2000	2.00E-07	4.00E-05	2000	6.40E-06	1.42E-03
2100	2.00E-07	4.00E-05	2100	5.90E-06	1.31E-03
2200	2.00E-07	4.00E-05	2200	5.60E-06	1.24E-03
2300	1.00E-07	2.00E-05	2300	5.20E-06	1.16E-03
2400	1.00E-07	2.00E-05	2400	5.00E-06	1.11E-03
2500	1.00E-07	2.00E-05 2500 4.70E-06 0.00333 East factory boundary			1.04E-03
East factory boundary	1.50E-05	(5m) 4.55E-04 0.00367 South factory boundary (140m)			1.01E-01
(5m) South factory	1.65E-05	4.76E-04 0.00333 West factory boundary (40m) 7.76E-04			1.06E-01
boundary (10m) West	1.50E-05	2.78E-03 North factory boundary (8m) 4.84E-04 6.78E-03			1.72E-01
factory boundary (5m) North factory boundary (150m)		Maximum concentration downwind 1.00E-03 Maximum			1.08E-01
1.25E-05 Maximum concentration downwind 3.05E-05		grounding distance			2.23E-01
Maximum grounding distance	70			67	

From the table above, we can see that the maximum ground concentration of non-methane total hydrocarbons emitted from the dispensing process of this project is 3.05E-05mg/m3, the maximum ground concentration is 6.78E-03% of the standard , and the maximum ground concentration of non-methane total hydrocarbons at the east factory boundary is 1.50E-05mg/m3, the maximum ground concentration accounts for 0.00333% of the standard rate, and the maximum ground concentration of non-methane total hydrocarbons at the south factory boundary is 1.65E-05mg/m3, the maximum ground concentration accounts for 0.00367% of the standard rate, and the maximum ground concentration of non-methane total hydrocarbons at the west factory boundary is 1.50E-05mg/m3, the maximum ground concentration accounts for 0.00333% of the standard rate, and the maximum ground concentration of non-methane total hydrocarbons at the north factory boundary is 1.25E-05mg/m3, and the maximum ground concentration is 2.78E-03% of the standard .

The maximum ground concentration of non-methane total hydrocarbons emitted from the substrate liquid preparation process of this project is 1.00E-03mg/m3. The maximum ground concentration is 2.23E-01% of the standard, the maximum ground concentration of non-methane total hydrocarbons at the east boundary is 4.55E-04mg/m3, and the maximum The ground concentration rate is 1.01E-01%, the maximum ground concentration of non-methane total hydrocarbons at the south factory boundary is 4.76E-04mg/m3, and the maximum ground The surface concentration rate is 1.06E-01%, the maximum ground concentration of non-methane total hydrocarbons at the west factory boundary is 7.76E-04mg/m3, and the maximum ground The concentration rate is 1.72E-01%, the maximum ground concentration of non-methane total hydrocarbons at the north factory boundary is 4.84E-04mg/m3, and the maximum ground concentration is 1.72E-01%. The standard rate is 1.08E-01%.

The non-organized emission of total non-methane hydrocarbons in the dispensing process and substrate liquid preparation process of the project meets the requirements of the Comprehensive Emission of Air Pollutants. The unorganized emission concentration limit in the "Emission Standard" (GB16297-1996) is 4.0mg/m3, which has little impact on the atmospheric environment.

The calculation model of atmospheric protection distance in the estimation model shows that the non-methane total hydrocarbons emitted from this project are not large. There is no need to set up an atmospheric environment protection range in the atmospheric environment protection area.

4. Health protection distance

The sanitary protection distance of the non-methane total hydrocarbons emitted from this project is calculated as follows:

Calculation formula:

$$\frac{Q}{Cm} = \frac{1}{A}\ddot{y}BL\ C+0.25r\ 2\ddot{y}0.05L\ D$$

Where: Cm——standard concentration limit, mg/m3;

L——the sanitary protection distance required by industrial enterprises, m;

r——Equivalent radius of the production unit where the source of hazardous gas unorganized emission is located, m;

Calculate the product S(m2), r=(S/ÿ)0.5;

Qc is the control level that can be achieved for the unorganized emission of harmful gases from industrial enterprises, kg·h -1.

A, B, C, D - Calculation coefficients of health protection distance, dimensionless, based on the average annual growth rate of the region where the industrial enterprise is located in the past five years.

Survey values of average wind speed and composition of air pollution sources in industrial enterprises.

According to the data provided by the meteorological department, the wind speed in Hefei in the past five years is 2-4m/s, which is calculated based on the second-class air pollution source.

The calculation coefficient of the sanitary protection distance is shown in the following table:

Table **34** Calculation coefficients of health protection distance

Department of Computing number	Location of industrial enterprises Average wind speed in the region over the past five years Speed m/s	Lÿ1000			1000<L<2000			L>2000		
		Composition categories of air pollution sources in industrial enterprises (1)								
		ÿ	ÿ ÿ ÿ			ÿ ÿ ÿ ÿ ÿ				
A	<2	400	400	400	400	400	400	80	80	80
	2-4	700	470	350	700	470	350 380 250 190			
	>4	530	350	260	530	350	260 290 190 140			
B	<2	0.01			0.015			0.015		
	>2	0.021			0.036			0.036		
C	<2	1.85			1.79			1.79		
	>2	1.85			1.77			1.7		
D	<2	0.78			0.78			0.57		
	>2	0.84			0.84			0.76		

Note: Industrial air pollution sources are divided into three categories:

Category **I :** The emission of the exhaust pipe emitting the same harmful gas as the fugitive emission source is greater than the allowable emission amount specified in the standard.

1/3 .

Category **II :** The emission volume of exhaust pipes emitting the same harmful gases as fugitive emission sources is less than the allowable emission volume specified in the standard.

1/3 of the total, or even if there is no exhaust pipe emitting the same type of air pollutants, the permissible concentration index of harmful substances emitted by the organization is based on the acute

Reaction indicator determiner.

Category **III :** There is no exhaust pipe emitting the same harmful substances and the fugitive emission source coexists. The allowable concentration of the harmful substances emitted by the fugitive is

Determined by chronic reaction indicators.

Source strength data, related parameters, and calculation results for each pollutant are shown in Table 35.

