Reconstruction Project of the Safety Quality Testing Labs of Animal Products of Jilin Province

Environmental Management Plan

Research Academy of Environmental Sciences of Jilin Province

April, 2009
Table of Contents

1 Background and Purposes of Establishment of the Environmental Management Plan (EMP) ............................................................................................................................. 1
   1.1 Background of the project ....................................................................................................... 1
   1.2 Purposes of the Environmental Management Plan (EMP) ...................................................... 3
   1.3 Criteria for Establishment and Voluntary Standards ............................................................... 4
       1.3.1 Criteria for establishment ................................................................................................. 4
       1.3.2 Technical specifications and guidelines ........................................................................... 5
       1.3.3 Voluntary standards .......................................................................................................... 6
   1.4 Criteria for grading of labs .................................................................................................... 10

2 Main Environmental Impacts and Mitigative Measures ........................................... 11
   2.1 Analysis of discharge of the current pollutants and pollution prevention and control measures .............................................................................................................. 11
   2.2 Environmental impact assessment and analysis .................................................................... 12
       2.2.1 Environmental impact analysis in the construction period ............................................ 12
       2.2.2 Environmental impact analysis in the operation period ................................................. 13
   2.3 Environmental protection measures ...................................................................................... 17
       2.3.1 Environmental impact mitigative measures in the construction period ......................... 17
       2.3.2 Environmental impact mitigative measures in the operation period .............................. 18

3 Enforcement Organizations ...................................................................................... 32
   3.1 Environmental management organizations ........................................................................... 32
       3.1.1 Frameworks of the environmental management organizations ...................................... 32
       3.1.2 Responsibilities of the environmental management organizations ................................ 34
   3.2 Environmental monitoring organization and responsibilities ................................................ 37
   3.3 Contractor’s responsibilities .................................................................................................. 37
   3.4 Personal training ................................................................................................................... 38
       3.4.1 Training of the new full-time and part-time environmental protection personnel in the construction period .................................................................................. 39
       3.4.2 Training of the new full-time and part-time environmental protection personnel in the operation period .................................................................................. 39

4 Environmental Monitoring Plan ............................................................................... 42
   4.1 Purposes of the environmental monitoring ........................................................................... 42
   4.2 Monitoring organization and implementation ....................................................................... 42
   4.3 Environmental monitoring program ...................................................................................... 42

5 Monitoring and Estimate of the Environmental Management Plan.......................... 54

6 Report ........................................................................................................................ 54

7 Public Participation ................................................................................................... 56
   7.1 Information publicity ............................................................................................................ 56
   7.2 Investigation of public participation ..................................................................................... 56

1) Yang Liwei, Secretary of China Southern Airline Jilin Branch, 45, 271 Liaoyang Street, ........................................................................................................................... 59

8 Channels for Filing Complaints for Disputes ........................................................... 61
   8.1.1 Establishment and compositions of the complaint organization ........................................ 61
8.1.2 Complaint procedure
1 Background and Purposes of Establishment of the Environmental Management Plan (EMP)

1.1 Background of the project

The Quality Safety Project of Agricultural Products from the World Bank Loan of Jilin Province (hereinafter referred to as the “World Bank Project of Jilin Province”) plans to adopt some advanced safety control technologies such as “Good Agricultural Practice” (GAP), “Good Manufacturing Practice” (GMP) and “Hazard Analysis and Critical Control Point Analysis” (HACCP), etc. to manufacture and process agricultural products, increase the area of coverage of the standardized demonstration zones (bases) and make manufacturing and processing of agricultural products of our province gradually enter the standardized track.

Focused on some aspects such as quality safety support system of agricultural products, whole-process standardized demonstration and popularization, whole-process quality supervision, product quality testing, quality tracing, propaganda and training as well as study of the relevant problems of quality safety of agricultural products, etc., the project is designed and divided into 5 subprojects, including popularization of the good agricultural practice of quality safety of agricultural products, public monitoring of quality safety of agricultural products, study of practicability of quality safety of agricultural products, training and propaganda, manufacturing chain demonstration models of safe agricultural products (re-loan project) and project management. The project, which is the reconstruction project of the quality safety testing lab of animal products of Jilin Province of the construction project of the quality safety monitoring system of agricultural products of the public monitoring project of quality safety of agricultural products, the second subproject, mainly undertakes the quality supervision of veterinary medicine and feedstuff and monitoring of residual medicine of animal and poultry products of the whole province, mainly including 4 aspects. The first is monitoring of residual medicine of animal and poultry products, the second is quality supervision and testing of veterinary medicine, the third is supervision and monitoring
of feedstuff and feedstuff additives and the fourth is supervision and monitoring of environment and water quality of the producing areas of animal products.

The project construction is guided by the National Construction Plan of the Quality Safety Inspection and Testing System of Agricultural Products and the central lab is set up and decorated according to the requirements of JGJ 91-93 Code for Design of Scientific Experiment Buildings, Appraisal Criteria for Assessment of Laboratory Qualification, Measures for Management of the Product Quality Supervision, Inspection and Testing Centers of the Ministry of Agriculture and Detailed Rules for Examination, Approval and Appraisal of the Product Quality Supervision, Inspection and Testing Organizations of the Ministry of Agriculture.

The project is planned to be built in Changchun City, capital of Jilin Province. The Supervision Institute of Veterinary Medicine and Feedstuff of Jilin Province located in 311 Liaoyang Street, Changchun City is planned to be reconstructed. The reconstruction contents mainly include reconstruction of 5000m² test building, reconstruction of 3000m² (building area) lab, civil works and decoration, waste gas and water nuisance-free treatment system, ventilation, air conditioning and purification system, power supply and lighting system, water supply and drainage system, fire safety system, lab water purification system, heating system, network monitoring system, standardized lab, purification of the experiment animal house, purification of the sterile room and purchase of some advanced instruments and equipments.

With the construction of the project, the high-precision analyzers will be purchased, the testing procedure will be standardized, the procedural and automatic routine quality testing of veterinary medicine will be realized and the testing capacity will be improved by 2-5 times. The testing of pharmacology, toxicology, test and other items of the new veterinary medicine can be carried out, the monitoring of residual veterinary medicine can be carried out from the sources, the capacity of testing of veterinary medicine, analysis of residual medicine and testing of feedstuff will be improved, the healthy, rapid and good-quality development of production of the animal husbandry will be assured, the food safety and public health will be assured and the technological support will be provided for shaking off poverty in the rural area,
increasing the agricultural income and making the farmers become rich.

The Quality Safety Center of Animal Products of Jilin Province is mainly responsible for quality supervision of three links, that is, manufacturing, operation and use of veterinary medicine, feedstuff and feedstuff additives and monitoring of residual medicine of animal and poultry products in the whole province. It has the sound organizational framework and perfect quality management system. According to the work demand, under the center are 8 sections and rooms such as administrative office, business section, medicine testing room, biological testing room, residual medicine testing room, feedstuff testing room, traditional Chinese medicine testing room and safety supervision section, etc.

1.2 Purposes of the Environmental Management Plan (EMP)

The environmental impact assessment of the project shows that the impacts of the project on the environment are mainly produced in the construction period and the operation period. The environmental management plan will give the detailed description of some contents such as environmental mitigative measures, environmental management, environmental supervision and environmental monitoring, etc. It will be the directive document of carrying out the above activities, with the roles as follows:

(1) Provide the directive document on the environment. The environmental management plan, examined by the World Bank, will be regarded as the environmental protection document and provided to the construction supervision unit, environmental monitoring unit and other relevant units in the construction period and the operation period.

(2) The responsibilities and roles of the relevant units are determined. The responsibilities and roles of the relevant functional departments and administrations are determined and the channels and modes of communication and exchange between all the departments are presented.

(3) The environmental mitigative measures and the environmental monitoring plan in the construction period and the operation period are presented.
1.3 Criteria for Establishment and Voluntary Standards

1.3.1 Criteria for establishment

1.3.1.1 Relevant laws and regulations of environmental protection of China

(1) Environmental Protection Law of the People’s Republic of China, December 26, 1989;

(2) Law of the People’s Republic of China on the Prevention and Control of Atmospheric Pollution, April 29, 2000;

(3) Law of the People’s Republic of China on the Prevention and Control of Water Pollution, February 28, 2008;

(4) Rules for Implementation of the Law of the People’s Republic of China on the Prevention and Control of Water Pollution, Decree No. 284 of the State Council;

(5) Law of the People’s Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, April, 2005;

(6) Law of the People’s Republic of China on the Prevention and Control of Environmental Noise Pollution, March 1, 1997;

(7) Law of the People’s Republic of China on Promotion of Cleaner Production, January 1, 2003;


(10) Law of the People’s Republic of China on Promotion of Cleaner Production (2002);

(11) Regulations on the Administration of Construction Project Environmental Protection, Decree No. 253 of the State Council [1998], November 29, 1998;

(12) Directory of the Systematic Management of Construction Project Environmental Protection, promulgated by the Environmental Protection Administration of China on January 1, 2003;

(13) Several Opinions on the Problems of Construction Project Environmental Management, Environmental Protection Administration of China, March 21, 1988;
(14) Notice of the State Council on Strengthening the Urban Water Supply and Saving and Prevention and Control Work of Water Pollution, No. 36 Document in 2000;