Table **35** Pollutant source strength data, related parameters and calculation results

QC of strong pollutants from pollution sources (kg/h)		Cm (mg/m3) AB			CDL(m)		
1# plant particulate matter	0.0000075	0.45	470 0.010 1.85 0.78				0.000 01
Total non-methane hydrocarbons in 1# plant: 0.0000264		2	470 0.010 1.85 0.78				0.000 01
Total non-methane hydrocarbons in 4# plant: 0.000948		2	470 0.010 1.85 0.78 0.011				

According to the above formula, L (particulate matter in plant 1#) = 0.00001m, L (total non-methane hydrocarbons in plant 1#)

=0.00001m, L (total non-methane hydrocarbons in 4# plant) =0.011m. According to the determination method of the sanitary protection distance difference, the sanitary

The protection distance is within 100m, and the difference is 50m. Therefore, the sanitary protection distance of this project is from the boundary of 1# plant to the outside.

100m, 50m outward from the boundary of 4# factory building.

5. Atmospheric environment protection distance

The atmospheric environment protection distance calculation model in the estimation model is used for the emission of unorganized particulate matter and unorganized non-methane total hydrocarbons in the project.

Calculated according to the formula, no exceeding the punctual point.

6. Environmental protection distance

Combined with the sanitary protection distance and the atmospheric environment protection distance, the area 100m outside the project boundary is set as the environmental

Protection distance: the existing project's environmental protection distance is mainly for industrial land to be built, without any environmentally sensitive points.

This environmental assessment recommends that no hospital, school or residential area should be planned or constructed within the environmental protection distance around the project.

The environmental protection distance envelope of this project is shown in Figure 6.

3. Analysis of noise environment impact

1. Analysis of noise pollution source strength

The noise of the project is mainly caused by air-cooled air conditioner outdoor unit, air compressor, filling and capping machine, washing and sealing machine, automatic enzyme

Standard plate washer, oscillator, dehumidifier, electric blast drying oven, hot air gun, mobile welding fume purifier and other equipment

The noise level generated by the operation is 70-90dB(A). The noise source sound level values and control measures are shown in Table 36:

Table **36** Noise source intensity of main equipment in the project **(dB(A))**

Serial number	Equipment Name Quantity (units) Location Coordinates/Height (m)			Sound level (unit: dB(A)
1	Air-cooled air conditioner outdoor unit	6	10~170, 5~90; 1.2	80~85
2	air compressor	1	140~170, 5~90; 1.2	85~90
3	Filling and capping machines	4	140~170, 5~90; 4	70~75
4	Washing and sealing machine	1	140~170, 5~90; 4	75~80
5	Automatic enzyme-labeled plate washer	1	40~120, 5~90; 4	70~75
6	Oscillator	4	40~120, 5~90; 4	75~80
7	dehumidifier	2	40~120, 5~90; 4	70~75
8	Electric blast drying oven	4	10~30, 5~90; 3~9	75~80
9	Hot air gun	2	10~30, 5~90; 3~9	70~75
10	mobile welding fume cleaner catalyzer	8	10~30, 5~90; 3~9	70~75

Note: The southwest corner of the project is the coordinate origin, the east-west direction is the horizontal axis, and the north-south direction is the vertical axis; the height starts from the workshop ground level.

2. Noise pollution control measures

Noise control methods include reducing noise at the source, controlling the transmission path, and protecting the receivers. Methods include sound insulation and vibration reduction.

The noise prevention and control measures required for this project are as follows:

Table **37** List of project noise control measures

sequence Number	Number of noise source names		Sound level (unit: **dB(A)**	Location	Governance measures	Noise reduction effect (single Position: dB(A)
1	Air-cooled air conditioner outdoor unit	6	80~85	Outside the workshop	Low noise equipment is preferred Equipment, set up vibration damping base	20~25
2	air compressor	1	85~90	In the workshop	The device itself is placed in a separate In the air compressor room, Vibration-damping base	25~30
3	Filling and capping machine	4	70~75	Inside the workshop	Low noise equipment is preferred Equipment, set up factory sound insulation	15~20
4	Washing and sealing machine	1	75~80	in the workshop		15~20
5	Automatic enzyme-labeled plate washer	1	70~75	Inside the workshop		15~20
6	Oscillator	4	75~80	in the workshop		15~20
7	dehumidifier	2	70~75	Inside the workshop		15~20
8	Electric blast drying oven	4	75~80	in the workshop		15~20
9	heat gun	2	70~75	Inside the workshop		15~20
10	Mobile welding fume cleaner catalyzer	8	70~75	Inside the workshop		15~20

3. Noise prediction

The industrial noise prediction model in the "Technical Guidelines for Environmental Impact Assessment - Acoustic Environment" is adopted.

ÿ When only A sound level is obtained, use the following formula to calculate:

$$LA(r) = LA(r0) ÿ A$$

A can select the octave band that has the greatest impact on the A sound level. Generally, the octave band with a center frequency of 500Hz can be used for estimation.

Calculate.

$$A = Adiv+Aatm+Agr+Abar+Amisc$$

Geometric divergence attenuation (Adiv) $Adiv = 20lg (r/r0)$

Attenuation due to air absorption (Aatm) $Aatm = A \frac{ar ÿ r \quad 0)}{(1000}$

Table **3** Atmospheric absorption attenuation coefficient of 8-octave band noise ÿ

Temperature ÿ	Relative humidity %	Atmospheric absorption attenuation ÿ **, dB/km** coefficient Octave band center frequency **Hz**							
		63	125	250	500	1000	2000	4000	8000
10	70	0.1	0.4	1.0	1.9	3.7	9.7	32.8	117.0
20	70	0.1	0.3	1.1	2.8	5.0	9.0	22.9	76.6

30	70	0.1	0.3	1.0	3.1	7.4	12.7	23.1	59.3
15	20	0.3	0.6	1.2	2.7	8.2	28.2	28.8	202.0
15	50	0.1	0.5	1.2	2.2	4.2	10.8	36.2	129.0
15	80	0.1	0.3	1.1	2.4	4.1	8.3	23.7	82.8

Take the value of 500Hz for the octave band.

Ground effect attenuation (Agr) Agr $A_{gr} = 4.8 - \frac{2h_m}{r}\left[17 + \frac{300}{r}\right] \leq \frac{r}{r}$

Where: r — distance from the sound source to the prediction point, m;

hm —mean height above the ground of the propagation path, m; hm = *F / r* ; *F :* area, m2; r , m;

If Agr is calculated to be a negative value, Agr can be replaced by "0".

For other situations, please refer to GB/T17247.2 for calculation.

Attenuation due to barrier (Abar)

This project has no sound barrier, so the value is 0

Attenuation caused by other various reasons (Amisc)

The value of this item is 0

Let the A sound level generated by the i-th outdoor sound source at the prediction point be LAi, and the working time of the sound source within the time T be *ti ;* The sound level A generated by the *jth* equivalent outdoor sound source at the prediction point is *LAj* , and the working time of the sound source is tj within the time T.