(15) Notice on Strengthening the Environmental Impact Assessment Management of Projects Funded by Loans from International Financial Organizations (HJ [1993] No. 324 Document);

(16) Provisional Measure of Public Participating in Environmental Impact Assessment (2006);

(17) Opinions on Strengthening the Industrial Water Saving Work (2000), No. 1015 of the State Economic and Trade Commission [2000];

(18) Measures on Environmental Information Publicity (Tentative);


1.3.1.2 Requirements of the World Bank

The requirements of the World Bank mainly include its 10 safety support policies, that is, business policy, procedure of the World Bank and business guidelines, etc., with the details as follows:

(1) environmental assessment (OP/BP/GP4.01)
(2) forestry (OP /GP4.36)
(3) natural habitat (OP/BP4.04)
(4) large dam safety (OP/BP4.37)
(5) insecticide management (OP4.09)
(6) involuntary resettlement (OP4.30)
(7) ethnic minorities (OP4.20)
(8) cultural relics (OP4.11)
(9) projects in the disputed area (OP/BP/GP7.60)
(10) international watercourse project (OP/BP/GP7.50)

1.3.2 Technical specifications and guidelines

(1) Technical Guidelines for Environmental Impact Assessment · General Principles (HJ/T2.1-93);
(2) Technical Guidelines for Environmental Impact Assessment · Atmospheric Pollution (HJ/T2.2-2008);
(3) Technical Guidelines for Environmental Impact Assessment · Surface Water Environment (HJ/T2.3-93);
(4) Technical Guidelines for Environmental Impact Assessment · Acoustic Environment (HJ/T2.4-1995);
(5) Technical Guidelines for Environmental Impact Assessment · Non-polluted Ecological Impacts (HJ/T19-1997);
(6) Technical Guidelines for Environmental Risk Assessment on Projects (HJ/T169-2004);
(7) Standards for the Water Surface Functional Areas of Jilin Province DB22/388-2004;
(8) Technical Measures for Formulating the Local Emission Standard of Air Pollutants GB/T13201-91)

1.3.3 Voluntary standards

The project carries out the following standards according to the division of the environmental functional areas of Changchun City.

1.3.3.1 Environmental quality standards

(1) Ambient air

The second-class standard of the Ambient Air Quality Standard (GB3095-1996) is carried out when the regional ambient air is assessed and see Table 1.3-1 for details.

<table>
<thead>
<tr>
<th>No.</th>
<th>Pollutant</th>
<th>Voluntary Standard</th>
<th>Daily Average</th>
<th>Hourly Average</th>
<th>Assessed Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SO₂</td>
<td>Ambient Air Quality Standard GB3095-1996 Class 2</td>
<td>0.15</td>
<td>0.5</td>
<td>ambient air in the area where the project is located</td>
</tr>
<tr>
<td>2</td>
<td>TSP</td>
<td></td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PM₁₀</td>
<td></td>
<td>0.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>NO₂</td>
<td></td>
<td>0.12</td>
<td>0.24</td>
<td></td>
</tr>
</tbody>
</table>

(2) Surface water

The waste water drained in the project is treated in Chuanhu Sewage Treatment Plant of Changchun City and finally drained to Yitong River and the Class IV standard
is adopted for the surface water quality according to the relevant regulations of the
Surface Water Functional Areas of Jilin Province (DB22/388-2004) and Changchun City. See Table 1.3-2 for details.

<table>
<thead>
<tr>
<th>Assessment Factor</th>
<th>Unit</th>
<th>Class IV</th>
<th>Source for the Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>-</td>
<td>6-9</td>
<td></td>
</tr>
<tr>
<td>CODcr</td>
<td>mg/L</td>
<td>≤30</td>
<td>GB3838-2002 Class IV, *Class IV by referring to the Environmental Quality Standard for the Songhua River System.</td>
</tr>
<tr>
<td>BOD₅</td>
<td>mg/L</td>
<td>≤6</td>
<td></td>
</tr>
<tr>
<td>NH₃</td>
<td>mg/L</td>
<td>≤1.5</td>
<td></td>
</tr>
<tr>
<td>SS*</td>
<td>mg/L</td>
<td>&lt;40*</td>
<td></td>
</tr>
<tr>
<td>petrol</td>
<td>mg/L</td>
<td>≤0.5</td>
<td></td>
</tr>
</tbody>
</table>

(3) Acoustic environment

According to the Map of the Applicable Areas of Changchun Urban Environmental Noise Standard, the Class I standard of GB3096-2008 Acoustic Environmental Quality Standard is carried out for the acoustic environmental quality standard in the project area. See Table 1.3-3 for details.

<table>
<thead>
<tr>
<th>Assessment Factor</th>
<th>Unit</th>
<th>Period of Time</th>
<th>Standard Limit Value</th>
<th>Source for the Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>equivalent sound level</td>
<td>dB (A)</td>
<td>daytime</td>
<td>55</td>
<td>plant to be built GB3096-2008 “Class I”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>night</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

1.3.3.2 Emission control standards of pollutants

(1) Air pollutants

The Class 2 standard of the Comprehensive Emission Standard of Air Pollutants (GB16297-1996) is carried out for the emission control of waste gas pollutants of labs. See Details for Table 1.3-4.
<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Allowed Maximum Emission Concentration mg/m$^3$</th>
<th>Allowed Maximum Emission Rate, kg/h</th>
<th>Unorganized Emission Monitoring Concentration Limit Value</th>
<th>Concentration mg/m$^3$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Height of Exhaust Cylinder m</td>
<td>Class 2</td>
<td>Monitoring Point</td>
</tr>
<tr>
<td>Grain</td>
<td>120</td>
<td>15</td>
<td>3.5</td>
<td>maximum concentration point out of the periphery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>5.9</td>
<td></td>
</tr>
<tr>
<td>Sulphuric acid mist</td>
<td>45</td>
<td>15</td>
<td>1.5</td>
<td>maximum concentration point out of the periphery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>Mercury and mercury compounds</td>
<td>0.7</td>
<td>15</td>
<td>0.0015</td>
<td>maximum concentration point out of the periphery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>0.0026</td>
<td></td>
</tr>
<tr>
<td>Phenols</td>
<td>100</td>
<td>15</td>
<td>0.10</td>
<td>maximum concentration point out of the periphery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>0.17</td>
<td></td>
</tr>
</tbody>
</table>

(2) Discharge standard of water pollutants

The waste water discharged in the project is treated and discharged to the urban drainage pipeline and then treated in the Water Purification Plant of Chuanhu, Changchun City and finally discharged to Yitong River. The Class 3 standard of GB8978-1996 Comprehensive Discharge Standard of Sewage is carried out for the discharge concentration of the routine pollutants and the allowed maximum discharge standard of the first-class pollutants of GB8978-1996 Comprehensive Discharge Standard of Sewage is carried out for the discharge concentration of heavy metal.
### Table 1.3-5: Discharge Standard of Water Pollutants

<table>
<thead>
<tr>
<th>Type of Pollution Source</th>
<th>Pollution Factor</th>
<th>Unit</th>
<th>Control Standard</th>
<th>Source for the Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Class 1</td>
<td>Class 2</td>
</tr>
<tr>
<td>Waste water</td>
<td>pH</td>
<td>-</td>
<td>6~9</td>
<td>6~9</td>
</tr>
<tr>
<td></td>
<td>COD</td>
<td>mg/L</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>BOD₅</td>
<td>mg/L</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>SS</td>
<td>mg/L</td>
<td>70</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>ammonia nitrogen</td>
<td>mg/L</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>phenyl amines</td>
<td>mg/L</td>
<td>1.0</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>animal and vegetable oils</td>
<td>mg/L</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>nitrobenzene</td>
<td>mg/L</td>
<td>2.0</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>anionic surfactant (LAS)</td>
<td>mg/L</td>
<td>5.0</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Organic phosphorus pesticide (counted in P)</td>
<td>mg/L</td>
<td>not tested</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>total mercury</td>
<td>mg/L</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td></td>
<td>total arsenic</td>
<td>mg/L</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>total lead</td>
<td>mg/L</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>total chromium</td>
<td>mg/L</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

(4) Emission standard for industrial enterprises noise at boundary

The Class I standard of GB12348-2008 Emission Standard for Industrial Enterprises Noise at Boundary is carried out for the noise at boundary in the operation period and the (DB22/272-2001) Construction Noise Limit Value at Boundary is carried out for the noise at boundary in the construction period.
### Table 1.3-6: Noise Emission Standard

<table>
<thead>
<tr>
<th>Type of Pollution Source</th>
<th>Pollution Factor</th>
<th>Daytime Limit Value dB (A)</th>
<th>Night Limit Value dB (A)</th>
<th>Relevant Regulations</th>
<th>Source for the Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction (at boundary)</td>
<td>equivalent sound level</td>
<td>75</td>
<td>55</td>
<td>stage of earthwork</td>
<td>DB22/272-2001 Construction Noise Limit Value at Boundary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70</td>
<td>55</td>
<td>stage of structure</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>65</td>
<td>55</td>
<td>stage of decoration</td>
<td></td>
</tr>
<tr>
<td>Operation period (at boundary)</td>
<td>equivalent sound level</td>
<td></td>
<td>55</td>
<td>GB12348-2008 Class I</td>
<td></td>
</tr>
</tbody>
</table>

### 1.4 Criteria for grading of labs

According to (WS 233-2002) General Biosafety Standard for Microbiological and Biomedical Laboratories of the Health Industrial Standard of the People’s Republic of China, the classification and grading of labs are shown in Table 1.4-1 below.

### Table 1.4-1: Criteria for Classification and Grading of Labs

<table>
<thead>
<tr>
<th>Grading</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1 biosafety protection lab</td>
<td>The lab structure and facilities, safety operating specification and safety equipments are applicable to the known avirulent microorganisms to the healthy adults such as common microbial lab used for teaching, etc.</td>
</tr>
<tr>
<td>Class 2 biosafety protection lab</td>
<td>The lab structure and facilities, safety operating specification and safety equipments are applicable to the microorganisms posing the moderate potential hazards to human beings or the environment.</td>
</tr>
<tr>
<td>Class 3 biosafety protection lab</td>
<td>The lab structure and facilities, safety operating specification and safety equipments are applicable to the pathogenic microorganisms and toxins making human beings infected with serious and even lethal diseases mainly by means of respiration, generally with the vaccines preventing infection. The HIV study (except the serological test) shall be carried out in the Class 3 biosafety protection lab.</td>
</tr>
<tr>
<td>Class 4 biosafety protection lab</td>
<td>The lab structure and facilities, safety operating specification and safety equipments are applicable to the pathogenic microorganisms and toxins highly hazardous to a human body, epidemic by means of aerosol or with unidentified epidemic</td>
</tr>
</tbody>
</table>
means and without effective vaccine or therapeutic method at present. The unidentified microorganisms similar to the above shall also be carried out in the Class 4 biosafety protection lab and shall not be determined whether they are treated in the Class 4 or lower lab until the sufficient data are available.

The lab can only carry out the testing of residues and irrigation water in the veterinary medicine, feedstuff, meat and eggs and the test carried out in the microbial lab is also the common microbial test; therefore, the known avirulent microorganisms to the healthy adults in the normal situation belong to the Class 1 biosafety protection lab.

2 Main Environmental Impacts and Mitigative Measures

2.1 Analysis of discharge of the current pollutants and pollution prevention and control measures

(1) Waste gas

The safety quality testing lab of animal products of Jilin Province has no ventilation equipment and adopts the natural ventilation. In the process of tests, the windows are often opened for ventilation, which influences not only the accuracy of the test data but also the testers and the residential districts around.

(2) Waste water

The current test waste water and domestic sewage is directly discharged to the urban sewer pipes. The discharge amount of domestic sewage of the lab is 2.4m³/d and the daily discharge amount of the test waste water is about 8m³/d. The waste water contains acid and alkali waste water, heavy metal and organic agents, etc.

The waste water produced in the lab is discharged in a small amount, but it has the complex compositions. If the discharge exceeds the standard, it will pose the great hazards. In the process of reconstruction, the production waste water and the domestic sewage shall be split and the test waste water shall be treated and shall not be discharged until it reaches the standard.

(3) Noise

According to the monitoring results of the environmental monitoring central
station of Changchun City, the noises at boundary meet the requirements of Class 1 standard, giving less impact on the acoustic environment around.

(4) Solid wastes

They are mainly feedstuff samples for tests, veterinary medicine samples, test equipments and appliances, test waste fluid and meat and eggs for tests, etc. The feedstuff samples and veterinary medicine samples are sent to the original production units or operating units. The waste fluid produced in the tests is collected in the 10L glass containers, sealed and packaged and then sent to Changchun Lantian Dangerous Waste Treatment Center Co., Ltd. for treatment. All the meat and eggs for tests are returned to the General Animal Veterinary Workstation of Jilin Province.

2.2 Environmental impact assessment and analysis

2.2.1 Environmental impact analysis in the construction period

(1) Ambient air impact analysis

The project is the technological reconstruction one. During the construction period, it is mainly the indoor operation, so there are few environmental impacts in the construction period. In the wall removal and indoor decoration, because of piling of building materials and waste slag and muck in the works in the construction sites, loading, unloading and mixing of powder (grain) materials and transportation of the building materials in bulks in the transport vehicle, they may be scattered, producing dust emission in the transportation if they are overloaded or no protective measure is taken. The engineering transportation and construction machinery may influence the atmospheric environmental quality in the local area, to some extent, but with the end of the construction period, these impacts will also appear.

(2) Surface water environmental impact analysis

The local construction group is selected for construction in the project, no construction camp is set, the toilet is the one of the Veterinary Medicine and Feedstuff Supervision Office of Jilin Province and the domestic sewage is discharged to the urban sewer pipes, so it gives few impacts on the water environment.

(3) Construction noises
The project is the technological reconstruction one. In the construction period, it is mainly the indoor operation. In the wall removal and indoor decoration, it is unavoidable to produce the construction noises. In the short period of time, it may give some impacts on the ambient environment, so management shall be strengthened in the construction process and some noise prevention measures such as construction on daytime and no construction at night, etc. are taken to reduce the impacts on the citizens around. With the end of the construction period, these impacts will be ended.

(4) Solid wastes

The indoor layout shall be reconstructed in the construction period of the project. In the removal of houses and indoor decoration, etc., some building rubbish and the constructors’ production and domestic rubbish will be produced. If it is not disposed, mosquitoes and flies will be produced with fetor, giving impacts on the ambient environment.

In order to avoid the impacts of solid wastes on the environment, the building rubbish produced in the construction period shall be cleaned and transported to the sites designated by the municipal administration for piling or road building materials. The special dustbins shall be set in the construction site to collect the domestic garbage, periodically transported to urban landfill of refuse, avoiding the random abandonment.

(5) Social environment

The social environmental impacts in the construction period of the project are mainly the impacts on the urban traffic, noise interference and inconvenient traffic brought to the citizens around.

2.2.2 Environmental impact analysis in the operation period

(1) Waste gas

The waste gas emitted in the project is mainly a small amount of acid mist, NO₂ and a little waste gas emitted by the organic solvents for tests. It shall not be emitted until it reaches the standard.

In the process of reconstruction, the fume chambers are set in some labs producing waste gas. The waste gas produced in the tests is collected in the negative
pressure, filtered, purified and emitted. In the normal situation, it will not give hazardous impacts on the ambient air.

In the heating period of the project, the heat source comes from the hot water pipes of Changchun Heating Power Co., Ltd. The project has no boiler’s room or chimney, so there is no emission of boiler flue gas.

(2) Waste water

The waste water discharged in the project is mainly the waste water discharged from the lab and in the workers and staff members’ life. In the process of reconstruction, the domestic sewage and production waste water are split.

There is no change of quantity of workers and staff members before and after the reconstruction of the project or domestic sewage discharge. The domestic sewage discharge is 2.4 m$^3$/d. The discharge concentrations of all the pollutants in the domestic sewage are COD 250 mg/L, BOD 200 mg/L and SS 200 mg/L. The water quality can meet the Class 3 standard of GB8978-1996 Comprehensive Discharge Standard of Sewage. The water can be directly discharged to the urban sewer pipes, treated in Chuanhu Sewage Treatment Plant of Changchun City and then discharged.

The production sewage is mainly the sewage discharged in the process of testing and inspection of all the testing sections in the test building. Its main pollutants are heavy metal, acid and alkali as well as various additives and chemical agents. The production sewage discharge is about 20 m$^3$/d. The quality of the discharged waste water varies according to the different test items. The test waste water monitoring results of the Environmental Monitoring Station of Changchun City and the Veterinary Medicine and Feedstuff Supervision Office of Jilin Province show COD 270 mg/L, BOD 81.5 mg/L, SS 37 mg/L, arsenic 0.00536 mg/L, mercury 0.000176 mg/L and low concentrations of COD and BOD in the discharged waste water, but containing heavy metal. The waste water produced in the lab has a small amount of discharge, but it has complex compositions. If it is not treated and directly discharged, it will give negative impacts on the surface water body. It shall not be discharged to the urban sewer pipes until it reaches the standard. When the heavy metal items are monitored and analyzed, there exists some problems of heavy metal pollution caused by analysis of residual fluid
and samples (some is the raw water and directly discharged water with the extremely high concentration).

In the process of reconstruction, the production waste water and domestic sewage is split and shall not be discharged to the urban sewer pipes until the lab waste water treatment facilities reach the standards.

3) Noise

The noises produced in the project are mainly those of the circulating water pumps, multifunctional oscillators, indoor air conditioners blower fans of ventilation devices, etc. of the lab. The noise source strength is about 75-90dB; therefore, these facilities shall be set indoors with acoustic insulation rooms, the sound screens shall be set to the wall and the damping cushion shall be set to the equipment, etc. so as to make the noises at boundary meet the requirements of the Class 1 standard of GB12348-2008 Ambient Noise Discharge Standard of Industrial Enterprises.