The contribution value (Leqg) of the proposed project noise source to the prediction point is:

$$L_{eqg} = 10\lg\left(\frac{1}{T}\left(\sum_{i=1}^{N} 10^{0.1 L_{Ai}} + \sum_{j=1}^{M} t_j 10^{0.1 L_{Aj}}\right)\right)$$

$$Leq = 10\lg\left(10^{0.1 Leqg} + 10^{0.1 Leqb}\right)$$

Where: *Leqg* —equivalent sound level contribution value of the construction project sound source at the prediction point, dB(A);

Leqb — background value at the prediction point, dB(A);

Simulate and predict the impact of new noise sources on the project area and factory boundaries after the project is put into operation.

The results are shown in Table 39.

Table **39** Environmental noise prediction results **Unit: dB(A)** Predicted value

Prediction Point		
	Daytime	at night
1# (Eastern factory boundary)	56.4	No production
2# (Southern factory boundary)	56.3	
3# (West Factory Boundary)	56.2	
4# (North Factory Boundary)	56.3	
Three types of standards in GB12348-2008 "Emission Standards for Environmental Noise at Industrial Enterprise Boundaries"	65	55

From the prediction results in Table 39, it can be seen that after the project is officially put into operation, the noise emission at the factory boundary will meet the requirements of GB12348-2008 "Industrial The three standard limit requirements in the "Enterprise Factory Boundary Environmental Noise Emission Standards".

In summary, after the project adopts reasonable noise prevention measures for each noise source, the noise emission in the project area can meet the The prescribed environmental standards will not change the acoustic environment function requirements of the area where the construction project is located and will have little impact on the surrounding environment.

4. Environmental Impact Analysis of Solid Waste

The solid waste generated by this project mainly includes employee office and domestic waste, waste packaging materials, waste wiring materials, waste quartz Waste activated carbon, waste reverse osmosis membrane and other general solid wastes generated by sand and pure water preparation, waste activated carbon, waste gas treatment Qualified products, waste paper towels, enzyme plate cleaning waste liquid, nitrogen-containing, sulfur-containing and boron-containing waste liquid, residual liquid and initial rinse liquid, inspection Hazardous waste such as testing room cleaning waste liquid.

1. Domestic waste

The amount of domestic waste generated is calculated as 0.5kg/person/day. The number of employees is 180, and the amount of domestic waste generated is 0.09t/d and 22.5t/a. Domestic waste is bagged and collected in categories and disposed of by the sanitation department.

2. General solid waste

The general solid waste generated by this project is mainly waste packaging materials, waste wiring materials, waste quartz sand, waste generated by pure water preparation, The annual production of activated carbon and waste reverse osmosis membranes is about 0.5t, and the annual production of waste packaging materials is about 0.02t. The annual production of waste quartz sand is about 0.001t, the annual production of waste activated carbon produced by pure water preparation is about 0.001t, and the annual production of waste reverse osmosis The membrane production is about 0.2t/a, which is collected and recycled by a material recycling company.

3. Hazardous waste

The hazardous wastes generated by this project are mainly waste activated carbon, unqualified products, waste paper towels, enzyme-labeled plates, etc. Cleaning waste liquid, nitrogen-containing, sulfur-containing and boron-containing waste liquid, residual liquid and initial rinse liquid, testing room cleaning waste liquid, etc., waste gas treatment The amount of waste activated carbon generated is about 0.27t/a, the amount of unqualified products generated is about 0.06t/a, and the amount of waste paper towels generated is about 0.26t/a. The amount of waste liquid generated by enzyme labeling plate cleaning is about 6t/a, the amount of waste liquid containing nitrogen, sulfur and boron is about 0.1105t/a, and the residual liquid and

The amount of initial rinse liquid produced is about 4t/a, and the amount of detection room cleaning waste liquid produced is about 1.52t/a.

Calculation method for the amount of waste activated carbon generated:

Amount of waste activated carbon generated = amount of activated carbon used + amount of pollutants adsorbed

Dosage: 1 ton of activated carbon adsorbs 250~300 kg of organic waste gas (this evaluation is based on 1 ton of activated carbon adsorbing 300 kg of non-formaldehyde (calculated as total hydrocarbons)

According to the atmospheric environmental impact analysis, the adsorption capacity of non-methane total hydrocarbons is 62.73 kg/a, so the amount of activated carbon used is 209.1kg/a, and the amount of waste activated carbon produced is 271.83kg/a.

The production capacity of enzyme-linked immunosorbent assay, chemiluminescence assay and fluorescence immunochromatography kits in this project is 1000 10,000 people/a, 8 million people/a, 57 million people/a, with each batch producing 20,000 people, 16,000 people, and 114,000 people respectively. 500 copies in total.

Wastewater from enzyme-linked immunosorbent assay (ELISA) plate cleaning is only produced in the ELISA process, with a total output of 10 million copies/year. Current status of the Gastric Mucosal Serum Detection Kit Project of Biotechnology (Hefei) Co., Ltd. (Huangao Shen [2016] No. 098) In this case, the enzyme-labeled reaction plate coating process needs to be cleaned 6 times. The amount of each test kit for 100 people is 10ml. The amount of waste liquid generated from standard plate cleaning is: 10ml/100 people × 6 times × 10 million people/a = 6t/a.

Nitrogen, sulfur and boron-containing waste liquids are only produced in the chemiluminescence process and fluorescent immunochromatography process, with a total output of 65 million doses/year, according to the Gastric Mucosal Serum Detection Kit Project of BIOHIT Biotechnology (Hefei) Co., Ltd. (Environmental Gaoshen [2016] No. 098) Current actual waste generation situation: nitrogen-containing waste liquid generation is 0.0006ml/person, sulfur-containing waste liquid generation is 0.0006ml/person, The amount of waste liquid produced is 0.0005ml/person, and the amount of waste liquid containing boron is 0.0006ml/person, so the amount of waste liquid containing nitrogen, sulfur and boron is 0.0005ml/person. The amount of liquid produced is: (0.0006+0.0005+0.0006) ml/person × 65 million people/a=0.1105t/a.

According to the "Biohit Biotech (Hefei) Co., Ltd. Gastric Mucosal Serum Detection Kit Project" (Huang Gaoshen [2016] 098) According to the current actual operation, the amount of residual liquid and initial rinse liquid generated is about 8L/batch, so the amount of this part of waste liquid generated is: 8L/batch×500 batches/a=4t/a.

According to the "Biohit Biotech (Hefei) Co., Ltd. Gastric Mucosal Serum Detection Kit Project" (Huang Gaoshen [2016] 098) The waste generation in the testing room. After each batch of monitoring, the testing utensils and instruments need to be cleaned. The production volume is 3.8L/batch, and the annual production volume is: 3.8L/batch × 500 batches/a = 1.52t/a.

Table **40** Solid waste generation and disposal of this project

Classification	Name Waste Code Form			Production **t/a**	Treatment and disposal measures
Household garbage garbage	Household waste	/	Solid State	22.5	Bags are collected and sorted by the sanitation department. Unified disposal
General solid Waste	Waste packaging materials	/	Solid State	0.5	Collected centrally and handed over to material companies for recycling use
	Waste wiring harness materials	/	Solid State	0.02	
	Waste quartz sand	/	Solid State	0.001	
	Pure water preparation Waste activated carbon	/	Solid State	0.001	
	Waste reverse osmosis membrane/		Solid State	0.2	
Hazardous waste thing	Unqualified product HW03 solid			0.06	After being temporarily stored in the hazardous waste warehouse in the factory, it will be handed over to the qualified Unit Disposal
	Waste gas treatment Waste activated carbon	HW06 solid state		0.27	
	Waste paper	HW02	Solid State	0.26	
	towels ELISA plate cleaning waste liquid	HW02 liquid		6	
	Nitrogen, sulfur and Boron-containing wastewater	HW02 liquid 0.1105			
	Residual liquid and initial lubrication Lotion	HW02 liquid		4	
	Testing room cleaning waste liquid	HW02 liquid		1.52	

According to the National Hazardous Waste List issued by the Ministry of Environmental Protection and the National Development and Reform Commission in 2016, construction units are required to set up hazardous waste

Waste warehouse, this project plans to set up a hazardous waste warehouse in the southwest corner of the 1F of the 4# plant, covering an area of about 100m2.

After temporary storage, it will be handed over to a qualified unit for disposal.

According to the relevant provisions of GB18597-2001 "Hazardous Waste Storage Pollution Control Standard", the temporary storage requirements for hazardous waste are as follows:

Down:

(1) All hazardous waste generators and hazardous waste managers should build dedicated hazardous waste storage facilities and also use

Convert the original structure into a hazardous waste storage facility.

(2) Hazardous wastes that are explosive, flammable, or emit toxic gases at room temperature and pressure must be pre-treated to stabilize them.

Otherwise, store it as explosive and flammable dangerous goods.

(3) Solid hazardous wastes that do not hydrolyze or volatilize at normal temperature and pressure may be stacked separately in storage facilities.

(4) In addition to the provisions of (3) above, hazardous waste must be placed in containers.

(5) It is prohibited to mix incompatible (interactive) hazardous wastes in the same container.

(6) Hazardous waste that cannot be placed in common containers can be placed in leak-proof plastic bags.

(7) Sufficient space must be left in the container for liquid or semi-solid hazardous waste, and the space between the top of the container and the surface of the liquid must be sufficient.

Leave at least 100 mm of space.

(8) Containers containing hazardous waste must be affixed with labels that comply with Appendix A of this standard.

By taking the above measures, the solid waste generated by the proposed project will be recycled or effectively treated, and will not cause any damage to the project.

Impact on the environment outside the project area.

V. Environmental Risk Analysis

According to HJ/T169-2004 "Technical Guidelines for Environmental Risk Assessment of Construction Projects", the purpose of environmental risk assessment is to analyze

and predict the potential dangers and harmful factors in construction projects, and propose reasonable and feasible prevention, emergency and mitigation measures.

Bring project accident rates, losses and environmental impacts to an acceptable level.

1. Identification of hazardous substances

The environmental risk substances involved in the project are shown in Table 41:

Table **41** List of main risk substances and their hazards

name	Hazard categories of major hazardous ingredients		Unit
65% nitric acid	Nitric acid	Oxidizing substances	Chemical Library
98% sulfuric acid	sulfuric acid	Toxic substances	Chemical Library
35% hydrochloric acid	hydrochloric acid	Toxic substances	Chemical Library
95% ethanol	ethanol	Highly flammable liquid	Chemical Library

2. Identification of major hazard sources and determination of environmental risk assessment work levels

According to GB18218-2009 "Identification of Major Hazard Sources of Hazardous Chemicals",

A production unit, facility or place or several production units, facilities or places less than 500m away constitute a

Unit; if the quantity of hazardous chemicals in a unit is equal to or exceeds the critical quantity specified in Table 1 and Table 2, the unit is considered as heavy

A major source of danger.

In accordance with the above standards, some of the raw and auxiliary materials used in this project are included in the "Identification of Major Hazard Sources of Hazardous Chemicals".

Table **42** Summary of major hazard source identification results

Substance name status		Dangers category	Amount of substance t		Recognition results
			Maximum storage capacity	critical volume	
Nitric acid	Liquid oxidizing substances		0.0035	200	Non-major hazard sources
sulfuric acid	liquid	Toxic substances	0.01	500	
hydrochloric acid	liquid	Toxic substances	0.0014	500	
95% ethanol	Liquid highly flammable liquid 0.0081			1000	

According to the Identification of Major Hazard Sources of Hazardous Chemicals (GB18218-2009), there are no major hazard sources in the project area.

The project is not located in an environmentally sensitive area. According to the environmental risk guidelines, the environmental risk assessment level is 2.

This evaluation refers to the standards to identify risks and conduct a brief analysis of accident risks, and proposes prevention, mitigation and emergency response measures.

measure.

Table **43** Evaluation work level list

	Highly toxic and dangerous substances	General toxicity hazard substance	Flammable and combustible hazardous materials quality	Explosive hazardous substances
Major hazard sources	one	two	one	one
Non-major hazard sources	two	two	two	two
Environmentally sensitive areas	one	one	one	one

3. Risk prevention measures

(1) Safety precautions for storage and transportation of hazardous chemicals

Enterprises strictly implement the "Regulations on the Safety Management of Hazardous Chemicals" and its implementation rules as well as the storage and transportation of hazardous chemicals.

and other laws, regulations, rules and standards, and establish a hazardous chemicals management system:

1) The architectural design of the warehouse complies with the "Code for Fire Protection Design of Buildings", "Regulations on Fire Safety Management of Warehouse ...

The requirements of the Regulations on the Safety Management of Hazardous Chemicals.

2) Chemical warehouses must have clear cargo markings, warning signs and instructions on hazardous properties and leak emergency procedures.

Labels containing handling, storage and transportation precautions and fire extinguishing methods.

3) For units transporting dangerous chemicals, the vehicles must have a dangerous goods transport certificate.

4) Organize a voluntary fire brigade and regularly organize fire training to ensure that every employee can use firefighting equipment.