4) Solid wastes

After the project is established, the main solid wastes are feedstuff samples, veterinary medicine samples, meat and egg samples for tests, waste fluid produced by test equipments and appliances (one-off) and tests, feces produced in the breeding room of small animals and small animal corpses after the tests, etc.

① Waste samples

In the test of the project, three portions of test samples are generally taken (it is generally 50-500g/package for the small packages of powder and tablets, it is generally 5-500ml/bottle for injection and it is generally 1kg for feedstuff, meat and eggs). In the test, one of the samples is randomly sampled for testing. After the test is over, a portion of sample is kept in the sample room and the left two portions are sent to the original unit. The feedstuff and veterinary medicine samples are generally kept in the sample room for 2-3 years and the meat and egg samples are generally kept for about 6 months in the sample room. According to the analog calculation of the current produced amounts, the sampled amount of veterinary medicine is about 300kg/a, of which 200kg/a is sent to the original unit and 100kg/a is kept in the sample room. The sampled amount of feedstuff, animal, egg and milk samples is 1t/a. The kept samples shall be
uniformly destroyed when they expire.

② Test equipments and appliances (one-off), waste fluid and culture media produced in the tests

After the project is established, about 20kg/a one-off test equipments and appliances, consumables (test paper, etc.) and damaged appliances (glassware) and about 10kg/a waste fluid and culture media are produced. The waste fluid produced by the test equipments and appliances (one-off) and tests are dangerous wastes (HW49 other wastes). It shall be sent to Changchun Lantian Dangerous Waste Treatment Center Co., Ltd. for treatment.

③ Feces, urine and residual feedstuff in the breeding of small animals and small animal corpses after the tests

Calculated according to the breeding stock of 50 small animals (small white rats) and 0.2kg/d feces, urine and residual feedstuff for each small animal, it is about 2.5t/a and the small animal corpses after the tests are 30kg/a.

④ Waste filter materials or active carbon replaced from the high-efficiency air filter

In order to assure the filtering efficiency of the high-efficiency air filter, the filter materials or active carbon board of the filter shall be replaced every 6 months and their amount is about 0.88t/a. The replaced waste filter materials or active carbon board are dangerous wastes, first sterilized and then sent to Changchun Lantian Dangerous Waste Treatment Center Co., Ltd. for burning treatment.

⑤ Sludge produced in the sewage treatment

The sludge output of the sewage treatment plant is about 0.5t/a. The produced sludge contains dangerous heavy metal wastes, which shall be appropriately stored and sent to Changchun Lantian Dangerous Waste Treatment Center Co., Ltd. for treatment.

⑥ Domestic garbage

Calculated according to 0.5kg per day per person, the daily output is 26.5kg/d and the annual output is 6.63t/a. It is uniformly collected by the environmental and sanitary authority and sent to the urban landfill of refuse for sanitary landfill.

The above solid wastes include not only common solid wastes but also dangerous
wastes. If they are not appropriately treated, they will give hazardous impacts on the environment. They shall be treated in the different modes according to the different properties. See the chapter of environmental impact mitigative measures of solid wastes for the detailed treatment methods.

2.3 Environmental protection measures

2.3.1 Environmental impact mitigative measures in the construction period

The bid invitation method is used to select the construction unit with certain strength. When the construction unit signs the construction contract with the contractor, it shall list the environmental impact mitigative measures in the construction period in the construction contract and the contractor shall promise to abide by and carry it out. The contractor and the construction supervisor shall accept the training on environmental protection and management prior to construction. The provincial and urban project offices dispatch persons or employ the environmental specialists to regularly go to the construction sites to inspect the implementation of the regulations on the construction environment protection, find the problems and correct them in time.

See Table 2.3-1 for the environmental mitigative measures in the construction period.

<table>
<thead>
<tr>
<th>Type</th>
<th>Environmental Impact Factor</th>
<th>Pollution Prevention and Control Measures</th>
</tr>
</thead>
</table>
| Construction period | Ambient air                | (1) Strengthen management, carry out civilized construction, take care to load and unload the building materials, remove the dirt attached to the vehicles as much as possible before they go out of the construction sites, and the vehicles transporting some articles easy to produce dust emission such as lime, sandstone, cement and fly ash, etc. shall be covered with tarp.  
(2) Lime and sandy soil, etc. shall not be piled in the open yard as possible as it can. If it has to be piled in the open yard, it shall be watered to improve the surface moisture content and play the effect of dust suppression.  
(3) Water shall be poured to reduce dust when the wall is removed.  
(4) Spoil shall be cleaned and transported to the low lying site the urban |
administration designates or the landfill of refuse. It is strictly prohibited from overloading, no spoil shall fall from the vehicle and the vehicle carrying the spoil shall run on the road in the period of time designated by the municipal government. 
No waste or refuse shall be randomly burnt in the construction site.
(6) The labor protection of the constructors shall be carried out well and the constructors shall wear anti-dust masks, etc.

| Water environment | No construction camp is set in the construction site, the toilet is the indoor one of the Veterinary Medicine and Feedstuff Supervision Office of Jilin Province and a little construction waste water is precipitated and discharged to the sewer. |
| Acoustic environment | (1) Rationally arrange the construction time Around the project area are the residential buildings. It is near the residential district. It is the residential building 30m from the project building. In order to reduce the impacts of the construction noises on the acoustic environment of the residential districts around, the scientific construction plan shall be made, the simultaneous use of a number of high-noise equipments shall be avoided. The operation of the equipments with the high noises and strong impacts as well as strong vibration (such as chum drill, etc.) shall be arranged on daytime and prohibited at night (22:00-6:00 on the next day) (2) Requirements shall be presented to the bidder and tender and the machines and equipments with the low noises shall be selected. (3) Strengthen propaganda and education of construction workers and reduce the artificial noises. |
| Solid wastes | (1) The construction and building rubbish shall be sorted and treated. The special person shall be designated to collect the building rubbish with the recycling value. The building rubbish and spoil that cannot be recycled shall be transported and piled in the site designated according to the requirements of the urban administration and planning departments. (2) The domestic garbage produced in the construction shall be collected in the recycling dustbin and uniformly sent by the environmental and sanitary authority to Changchun urban refuse treatment plant for sanitary landfill. |

2.3.2 Environmental impact mitigative measures in the operation period

2.3.2.1 Ambient air impact mitigative measures

The working properties of the lab and the testing room have not only the high
requirements for the indoor temperature and humidity but also the different requirements and standards for the air cleanliness. In order to assure the requirements of the test and inspection for the indoor temperature, humidity and air cleanliness, the ventilation device and the high-efficiency filter shall be set according to the relevant requirements of the Technical Specification for Building of the Biosafety Lab GB50346-2004 in the reconstruction.

(1) Ventilation and air exhaust system of the lab

A lot of acid and alkali waste gas and other hazardous gas, which will be produced in the working process of the lab and testing room at any time, shall be emitted at any time.

①Ventilation and air conditioning system

a) The separate ventilation and air conditioning system shall be installed to control the air flow direction and pressure intensity gradient. The system assures that the indoor air shall pass the air exhaust pipe and high-efficiently filtered and emitted in the use of the lab and shall not be emitted outdoor via the other parts or gaps of the lab, and at the same time, it is assured that the air in the lab shall flow from the “clean” area to the “polluted” area. The layout of the air inlet and air outlet shall reduce the dead space in the lab to the minimum extent.

b) The ventilation and air conditioning system is the direct emission system and no air return system shall be partially adopted.

c) Environmental parameters: The negative pressure shall be kept in the lab relative to outside of the lab. It is appropriate to keep the relative pressure intensity of $-30Pa \sim -40Pa$ in the lab and the relative pressure intensity of $-15Pa \sim -20Pa$ in the buffer room. It is appropriate to control the temperature and humidity in the lab to the range comfortable to a human body or they can be determined according to the process requirements. It is appropriate to keep the Class 7-8 air cleanliness in the lab defined in the GB 50073—2001Specification for Design of the Clean Plant. The artificial lighting in the lab shall be even and not be dazzling and the illumination shall not be less than 500lx.

d) In order to assure that the air in the lab shall flow from the “clean” area to the
“polluted” area, the layout of the air exits evenly distributed on both the sides shall not be made in the lab and the ventilation design of upper blowing and exhaust shall not be adopted. The air emitted from the biosafety cabinet and highly filtered inside can be directly emitted to the atmosphere via the exhaust duct of the system and also sent to the air exhaust system of the building. The pressure balancing shall be assured between the biosafety cabinet and the air exhaust system.

e) The incoming air in the lab shall go through the primary, intermediate and highly efficient filtering.

f) The exhaust air from the lab shall be high-efficiently filtered or treated in the other methods and directly emitted to the air at the speed of not less than 12m/s. The air exit shall be far from the air inlet of the system. The treated exhaust air can also be emitted to the exhaust air duct of the building, but shall not be returned to any part of the building.

g) The air inlet and exhaust high-efficient filters must be installed in the place of the lab with draught and cladding so as to avoid the pollution of the air duct.

h) In the ventilation system of the lab, the airtight adjusting valve shall be installed to the main air inlet and exhaust pipe and it can be completely closed to carry out the chemical suffocating and sterilization in the lab if necessary.

i) All the parts used in the ventilation system of the lab shall be airtight. The high-efficient filter used shall not be the wood frame one.

j) The blower fan starting automatic interlocking device shall be installed to assure that the exhaust blower shall be started first and the air blower when the lab is opened and the air blower shall be stopped and then the exhaust blower when the lab is closed.

k) The separated air conditioner shall not be installed in the lab.