Develop first aid plans for chemical injuries and poisoning and organize training exercises.

(2) Anti-leakage settings

The chemical warehouse floor of this project is treated with anti-corrosion and anti-seepage treatment and is equipped with diversion ditches and collection tanks.

Chemicals leak from cracks and are collected in the collection tank before entering the water, soil and the environment outside the workshop.

The possibility is very small.

(3) Accident pool setting

According to the relevant requirements of the Technical Requirements for Prevention and Control of Water Pollution in Accident Conditions (Q/SY1190-2013),

The calculation formula for the accidental discharge volume that needs to be accommodated within the plant area is as follows:

Vtotal = (V1 + V2 - V3) + V4 + V5 ÿ

Where: V1 - the amount of material involved in the accident within the collection system, m3;

V2 - the fire water volume of the storage tank, device, railway or automobile loading and unloading area where the accident occurred, m3;

Note: V2=ÿQÿtÿ; Qÿ—the storage tank, device, railway, or vehicle loading and unloading area where the accident occurred is used simultaneously.

Fire-fighting facility water supply flow rate, m3 /h; tfire-fighting - the design fire-fighting duration corresponding to the fire-fighting facility, h;

V3 - the amount of material that can be transferred to other storage or treatment facilities in the event of an accident, m3;

V4 - the amount of production wastewater that must still enter the collection system in the event of an accident, m3;

V5 - the amount of rainfall that may enter the collection system in the event of an accident, m3;

Note: V5=10qF; q—rainfall intensity, mm; average daily rainfall; q=qa/n; qa—average annual rainfall,

mm; n—average number of rainy days per year; F—rainwater catchment area that must enter the accident wastewater collection system, ha.

The values of the parameters in the above formula ÿ are as follows:

V1=0m3

V2=ÿQ t eliminator

Specific fire water volume V2: Based on the fire flow rate of 15L/s and the fire time of 1.5h, the fire water volume in the event of a project accident is

V2=81m3;

V3=0m3; V4=0m3; V5 takes 30m3;

Then Vtotal = 111m3

In summary, the effective volume of the accident pool should be greater than 111m3. It is recommended that the construction unit set up a 120m3 emergency accident pool in the factory area.

The southeast side of the building is connected to the emergency pool and a shut-off valve is installed. Under normal circumstances, the shut-off valve is closed and the emergency pool is closed.

Therefore, the pool remains empty. In case of an accident, open the shut-off valve and the fire water flows into the emergency pool by itself to prevent it from entering the outer ring.

territory.

4. Risk management requirements

Once an environmental risk accident occurs in this project, it will have a serious impact on people and the environment within a certain range.

Safety management is very important in production.

(1) Strengthening management is the most effective way to prevent risk accidents. From the causes of accidents, most accidents are caused by violations of

Therefore, during the construction and production operation of this project, it is necessary to strengthen the management of all employees.

Regular safety and technical training, effective safety monitoring measures are taken in all aspects of the project to prevent accidents

The probability is reduced to a minimum.

(2) This project should establish a complete set of accident risk emergency management organizations, formulate safety regulations, accident prevention measures and

Emergency plan. Management personnel should have clear responsibilities and authority, be aware of production technology and the consequences of accident risks, and have the ability to solve problems.

The ability to eliminate and mitigate accidents.

(3) Strictly implement the equipment maintenance system, regularly inspect the equipment and devices, and promptly deal with unsafe factors.

Eliminate it in the bud. Various emergency treatment equipment and facilities (such as fire extinguishers, gas masks, respirators, etc.) must also be

Must always be kept in good condition.

(4) In case of an emergency, an alarm signal should be issued in time and the relevant departments (emergency center, environmental monitoring center) should be notified.

If the accident may affect the surrounding environment, the people in the affected area should be notified in time.

Evacuate to a safe area or take effective protective measures to minimize the hazards and impacts of the accident.

(5) Once the accident is under control, a detailed analysis of the cause of the accident and the impact of various factors involved should be conducted.

Conduct an evaluation and make recommendations for eliminating and minimizing these factors in the future.

5. Environmental risk emergency plan

The purpose of developing a risk accident emergency plan is to maximize the effectiveness of the response in the fastest possible time when a risk accident occurs.

Efficiency, orderly implementation of rescue, control the development of the situation as soon as possible, reduce the harm caused by the accident, reduce the losses caused by the accident

The project risk accident handling should have a complete handling procedure diagram. Once an emergency accident occurs, it must be handled in accordance with the risk accident

Processing program diagram to operate.

VI. Cleaner Production

(1) Clean production process analysis

The waste gas generated by this project is mainly welding smoke, non-methane total hydrocarbons and canteen oil smoke.

The smoke dust purifier is used for treatment and then discharged. The non-methane total hydrocarbons generated in the dispensing process are collected by the gas hood and adsorbed by activated carbon and then passed through a 15m

The non-methane total hydrocarbons generated in the substrate liquid preparation process are collected by the biosafety cabinet and adsorbed by activated carbon.

Then it is discharged through a 15m high exhaust chimney (2#), and the canteen fumes are treated by a fume purifier before being discharged.

The wastewater from the project includes the waste liquid from enzyme labeling plate cleaning, the residual liquid from the workshop and the initial washing waste liquid, the waste liquid from the testing room cleaning, the waste liquid from magnetic

The nitrogen, sulfur and boron-containing waste liquids generated by the initial washing, activation and final washing of the microspheres are collected separately and treated as hazardous waste.

The canteen wastewater is treated by the oil-water separator and then is combined with the cleaning wastewater, staff office sewage, and workshop utensil washing wastewater.

After treatment in the septic tank, it is combined with clean sewage and discharged into the municipal sewage network.

Domestic garbage is collected in bags and sorted, and handed over to the municipal sanitation department for disposal. Waste packaging materials, waste wiring materials,

Waste quartz sand, waste activated carbon and waste reverse osmosis membranes produced by pure water preparation are collected and recycled by the material company.

Waste gas treatment produces waste activated carbon, unqualified products, waste paper towels, enzyme plate cleaning waste liquid, nitrogen, sulfur and boron-containing waste

Hazardous wastes such as liquid, residual liquid, initial rinse liquid, and testing room cleaning waste liquid will be temporarily stored in the factory and then handed over to qualified units for disposal.

(2) Comprehensive utilization of resources

Waste packaging materials, waste wiring materials, waste quartz sand, waste activated carbon produced by pure water preparation, waste

General solid waste such as discarded reverse osmosis membranes are recycled and reused uniformly by material units, which not only reduces waste but also lowers production costs.

(3) Energy-saving technology

The production workshop is a major energy consumer, so how to save energy is one of the main principles of this design.

From the formulation of process principles to the selection of equipment, full attention has been paid to energy saving. In the layout of the workshop, the routes are as smooth as possible.

Reduce roundabout transportation; simplify logistics, reduce material transportation links, and save energy consumption in transportation. At the same time, try to consider adopting new

Processes, new technologies, and new equipment reduce waste and increase product life, thereby reducing the energy consumed by excess waste.

It also saves materials for society and creates indirect energy-saving effects.

In summary, the construction project has low pollutant emission levels, mature and stable technology, and the waste generated is classified and recycled.

Realize resource utilization and meet the requirements of clean production.

7. Environmental Protection Investment

The environmental protection investment of this project is approximately RMB 1.95 million, accounting for 0.65% of the total investment of RMB 300 million. The main uses are detailed in Table 44:

Table **44** Environmental Protection Investment Estimation

Governance content during the implementation phase		Pollution prevention and control measures	Investment (10,000 yuan)
Shi work Expect	construction waste gas	Strengthen management	1
		Sprinklers, covers, fences	5
	construction wastewater	Simple sedimentation tank	4
	construction noise	Use low-noise equipment and strengthen management; Reasonable layout of noisy machinery, etc.	6
	Household waste	Collected and handled by the sanitation department	1
	Construction waste	Centralized collection, timely removal or backfilling	4
camp transport Expect	Wastewater septic tanks, oil-water separators, sewage pipe networks, and sewage outlets are standardized for welding		18
	exhaust gas	fumes: welding fume purifiers	36
		Non-methane total hydrocarbons in dispensing process: collected by gas hood + adsorbed by activated carbon Discharged from 15m high exhaust pipe (1#)	
		Non-methane total hydrocarbons in substrate solution preparation process: biosafety cabinet collection + active After adsorption by carbon, it is discharged from a 15m high exhaust pipe (2#)	
		Canteen fume: fume purifier	
	solid waste	garbage can	10
		Hazardous waste storage	
	noise	Give priority to low-noise equipment, set up vibration reduction bases, and soundproof the factory buildings.	10
	Risk Prevention	Ground anti-corrosion and anti-seepage, accident pool, shut-off valve	100
total	—	—	195

The project's environmental protection investment is RMB 1.95 million, accounting for 0.65% of the total investment.

Prevention and control measures to be taken by the construction project and expected control effects Content Emission source

type (number)		Pollutant name	Prevention and control measures	Expected governance effects
Air pollutants	Welding process welding fume	mobile welding fume purifier		Meet the monitoring concentration limit of fugitive emissions in GB16279-1996 "Integrated Emission Standard of Air Pollutants"
	Non-methane total hydrocarbons in dispensing process		The gas is collected by the hood and adsorbed by activated carbon, then discharged through a 15m high exhaust pipe (1#) meeting the secondary standard in GB16279-1996 "Air Pollutants Collection	
	Substrate liquid preparation process	Non-methane hydrocarbons	and Activated Carbon Comprehensive Emission Standard in Biosafety Cabinets" and then adsorbed by a 15m high exhaust pipe (2#).	
	canteen	Canteen fumes	Oil fume purifier	It meets the requirements of GB18483-2001 "Food Industry Fume Emission Standard" (Trial), the Hefei Economic Development
Water pollutants	Staff Office	COD, BOD5, SS, NH3-N, TP, animal and vegetable oils, unit product baseline discharge	Septic tanks, oil-water separators, sewage pipe networks	Zone Wastewater Treatment Plant Takeover Standard and the "Mixed Preparation Pharmaceutical Industry Water Pollutant Emission Standard" Pollutant emission limits in (GB21908-2008)
solid waste	Employee office and domestic waste		Bagged and classified for collection and disposal by the sanitation department	No impact on the environment outside the project area
	Production workshop	Waste packaging materials, waste harness materials, and waste single sand and pure water carbon and waste reverse osmosis membrane	quartz are collected and handed over to the material preparation site for recycling. Waste activated	
		waste gas treatment produce waste activated carbon, unqualified products, waste paper towels, enzyme labeling plate cleaning waste liquid, nitrogen-containing, sulfur-containing and boron-containing waste liquid, residual liquid and initial rinse liquid,	After being temporarily stored in the factory's hazardous waste warehouse, it will be handed over to a qualified unit for disposal	
noise Voice	test room cleaning waste liquid project noise is mainly air-cooled air conditioner outdoor unit, air compressor, filling and capping machine, washing and sealing machine, fully automatic ELISA plate washer, oscillator, dehumidifier, electric blast drying oven, hot air gun, mobile welding fume purifier, etc. The noise level generated by the operation of the equipment is 70-90dB(A). After taking noise reduction measures such as the independent equipment room, the noise emission of the project area meets the requirements of GB12348-2008 “Environmental Protection Standards for Industrial Enterprises“ The three standard requirements in the "Noise Emission Standards".			
other	/			
Ecological protection measures and expected effects				

1. Conclusion

1. Project Overview

BIOHIT Biotech (Hefei) Co., Ltd. BIOHIT innovative in vitro diagnostic reagents and supporting instruments R&D and production base

The construction site of the project is located at the northeast corner of the intersection of Kongquetai Road and Chang'an Road in Hefei High-tech Industrial Development Zone (north latitude 31°48ÿ29" E, 117°05ÿ50" E). This project was approved by Hefei High-tech Industrial Development Zone on December 4, 2017.

The project has been approved by the Economic and Trade Bureau with the document No. [2017] 695. The total area of the project is 16,680m2 and it mainly consists of four buildings.

Factory buildings: 1# Factory Building is 3-storey, 2# Testing Center is 3-storey, 3# Factory Building is 5-storey (partially 4-storey), 4# Factory Building is 4-storey

The project is mainly engaged in the production of in vitro diagnostic kits and test instruments. After the project reaches full production, it will produce 75 million test kits per year.

1,000 test instruments. The total investment in the project is RMB 300 million, of which RMB 1.95 million is invested in environmental protection, accounting for 0.65% of the total investment.

The east side of this project is industrial land to be built, the south side is industrial land to be built across Chang'an Road, and the west side is industrial land to be built.

The north side, separated by a planned branch road, is industrial land to be built.

2. Site feasibility

(1) This project is located at the northeast corner of the intersection of Kongquetai Road and Changan Road in Hefei High-tech Industrial Development Zone.

According to the Planning (Single Unit) Design Conditions Notice (Compliance High-tech 2017049), the project land use nature is industrial.

The high-tech zone leads the development of four major high-tech fields: electronic information, optomechanical integration, bioengineering and new medicine, and new materials.