In the reconstruction, the aluminum bromide air conditioning system is planned to be used partially to supply cold air in the summer and hot air in the winter.

The air treatment equipments are centralized in the air conditioner room. The fresh air treatment and exhaust treatment systems are the separated ones. After the fresh air is purified, it shall be sent to all the rooms via the fresh air flow pipes.
according to the different requirements of the different rooms for the fresh air quantity and cleanliness grade.

The local air conditioning system covers each room of the test building, including administrative district, production and life service district, test and inspection district. The different air quantities shall be configured according to the different requirements of the different districts.

When the local air conditioning system is adopted, it requires that the windows and sunshades of the lab and testing room as well as the connecting parts of the indoor pipes, air ports and lights with the wall or sunshades shall be sealed.

② Air purification system

For the air purification system, it is planned to use air purifier, 5011B mist generator, 5011C mist generator and 8011 data collection system to monitor the air quality and purify the air.

③ Strong air exhaust and purification system: No inspection of animal diseases shall be made in the project, so the exhaust air shall have no bacteria or living toxin, etc. but only a little acid and alkali waste gas and volatile gas, etc. According to the functions of all the rooms, their roles of safety and protection shall be given play with the effective control of the air blowing and exhaust. Their core safety measure is to keep the negative pressure via the air exhaust and assure that no ambient environment shall be polluted.

◎ The fume chambers shall be set in the chemical testing room, pharmacological testing room, feedstuff animal PCR testing room, medicated food and pre-mixed agent room, additive room, feedstuff testing room, animal product producing area water testing room, meat product physiochemical testing room, residual meat product testing room, meat processing immune testing room, residual microorganism testing preparation room and chromatographic analysis room, etc. The waste gas produced in the process of test and inspection shall be collected in the negative pressure, the high-efficient filter shall be set at the exit of the fume chamber and the filtering media are filtering cotton and active carbon. One or two serial filters are planned to be used according to the actual situation of each lab and the filtering efficiency of the
high-efficient air filter shall not be less than Class B (not less than 99.97%).

◎ The sterile room, small animal breeding room and anatomy room shall be regularly sterilized and the strong air exhaust device shall be installed. The waste gas produced in the process of test and inspection shall be collected in the negative pressure and the high-efficient filter shall be set at the air exit of each room so that the waste gas shall not be emitted to the atmosphere until it reaches the emission standard.

Some methods such as ultraviolet sterilizing, ozone generator and watering of sterilized water, etc. are planned to be used.

The high-efficient filter has the collecting efficiency of more than 99.97% and air flow drag of 245Pa for the particle with the diameter equal to or more than 0.3μm and the exhaust waste gas can be emitted.

◎ No air exhaust device can be set in the reception room, duty room, power distribution room, administrative office, director’s office and meeting room, etc.

④ Movable air exhaust system: The special movable air exhaust system can be set in each lab. Such a system can randomly change the position and direction. The gas produced by the central test board and other test and inspection equipments and instruments without fixed positions can be quickly collected and emitted to the machine room for the nuisance-free treatment via the air exhaust pipes at any time and then emitted to the atmosphere.

⑤ Mechanical fume exhaust and ventilation system: The mechanical fume exhaust and ventilation system is set in some places such as balance room, dark room, corridor, staircase and toilet, etc. to emit the foul air at any time. In some parts of the lab can also be set the mechanical ventilation system so as to resolve the indoor ventilation problem without any test or inspection operation.

(2) Height of the exhaust cylinder

The exhaust cylinder of each ventilation system shall be 5m higher than the roofs of the buildings in the range of 200m around.

(3) Risk prevention measures

When any accident occurs to the air purification system or the positive pressure occurs to the polluted area, the alarm will be immediately started, the test shall be
stopped and the emergency accident program shall be started.

The strict safety responsibility system shall be established in the lab.

### 2.3.2.2 Water environmental impact mitigative measures

All the water used in the project comes from the urban water supply pipes and is connected to the building via the DN150 pipes.

The sludge in the drainage system is cleaned and split from water and the domestic sewage and the production waste water is set with the separated pipes. There is a small domestic sewage discharge and the COD concentration is 250mg/L and the BOD$_5$ concentration is about 150 mg/L in the waste water. The drainage concentration can meet the Class 3 standard of GB8978-1996 Comprehensive Discharge Standard of Sewage; therefore, the domestic sewage can be directly drained to the sewer pipes without any treatment.

There is a small amount of waste water produced in the lab, but it has the complex compositions. The waste water contains acid, alkali, organic matters and a little heavy metal, etc., with the great hazards, so it shall not be drained until it is treated.

1. Designed water quantity and quality of the sewage treatment station

   The waste water output in the tests of the project is about 20m$^3$/d. The designed capacity of the sewage treatment station is 25m$^3$/d. If it is considered that the sewage treatment plant may fail in the drainage, it is suggested that a storage tank for accidents shall be built. The volume of the storage tank for accidents takes the waste water discharge for 2 days, that is, 40m$^3$. The whole sewage treatment plant is built in the first underground floor of the test building.

2. Production waste water treatment program:

   According to the drained waste water quality, quantity and drainage requirements, combined with the recommendation of the feasibility research program, the analysis and comparison of the technological, economic and operating effects of the following sewage treatment programs is carried out in the environmental assessment.

   **Program 1: filtering + physical + sterilizing method**
The production waste water drainage and treatment is an independent closed one. In the process of test, the drained sewage is collected from some terminals such as washing tank and floor drain, etc. via the branch pipes to the trunk pipe and then separately drained to the sewage treatment room where is set a 40m$^3$ sewage storage tank. The sewage is filtered via the filtering devices with the 4 different apertures before it enters the tank, and then passes 2 heavy metal extractors to extract the unfiltered heavy metal. After the above physical treatment, the acid and alkali neutralization, extraction of chemical agents and sterilization, etc. are carried out and then it shall not be drained to the urban sewer pipes until it conforms to the drainage standard.

Program 2: biochemical method (H/O)

The biochemical method is a sewage biochemical treatment method widely adopted, which is applicable to treatment of the organic waste water with the high concentration, covering a small area, with the stable operation, simple operation and strong impact endurance and load capacity.

See Chart 2.3-1 for its process flow.

Program 3: integrated lab sewage treatment equipment

The project has a small amount of waste water discharge, so the whole-set...
equipment can be purchased for treatment. By now, there have been many domestic sewage treatment plants manufacturing “series of lab waste water processors”. The series of waste water processors mainly adopt some technologies such as neutralization, mixing and sedimentation, active carbon catalysis-ozone oxidation, bioactive carbon absorption, etc. and is characterized as covering a small area, high automation, good treatment effects and low operating cost, etc. No person shall be designated on duty. It has been awarded with the Scientific and Technological Achievement Appraisal Certificate of the Bureau of Science and Technology of Guangdong Province (YKJZi [2005] No. 287). Tested and validated by some authorities such as the Geochemical Institute of the Chinese Academy of Sciences, etc., the treatment effects can completely meet the requirements of the relevant national drainage standards. It has made good achievements in the actual application of some units such as Guangzhou University, Guangzhou College of Medicine, Environmental Monitoring Center of Chongqing City, Zhongshan Medicine Test Institute and Yuexiu Disease Control Center, etc.

1) Process flow and principle

The waste water passes the collection system, first enters the adjusting tank, with the water quality and quantity adjusted, and then passes the water pump and evenly and constantly pumped to the reaction tank of the waste water processor and passes the pH controller, and the metering pump is used to accurately add an amount of NaOH aqueous solution to adjust the pH value in 8～9 and add coagulant PAC and coagulant aid PAM.

In the alkali conditions, acid in the waste water is neutralized, the chemical reaction occurs between some heavy metal ions such as iron, cadmium, copper, manganese, nickel and lead, etc. and OH⁻ and the hydroxide deposit is produced, and at the same time, on the effects of PAC and PAM cohesion and flocculation, the produced deposits in the reaction coagulate with each other, some floating grains, inorganic and organic matters existing in the waste water are absorbed to form a big block of flocculent alum.

The waste water automatically flows to the tube settler, some flocculent alum, depending on the effect of gravity, naturally settles so as to achieve the purpose of
eliminating the floating matters, heavy metal ions and some organic matters in the waste water. The sludge in the sludge bucket is regularly cleaned and sent to the relevant department for burning, landfill or other treatment methods.

The water coming out of the sediment tank is pumped to the active carbon ozone oxidation tank. On the effect of the drag of stuffing, the waste water is evenly arranged and seeps slowly from the upper part to the lower part. And at the same time, the air is taken as the material, ozone made from the ozone generator passes the gas distribution system, penetrates the active carbon stuffing from the bottom of the oxidation tank to the upper part or the venturi ejector and is absorbed in the water in the negative pressure. In the full contact of gas and fluid phases, some organic matters, bacteria, chrome and odor, etc. in the waste water are eliminated on the physical and chemical effects such as absorption, interception, impact and coiling, etc. of the active carbon with the big gap structure and specific surface area and some are eliminated by the ozone with the strong oxidization, good sterilizing, deodorization, purification and decoloring as well as degradation of organic matters on the catalysis of the active carbon.