This project mainly produces pepsinogen I kit, pepsinogen II kit, gastrin 17 kit,

Helicobacter pylori IgG test kit is in line with the new pharmaceutical industry, one of the leading industries in the High-tech Zone. Therefore, this project is in line with the overall

Planning and reasonable site selection.

(2) Environmental impact requirements

A. This project is not located in a drinking water source protection area, scenic spot, nature reserve, historical and cultural relics protection area,

Environmentally sensitive areas such as basic farmland protection areas.

B. The current environmental quality of the area where the project is located is good, and the environmental carrying capacity can meet the needs of project construction.

C. There are no major sources of danger within the immediate vicinity of this project.

(3) Construction conditions

A. The project's terrain is not very undulating and there are no hidden dangers of geological disasters.

B. The project is located in a convenient location with sufficient transportation and sufficient local supply of building materials.

Both can meet the needs.

C. The municipal infrastructure in the proposed project area is complete, and the water supply, drainage, power supply, telecommunications, etc. can meet the needs of project construction.

Based on the above analysis, the project site is reasonable.

3. Compliance with industrial policies

This project Pepsinogen I kit, Pepsinogen II kit, Gastrin 17 kit, Helicobacter pylori IgG

The test kit belongs to the "encouraged category" in the "Guiding Catalogue for Industrial Structure Adjustment (2011 Edition)" (revised in 2013) of the National Development and Reform Commission.

In the second item of the thirteenth item "Medicine", "Development and production of new diagnostic reagents", fluorescent immunoassay analyzers, chemical

Luminescence tester does not belong to the encouraged, restricted and eliminated items, and can be regarded as permitted.

Industry policy requirements.

4. Current status of environmental quality

The average 24-hour values of air pollutants such as SO2, NO2, PM2.5 and PM10 in the project area are all lower than those in GB3095-2012.

The air quality is good, and the surface water quality in some areas of Paihe River does not meet the second level standard of the Ambient Air Quality Standard.

The noise level in the project area during the day and at night meets the Class IV standard of the Surface Water Environmental Quality Standard (GB3096-2002);

The noise environment quality meets the Class 3 standard in the Environmental Quality Standard (GB3096-2008), and the noise environment quality is good.

5. Environmental impact analysis during the construction period

ÿ Wastewater: Wastewater during construction period mainly includes flushing wastewater in the construction area, domestic sewage of the construction team, and wastewater generated by construction machinery.

Small amounts of oily wastewater, etc. Domestic wastewater is directly discharged into the municipal sewage network after being treated in a septic tank; construction wastewater is discharged into the municipal sewage network after being treated in a simple sedimentation tank.

After being collected and treated in the pond, the pollutants are used for sprinkling water and suppressing dust at construction sites. They are recycled and not discharged to the external environment.

ÿ Waste gas: The main atmospheric pollutants during the construction period are dust and fuel waste gas generated at the construction site, which are all non-toxic.

After organizing the emission, setting up fences or walls, closing the construction site, sprinkling water to suppress dust, reducing the construction site and other related measures,

The amount produced is small and has little impact on the surrounding environment.

ÿ Noise: The noise generated during the construction period is phased, temporary and unstable. According to the construction characteristics of the project,

The noise level of the power source of each mechanical equipment is generally above 85dB (A).

When the construction is completed, the noise impact will disappear and will not cause long-term and permanent impact on the surrounding environment.

After the treatment measures are given, the project construction period will have little impact on the surrounding sound environment.

ÿSolid waste: Solid waste during the construction period mainly comes from construction waste at the construction site and daily life of construction workers.

Garbage, etc. Construction waste during the construction period should be transported out at any time and transported to a construction waste landfill for unified treatment or used for road construction or pit filling.

Domestic waste is collected and handed over to the local sanitation department for unified removal and disposal.

6. Environmental impact analysis during the operation period

(1) Wastewater: The wastewater generated by the project mainly includes office and domestic sewage, cleaning wastewater, workshop utensil washing wastewater,

The main pollutants in catering wastewater are COD, BOD5, SS, NH3-N, TP, animal and vegetable oils, etc.

After pre-treatment in the separator, it is pre-treated in the septic tank together with the workshop utensil washing wastewater, cleaning wastewater, and staff office and domestic sewage.

The clean sewage is discharged into the municipal sewage network, and then into the Hefei Economic Development Zone Sewage Treatment Plant for treatment to meet the standards before being discharged into the Pai River.

The discharge volume is small and the composition is simple, which will not reduce the existing water environment functions of the surface water Paihe River.

(2) Waste gas: The welding fume of this project is discharged after being treated by a mobile welding fume purifier, meeting the requirements of the Air Pollution Control Law.

The monitoring concentration limit of unorganized emissions in the Comprehensive Emission Standard for Pollutants (GB16297-1996) is the limit of non-methane total hydrocarbons in the dispensing process.

The gas is collected by the gas collecting hood and adsorbed by activated carbon, then discharged through a 15m high exhaust pipe (1#). The non-methane total hydrocarbons in the substrate liquid preparation process are generated by the

The pollutants are collected in the chemical safety cabinet, adsorbed by activated carbon and then discharged through a 15m high exhaust pipe (2#), meeting the requirements of the Comprehensive Emission Standards for Air Pollutants.

The second level standard of "GB16297-1996" is met. The cooking fume is discharged after being treated by the fume purifier, which meets the requirements of GB18483-2001.

The "Food Industry Fume Emission Standard" (Trial) requires that the impact on the regional air environment is relatively small.

(3) Noise: The noise of the project is mainly caused by the air-cooled air conditioner outdoor unit, air compressor, filling and capping machine, washing and sealing machine,

Fully automatic enzyme-labeled plate washer, oscillator, dehumidifier, electric blast drying oven, hot air gun, mobile welding fume purifier

The noise level generated by the operation of equipment such as the following is 70-90dB(A). By giving priority to the use of low-noise equipment, a vibration reduction base is set up.

After the project is put into operation, the noise from the factory boundary will have a great impact on the surrounding environment.

No significant impact.

(4) Solid waste: The solid waste generated by the project mainly includes office and domestic waste, waste packaging materials, waste wiring harness materials,

Waste quartz sand, waste activated carbon produced by pure water preparation, waste reverse osmosis membrane and other general solid wastes, waste activated carbon produced by waste gas treatment

Carbon, unqualified products, waste paper towels, enzyme plate cleaning waste liquid, nitrogen-containing, sulfur-containing and boron-containing waste liquid, residual liquid and initial rinse

Liquid, testing room cleaning waste and other hazardous waste. Employee office and domestic garbage is bagged and collected separately and handled by the sanitation department.