The waste water finally enters the active carbon biological filter tank, some fine floating matters, trace metal and a little organic matters, etc. are eliminated on the physical and chemical effects of absorption and interception, etc. of the active carbon with the big gap structure and specific surface area and some are degraded and eliminated by the anaerobic, aerobic and facultative bacteria, etc. in the microbial film of the active carbon. It is crossed, alternated and recycled with the microbial degradation and absorption until the waste water reaches the standard and is drained.

The whole waste water treatment flow is automatically controlled by the PLC programming. The adjusting tank is set with the floating ball liquid level controller, the pump is stopped automatically in the low liquid level and automatically started in the high liquid level. The medicating box is set with the liquidometer, which will automatically give a warning when there is lack of medicine and stop. No person is basically designated on duty for the whole machine.
Environmental Management Plan

Sewage Treatment Process Flow Chart

废水 waste water，PH 计 PH meter，臭氧发生器 ozone generator，调节池 adjusting tank，反应池 reaction tank，沉淀池 sediment tank，活性炭滤池 active carbon filter tank，达标排放 drainage when reaching the standard，氧化池 oxidization tank

2) Characteristics of the product:

★ Some technologies such as neutralization, coagulation, sedimentation, chemical oxidation, film separation, active carbon catalysis-ozone oxidation and biological active carbon absorption, etc. are adopted to treat various pollutants in the waste water;

★ The microcomputer program carries out the real-time monitoring and control the change of waste water quality and treatment flow, realize the all-weather automatic operation and no person on duty;

★ The PH meter, ORP meter and imported metering pump are used to accurately control the medicated amount, and some devices of liquid level control, warning in lack of medicine and automatic soil discharging, etc. are set;

★ The advanced venturi ejection oxygen charger with the full contact of gas and water as well as complete reaction;

★ Convenient operation, stable operation, long useful life and low operating and maintenance cost;

★ Cover a small area and placed indoor and outdoor according to the different cases;

★ The design and manufacturing can be made according to the customers’ different requirements.

3) Applicable scope:
It is widely applied for the comprehensive treatment of test waste water of colleges and universities, scientific research institutes, testing institutions and chemical lab, etc.

4) Main technical parameters:

<table>
<thead>
<tr>
<th>Item</th>
<th>Technical Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Flow (m$^3$/d)</td>
<td>3~25</td>
</tr>
<tr>
<td>removal Rate (%)</td>
<td></td>
</tr>
<tr>
<td>heavy metal (total lead, manganese, total zinc, total mercury and total arsenic, etc.)</td>
<td>≥96</td>
</tr>
<tr>
<td>COD</td>
<td>≥93</td>
</tr>
<tr>
<td>chloroform</td>
<td>≥93</td>
</tr>
<tr>
<td>methyl benzene</td>
<td>≥93</td>
</tr>
<tr>
<td>phenol</td>
<td>≥93</td>
</tr>
<tr>
<td>organic phosphorus pesticide</td>
<td>≥90</td>
</tr>
<tr>
<td>sterilizing efficiency (%)</td>
<td>≥91</td>
</tr>
<tr>
<td>quantity of coliform groups (mpn/L)</td>
<td>≤220</td>
</tr>
<tr>
<td>total bacteria (cfu/L)</td>
<td>≤7500</td>
</tr>
<tr>
<td>noise (dB)</td>
<td>≤65</td>
</tr>
<tr>
<td>price</td>
<td>0.15~0.35 million yuan</td>
</tr>
</tbody>
</table>

According to the comparison and selection of programs, it is thought in the assessment that the waste water discharge of the lab is the intermittent one, and the drained waste water qualities are different due to the different monitoring contents, so it is unsuitable to take the biochemical method (program 1) for treatment. In the conditions of the same waste water quantity and quality, both program 1 and program 2 can realize the drainage when reaching the standard. Program 3 can achieve the good treatment effects and good impact endurance capacity. It is widely applied and it is the special whole-set lab sewage treatment equipment, so it is recommended to take program 3. The total investment of the sewage treatment facility is about 0.35 million yuan (treatment capacity: 25m$^3$/d), with the operating cost of about 1 yuan/ton water.

2.3.2.3 Acoustic environmental impact mitigative measures

The low-noise equipment and foundation shall be selected for the high-noise source for damping treatment and sealing of the working rooms for noise reduction, etc.
to make the noise at boundary conform to the requirements of the acoustic environment quality standard in the area.

2.3.2.4 Solid waste environmental impact mitigative measures

The solid wastes produced in the project are generally solid wastes and dangerous wastes, which shall be sorted for treatment.

(1) Treatment of common solid wastes:

Some common solid wastes such as waste animal and aquatic product samples and domestic garbage produced in the tests shall be centralized and sent by the environmental and sanitary authority to the urban landfill of refuse for sanitary landfill.

(2) Treatment of dangerous wastes:

1) The waste pesticide (veterinary and fishing medicine) and fertilizer samples are the dangerous wastes, which shall be returned to the original production units for treatment;

2) Some dangerous wastes such as test equipments and appliances (one-off), culture fluid, overdue test drugs or agents, heavy metal sludge, waste active carbon, animal feces and urine and residual feedstuff, etc. produced by the sewage treatment station shall be sorted and periodically sent to Changchun Lantian Dangerous Waste Treatment Center Co., Ltd. for treatment.

In the transportation, the “measures for management of transfer and alliance of dangerous wastes” shall be strictly abided by.

See Table 2.3-1 for the treatment methods of the different solid wastes.
<table>
<thead>
<tr>
<th>Name of Solid Waste</th>
<th>Output kg/a</th>
<th>Type of Waste</th>
<th>Industrial Source and Waste Code</th>
<th>Packaging and Storage Mode</th>
<th>Treatment Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>testing samples of animal products, milk and eggs, etc.</td>
<td>2000</td>
<td>common solid waste</td>
<td></td>
<td>original package</td>
<td>collected and sent by the environmental and sanitary authority to the urban landfill of refuse for sanitary landfill</td>
</tr>
<tr>
<td>veterinary medicine samples</td>
<td>100</td>
<td>dangerous wastes (HW03 waste and waste medicine)</td>
<td>non-special industry 900-002-03</td>
<td>original package</td>
<td>returned to the original unit for treatment</td>
</tr>
<tr>
<td>one-off test equipments and appliances, consumables and damaged appliances, etc.</td>
<td>20</td>
<td>HW49</td>
<td>non-special industry 900-047-49</td>
<td>closed utensil</td>
<td>The wastes produced in the lab are the dangerous ones shall be sealed and packaged and then sent to Changchun Lantian Dangerous Waste Treatment Center Co., Ltd. for treatment according to the National Catalogue of Dangerous Wastes in 2008.</td>
</tr>
<tr>
<td>waste fluid and culture media, etc. produced in the tests</td>
<td>10</td>
<td></td>
<td></td>
<td>contained in the 10kg glass bottle, sent once for half a year or a year</td>
<td></td>
</tr>
<tr>
<td>animal feces, urine and residual feedstuff</td>
<td>5000</td>
<td></td>
<td></td>
<td>cleaned every day</td>
<td></td>
</tr>
<tr>
<td>small animal corpses after the tests</td>
<td>150</td>
<td></td>
<td></td>
<td>cleaned every day</td>
<td></td>
</tr>
<tr>
<td>sludge of the sewage treatment station</td>
<td>1000</td>
<td>dangerous wastes</td>
<td>environmental control 802-006-49</td>
<td>transported in the closed tank car after pressure filtering and sterilizing</td>
<td></td>
</tr>
<tr>
<td>waster filter material and active carbon</td>
<td>880</td>
<td>dangerous wastes</td>
<td></td>
<td>filter board replaced once for 6 months</td>
<td></td>
</tr>
<tr>
<td>domestic garbage</td>
<td>7420</td>
<td>common solid waste</td>
<td></td>
<td>stored in the dustbin designated</td>
<td>collected and sent by the environmental and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>----------------</td>
<td>----------------</td>
<td>---------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16580</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lantian Dangerous Waste Treatment Center Co., Ltd., located in Weizigou Village, Yingjun Town, Erdao District, Changchun City, is the first special enterprise of dangerous waste treatment and comprehensive use built in the province according to the relevant national standards approved by the Development and Reform Commission of Jilin Province and the Environmental Protection Bureau of Jilin Province, mainly engaged in some services such as collection, transport, storage, treatment and comprehensive use of some industrial solid wastes (including dangerous wastes, chemical, industrial wastes, dangerous chemical waste products, faked and poor products designated by the government and overdue food and medicine, etc.), with the annual treatment of 6000-ton dangerous wastes. It has obtained the dangerous waste operating qualification promulgated by the Environmental Protection Bureau of Jilin Province. The construction unit has signed the agreement on treatment of dangerous wastes with Lantian Dangerous Waste Treatment Center Co., Ltd. and entrusted it to treat the dangerous wastes discharged in the project.