Waste packaging materials, waste wiring materials, waste quartz sand, waste activated carbon produced by pure water preparation, and waste reverse osmosis membranes are collected and disposed of.

After being collected, it is handed over to the material unit for recycling and reuse. Waste gas treatment produces waste activated carbon, unqualified products, waste paper towels, enzyme labeling, etc.

Plate cleaning waste liquid, nitrogen-containing, sulfur-containing and boron-containing waste liquid, residual liquid and initial rinse liquid, test room cleaning waste liquid are hazardous waste in the factory area

After being temporarily stored in the warehouse, it will be handed over to a qualified unit for disposal, and will not affect the environment outside the project area.

7. Overall Conclusion

In summary, the construction of this project complies with the national industrial policy. The project site is industrial land and complies with

Hefei High-tech Industrial Development Zone Master Plan requirements; This project needs to implement the pollution prevention and control measures required by this assessment, and seriously

After the implementation of the "three simultaneous" system, all pollutants can be discharged stably and meet the standards without degrading the original environment of the evaluation area.

Quality Function Level. Therefore, from the perspective of environmental impact, the project is feasible.

Table **45** List of pollution prevention and control measures for the "three simultaneous" projects

Pollution source classification	Pollution prevention and control measures	Main project content	Expected results	Remark
Sources of water pollution	After being pre-treated in an oil-water separator, catering wastewater is pre-treated in a septic tank along with workshop utensil washing wastewater, cleaning wastewater, and employee office and domestic wastewater. The wastewater is then discharged into the municipal sewage network together with the clean sewage, and then into the Hefei Economic Development Zone Sewage Treatment Plant for treatment to meet the standards before being discharged into the Pai River.	Standardization of septic tanks, oil-water separators, sewage pipe networks, and sewage outlets	Meet the standards for the sewage treatment plant takeover in Hefei Economic Development Zone and the pollutant emission limits in the "Water Pollutant Emission Standard for Mixed Preparation Pharmaceutical Industry" (GB21908-2008)	"Three Simultaneities"
Sources of air pollution	Welding fume is discharged after being treated by a mobile welding fume purifier	Mobile welding fume purifier	Meet the unorganized emission concentration limits in the Integrated Emission Standards for Air Pollutants (GB16297-96)	"Three Simultaneities"
	The total non-methane hydrocarbons in the dispensing process are collected by the gas collection hood, adsorbed by activated carbon, and discharged through a 15m high exhaust pipe (1#).	Gas collection hood, activated carbon treatment device, exhaust pipe	Meet the secondary standard of the "Integrated Emission Standard of Air Pollutants" (GB16297-96)	
	The total non-methane hydrocarbons in the substrate liquid preparation process are collected by the biosafety cabinet, adsorbed by activated carbon, and discharged through a 15m high exhaust pipe (2#).	Biological safety cabinet, activated carbon treatment device, exhaust pipe		
	The canteen fume is discharged after being treated by the fume purifier	Oil fume purifier	Meet GB18483-2001 "Catering Industry Fume Emission Standard" (Trial) The standard requires that factory boundary noise emissions meet	
Sources of noise pollution	Low-noise equipment is given priority, and vibration reduction bases, sound insulation of factory buildings, and a separate air compressor room are used to reduce noise. Employees' office and domestic garbage is bagged and collected separately, and disposed of uniformly by the sanitation department. Waste packaging materials, waste wiring materials, waste quartz sand,		Three types of standards in GB12348-2008 "Emission Standards for Environmental Noise at Industrial Enterprise Boundaries"	"Three Simultaneities"
solid waste	waste activated carbon generated by pure water preparation, and waste reverse osmosis membranes are collected centrally and	Bagged and classified collection	No impact on the environment outside the project area	"Three Simultaneities"
	handed over to material units for recycling. Waste activated carbon, unqualified products, waste paper towels, enzyme labeling plate cleaning waste liquid, nitrogen-containing, sulfur-containing and boron-containing waste liquid, residual liquid and initial rinse liquid, and	Centralized collection		
	testing room cleaning waste liquid generated by waste gas treatment are temporarily stored in the factory's hazardous waste warehouse and then handed over to qualified units for disposal.	Hazardous waste storage		

2. Environmental protection requirements

In order to protect the environment and minimize the impact on it, this assessment proposes the following requirements:

1. Strengthen construction management, strictly implement relevant measures, and minimize environmental impact.

2. The company implements the legal person responsibility system for environmental protection, strengthens the management and maintenance of waste gas and wastewater treatment facilities, and ensures their proper operation.

Always running.

3. During the planning and construction process of construction projects, the "three simultaneous" system of construction projects should be implemented conscientiously, and all environmental protection

Measures have been implemented in place.

4. To maintain the good operation of the equipment, attention should be paid to the equipment sound insulation and noise reduction. Try to reduce the noise at the factory boundary to ensure the factory

Noise level meets standards.

5. Further standardize and strengthen the environmental management of hazardous waste storage sites, and do a good job in transportation, treatment and disposal.

6. Pollution discharge status should be reported regularly to the Hefei Municipal Environmental Protection Bureau High-tech Industrial Development Zone Branch and relevant management departments.

and accept its supervision and management in accordance with the law.

7. The above evaluation results are based on the scale and layout provided by the builder. If the builder expands the scale or changes

The construction party must re-apply in accordance with environmental protection requirements.

Preliminary opinion: official seal Person in charge Year, month, day
Review opinions of the next level environmental protection administrative department: official seal Person in charge Year, month, day

Approval opinion:

official seal

Person in charge

Year, month, day

Note release

1. This report form should be accompanied by the following annexes and drawings:

Appendix **1** Power of Attorney

Appendix **2** Other administrative documents related to environmental impact assessment

Attached Figure **1 :** Geographical location of the project

Attached Figure **2 :** Schematic diagram of the project's surrounding environment and noise monitoring point distribution map

Figure **3 :** Schematic diagram of sensitive targets in construction projects

Figure **4 :** Plant layout plan

Figure **5 :** Workshop layout

2. If this report cannot explain the pollution generated by the project and its impact on the environment, a special evaluation should be conducted.

Based on the characteristics of the construction project and the local environmental features, **1-2** of the following items should be selected for special evaluation.

1. Special assessment of atmospheric environmental impact

2. Special assessment of water environment impact (including surface water and groundwater)

3. Special evaluation of ecological impact

4. Special evaluation of noise impact

5. Special assessment of soil impact

6. Special assessment of solid waste impact

Special items not included in the above special evaluation can be listed separately. Special evaluation shall be carried out in accordance with the requirements of the Technical Guidelines for Environmental Impact Assessment.

Please proceed.