### 2.3.2.5 Risk prevention measures and emergency program

Safety is the direct purpose of reconstruction of the lab. In the construction, all the factors unfavorable to safety shall be eliminated and the design of all the parameters in conflict with the biosafety shall conform to the safety requirements. For example, purification shall be subject to safety, convenient use subject to safety, saving subject to safety and humanistic service subject to safety.

(1) The design and construction of the lab shall meet the BSL-1 basic lab requirements.

1) The hand washing tank shall be set at the exit of each lab, the washing tap shall be the automatic inductive one, with long handle or pedal and equipped with sterilizing
soap.

2) The air and physical surface sterilizing equipment and facility shall be set in the lab.

(2) The environmental pollution emergency program shall be formulated in the lab and reported to the administration in charge of environmental protection of the county-level people’s government on records and periodically rehearsed.

(3) If any leakage or diffusion occurs in the lab, causing or possibly causing the serious environmental pollution, the emergency measures shall be immediately taken, informed of the units and citizens possibly suffering from hazards and reported to the administration in charge of environmental protection of the local people’s government and relevant departments for investigation and treatment.

(4) When the dangerous wastes are produced in the lab, the precautions and emergency program for accidents shall be formulated and put to the administration in charge of environmental protection of the local people’s government above the county level on records according to the regulations of the national prevention and control of environmental pollution by dangerous wastes.

The lab shall not be engaged in the highly pathogenic microorganism test activities.

3 Enforcement Organizations

3.1 Environmental management organizations

3.1.1 Frameworks of the environmental management organizations

See Chart 3.1-1 and Chart 3.1-2 for the frameworks of the environmental management organizations in the construction period and operation period of the project.
Chart 3.1-1 Framework of Environmental Management Organizations in the
3.1.2 Responsibilities of the environmental management organizations

According to the characteristics of the project, the implementation of environmental protection of the project shall not be supervised by the Environmental Protection Bureau of Jilin Province and the Environmental Protection Bureau of Changchun City but also by the relevant departments of the World Bank. In the construction period of the project, the environmental supervisors shall be designated to assist the construction party in the on-site supervision.

The responsibilities of all the relevant environmental management organizations are as follows:

**World Bank Environmental Department:** It is responsible for the whole-process supervision and presenting requirements for the environmental protection of the project according to the relevant requirements for environmental protection of the World Bank.
**Environmental Protection Bureau of Jilin Province:** It is responsible for the whole-process supervision, presenting requirements for the environmental protection of the project, completion and acceptance of “three simultaneous items” of the project, inspection of implementation of the environmental management plan and verification of the environmental monitoring plan and environmental monitoring report.

**Jilin Province World Bank Loan Project Leading Group Office (Provincial Project Office):** It assists the World Bank Environmental Department in the environmental supervision of the project, assures that the implementation of Jilin Province World Bank Project shall conform to the relevant environmental rules of the country and the World Bank and avoids or reduces the produced negative environmental impacts.

**Environmental Protection Bureau of Changchun City:** It is responsible for the whole-process supervision of the project according to the requirements of the World Bank Environmental Department and the Provincial Environmental Protection Bureau, supervision and inspection of prevention and control of pollution by the waste water, gas and dangerous wastes of the labs. If any illegal action is found, it shall ask the rectification in the limited period. The inspection and treatment results shall be recorded, signed by the inspector and kept on a file and given feedback to the inspected unit.

**Veterinary Medicine Product Supervision Office of Jilin Province:** It assures that the environmental management departments and the relevant environmental management measures of the World Bank shall be carried out and assists the environmental management departments in the routine supervision.

**Environmental supervisor:** It assists the construction party in being responsible for supervision of implementation of the environmental protection measures on the construction site and the environmental management departments in the routine environmental supervision.

Environmental supervision engineer’s main responsibilities:

1. Assure that all the project licenses and requirements as well as environmental management plan shall be carried out before the starting of construction.

2. Check that all the employees of the construction unit and the operation unit
shall carry out the environmental protection measures according to the provisions of the contract.

(3) Exchange with the construction personnel, help explain the on-site environmental requirements, provide suggestions on remedies, provide the remedies for the items that do not conform to the original intention of the project and issue the special formal guidelines to the construction unit and the operation unit.

(4) Exchange with the construction unit, operation unit and building consultants, strengthen the exchange, obtain some other viewpoints on the special problems, rapidly respond some problems met in the process of implementation to the architectural management engineer to help resolve the problems if the project does potential damages to the sensitive target or there exist some items in conflict with the project.

(5) Supervise the implementation of the environmental monitoring plan in the construction period and construction of the “three simultaneous items” of the environmental protection facilities and assure the final completion in the time limit and successful passing of the environmental protection acceptance.

Environmental protection person: Carry out the environmental protection rules and standards, grasp the environmental conditions of the supervision office, carry out statistics and analysis of discharge of pollutants, organize the formulation of the environmental protection plan and annual plan of the whole unit and organize to implement it, be responsible for propaganda and education of environmental management and environmental protection knowledge and popularization of new technologies of the whole unit, periodically inspect operation of the environmental protection facilities, establish the pollutant source archives, operation archives of the environmental protection facilities, carry out the statistics of environmental protection, establish and keep the test archives, truly record the test activities and operating states of facilities and equipments, nuisance-free treatment, centralized treatment and inspection of the waste water, gas and dangerous wastes produced in the test activities, establish the environmental protection monitoring plan and organize and coordinate to complete the supervision tasks according to the requirements of the upper-level environmental protection department, coordinate to deal with the relevant pollution
accidents and disputes, supervise and inspect the implementation of the “three simultaneous items” system of the new, reconstructed and expanded projects and participate in completion and acceptance of the environmental protection facilities, etc.

3.2 Environmental monitoring organization and responsibilities

According to the property of the project, no environmental monitoring organization shall be set in the construction unit and the environmental monitoring can be entrusted to the Environmental Monitoring Station of Changchun City.

The Veterinary Medicine Product Supervision Office of Jilin Province and the environmental supervision engineer are responsible for the on-site supervision and environmental monitoring work in the construction period and the operation period. They are mainly to monitor the environmental monitoring plans in the construction period and operation period according to the monitoring plan of the environmental assessment.

Main responsibilities: carefully carry out the relevant national laws and regulations on environmental protection, build and perfect all the laws and regulations, complete the monitoring tasks, build the statistic archives of monitoring and analysis data and fill in the environmental report, complete the environmental monitoring work assigned by the testing center, strengthen maintenance and calibration of the environmental monitoring instruments and equipments and assure the normal monitoring work.

The monitoring person shall work with a license, be responsible for all the environmental monitoring documents provided, be familiar with the production process, continuously improve the operating quality and accept the upper-level examination.

3.3 Contractor’s responsibilities

Select the contractor with strength. The environmental impact mitigative measures in the construction period shall be contained in the contractor’s bidding document and finally in the construction contract as the contract requirement for the project contractor so as to assure the effective implementation of the environmental management plan. The contractor’s responsibilities are as follows:
(1) Require that the contractor and the construction supervisor shall accept the training on the environmental protection and environmental management before construction, the contractor shall equip 1 full-time environmental worker for the project. The environmental worker shall accept the training in the training plan so as to be competent for the work.

(2) In the construction, the contractor shall communicate and negotiate with the masses of people in the area where the project is located, build the bulletin board in each construction unit, inform the public of the detailed construction activities and time and provide the contactor and contact telephone so that the public will issue complaints for the construction activities and suggestions.

(3) On-site environmental protection management. While carrying out well the prevention and control measures of sewage, waste gas, noises and solid wastes, the construction unit shall assign the special environmental protection person to be responsible for the environmental management in the construction period and equip the acoustic meter to test the environment sensitive points around the project and assure that the acoustic environment of the environment sensitive points shall be controlled in the acoustic environmental quality standard.

(4) Rationally arrange the construction time. The transportation of the building materials shall be avoided in the traffic jam. The transport vehicle shall run in the designated route. Some works such as wall removal or decoration producing the high noises shall be made on daytime and construction is strictly prohibited at night.

(5) Carry out well the constructors’ occupational health management, safety management and social management.

3.4 Personal training

Before the construction is started, the employees of the construction unit and construction contractor and the supervision engineer shall attend the training on environment, health and safety.
3.4.1 Training of the new full-time and part-time environmental protection personnel in the construction period

The construction unit shall entrust the qualified unit to carry out training of the full-time and part-time environmental protection personnel of the construction and supervision units. The training objects are persons responsible for the engineering technology and full-time management personnel of all the construction and supervision units.

The teaching contents include:

(1) Laws, documents and relevant requirements on environmental protection of the country and Jilin Province in the project construction and management;

(2) Environmental protection measures presented in the design of the project and environmental protection requirements in the construction period;

(3) Environmental protection guidelines in the construction period of the project.

The persons responsible for the environmental protection design of the design units and environmental protection bureaus and the relevant experts of the environmental assessment units and supervision units can be invited for teaching in the training.

3.4.2 Training of the new full-time and part-time environmental protection personnel in the operation period

The training of the new full-time and part-time environmental protection personnel in the operation period shall be organized and carried out by the environmental protection departments. The relevant environmental protection experts of some universities, scientific research institutes and operation units can be employed for teaching or the short-term training course shall be organized. According to the requirements of the general project, the uniform training shall be carried out for the 12 lab construction projects.

The total training expense for the lab project is 52000 yuan.
<table>
<thead>
<tr>
<th>Period</th>
<th>Type</th>
<th>Quantity (Person)</th>
<th>Time</th>
<th>Expense (10 thousand yuan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>design and planning period</td>
<td>investigation of the advanced domestic lab and pollution control projects</td>
<td>1</td>
<td>design and planning period</td>
<td>1.0</td>
</tr>
<tr>
<td>construction period</td>
<td>environmental protection persons of the construction unit and the project contractor</td>
<td>1 person for each</td>
<td>before the construction after the contractor is determined</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>environmental supervision engineers</td>
<td>1 person for the construction unit and 1 person for the operation unit</td>
<td></td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>all the construction personnel</td>
<td>30 persons</td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td>before the operation</td>
<td>environmental management person of the operating unit</td>
<td>1</td>
<td>before the operation of the project after the construction is completed</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>environmental workers of the operating unit</td>
<td>2</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>test technicians of the operating unit, propaganda, education and training on the environmental protection</td>
<td>35</td>
<td></td>
<td>1.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training Contents</th>
<th>Training Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Builders’ general environmental common sense</td>
<td>introduce the environmental impact facts and environmental protection measures related to the environment; introduce the environment sensitive districts in the construction area and the environmental problems that shall be paid attention as well as districts near the construction area; roles and responsibilities of the environmental management and design engineers, environmental supervisor and architectural supervisor and important of the environmental problem report; management of wastes in the construction camp and construction site; pollution control measures in the construction site; regulations on illegal actions and fines of laws and regulations;</td>
</tr>
<tr>
<td>Builders’ general health and safety</td>
<td>Approaches of infection and protection, prevent HIV/AIDS and STD prohibition on alcoholic drinks and drugs</td>
</tr>
</tbody>
</table>

Training Period: training course for half a day on the site
Environmental Management Plan

Process of seeking the medical aid in the emergent state and non-emergent state and process of seeking the other relevant medical aids. (STD testing, consultation)

Health and safety common sense including some basic processes: traffic safety, power use safety, explosion, fire, management of dangerous wastes

Use of personal protective tools

Fines due to violation of laws and regulations

<table>
<thead>
<tr>
<th>Table 3.4-3</th>
<th>Training of the Operator’s Environmental Management Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Object</strong></td>
<td><strong>Training Contents</strong></td>
</tr>
<tr>
<td>environmental management personnel</td>
<td>management procedure of the World Bank Project archiving, publicity, exchange and report system of the environmental information meet an emergency of environmental risks health and safety inspection and application process investigation of the advanced process and environmental management</td>
</tr>
<tr>
<td>environmental workers</td>
<td>use of equipments including standards, tests, methods, transfer of samples, data, quality control, monitoring and report requirements; meet an emergency of environmental risks; potential leakage and overflow, environmental and personal impacts of leakage and overflow, emergency response process including priority response, positions and use of the response facilities</td>
</tr>
<tr>
<td>all the testers</td>
<td>management procedure of the World Bank Project precautions for treatment and disposal of “three wastes” produced in the process of test; correct use of the environmental equipments; meet an emergency of environmental risks; potential leakage and overflow, environmental and personal impacts of leakage and overflow, emergency response process including priority response, positions and use of the response facilities</td>
</tr>
</tbody>
</table>
4 Environmental Monitoring Plan

4.1 Purposes of the environmental monitoring

The environmental monitoring is involved in the construction period and the operation period. Its purposes are to completely grasp the development of pollution of the project planned to be built in time, know the changing degree of the environmental quality of the area where the project is located, influencing range and environmental quality development in the operation period, give feedback information to the department in charge in time and provide the scientific criteria for the environmental management of the project.

4.2 Monitoring organization and implementation

The environmental monitoring in the construction period and the operation period is entrusted by the project contractor or operator to the Environmental Monitoring Station of Changchun City, which is the national environmental quality monitoring certification unit, with the complete equipments and powerful technological strength and can complete the environmental monitoring tasks undertaken.

According to the environmental impact predicted results, the sensitive points with the obvious pollution will be regarded as the monitoring points. According to the pollution in the construction period and the operation period, the monitoring contents are greatly influenced acoustic environment, ambient air, surface water environment and underground water environment. The monitoring factors are determined according to the pollution characteristic factors in the project analysis. The monitoring analysis methods are the relevant project monitoring analysis methods in the Technical Criteria for Environmental Monitoring promulgated by the State Environmental Protection Administration and the assessment standard is the national standard determined in the environmental assessment.

4.3 Environmental monitoring program

According to the characteristics of the project, the environmental management in the operation period of the project is incorporated to the environmental management
The environmental monitoring program of the project is mainly the environmental monitoring in the construction period. The main environmental protection targets in the construction period are the citizens of the residential buildings in the range of 200m around the test building.

Environmental monitoring points in the construction period: the environmental monitoring points are set near the environment sensitive point targets (residential districts) in the section where the works are centralized according to the project progress.
<table>
<thead>
<tr>
<th>Concern/Problem/Impact</th>
<th>Management/Mitigative Measure</th>
<th>Monitoring Item</th>
<th>Time/Frequency/Duration</th>
<th>Responsible Organization</th>
<th>Cost (10 thousand yuan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. waste water</td>
<td>1.1 The sludge in the drainage system is cleaned and split from water in the planning and design and the domestic sewage and the production waste water is set with the separated pipes and discharged. 1.2 A test waste water treatment station is designed. After the test water is treated, the discharge concentration of the common pollutants in the waste water meets the Class 3 standard of GB8978-1996 Comprehensive Discharge Standard of Sewage and the discharge concentration of heavy metal meets the allowed maximum discharge standard for the first-class pollutants of GB8978-1996 Comprehensive Discharge Standard of Sewage.</td>
<td>verification and design</td>
<td>incorporated to the project design approval procedure</td>
<td>design and approval departments</td>
<td>included in the design cost</td>
</tr>
<tr>
<td>2. waste gas</td>
<td>2.1 The ventilation and air exhaust system is designed according to the relevant requirements of the Technical Specification for Building of the Biosafety Lab GB50346-2004 2.2 The mechanical fume exhaust and ventilation system is set in some places such as corridor, staircase and toilet, etc. to emit the foul air at any time. In some parts of the lab can also be set the mechanical ventilation system so as to resolve the indoor ventilation problem without any test or inspection operation.</td>
<td>verification and design</td>
<td>incorporated to the project design approval procedure</td>
<td>design and approval departments</td>
<td>included in the design cost</td>
</tr>
<tr>
<td>3. noises</td>
<td>3.1 The low-noise equipment and foundation shall be designed and selected for damping treatment, the blower fan and pump, etc. producing the high noises shall be installed in the basement and closed and the windows and doors of the room where the high-noise equipment is installed shall be the acoustic insulation windows and doors.</td>
<td>verification and design</td>
<td>incorporated to the project design approval procedure</td>
<td>design and approval departments</td>
<td>included in the design cost</td>
</tr>
<tr>
<td>Concern/Problem/Impact</td>
<td>Management/Mitigative Measure</td>
<td>Monitoring</td>
<td>Time/Frequency/Duration</td>
<td>Responsible Organization</td>
<td>Cost (10 thousand yuan)</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------</td>
<td>------------</td>
<td>-------------------------</td>
<td>--------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>1. waste water in the construction</td>
<td>1.1. The original toilets of the building are used and the domestic sewage is discharged to the urban sewer pipes. 1.2 A little waste water in the construction is deposited and discharged to the sewer pipes.</td>
<td>1.1.1 Inspect whether the domestic sewage is discharged to the urban sewer pipes and it shall not be randomly discharged. 1.1.2 Inspect whether the sediment tank is built and the waste water in the construction is deposited and discharged.</td>
<td>construction period</td>
<td>construction unit and construction supervisor</td>
<td>cost counted in the construction cost and supervision cost</td>
</tr>
<tr>
<td>2. dust emission in the construction</td>
<td>2.1 Strengthen management, carry out civilized construction, take care to load and unload the building materials, and the vehicles transporting some articles easy to produce dust emission such as lime, sandstone, cement and fly ash, etc. shall be covered with tarp;</td>
<td>2.1.1 Inspect whether the dust emission is produced.</td>
<td>gale and dry weather in the construction period</td>
<td>construction unit and construction supervisor</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>2.2 The dust emission on the construction site and construction road can be prevented and controlled by watering and cleaning measures. It is suggested that the construction site shall be watered 4-5 times per day to suppress the dust;</td>
<td>2.3 Lime, sandy soil and spoil (slag), etc. shall not be piled in the open yard as possible as it can. If it has to be piled in the open yard, it shall be watered to improve the surface moisture content and play the effect of dust suppression;</td>
<td>2.4 No overloading is allowed, no dirt shall fall from the vehicle and the dirt of the wheels shall be removed before the vehicle runs out of the site and it is prevented from falling along the road;</td>
<td>2.5 The building materials and spoil shall be covered and no overloading is allowed in the process of transportation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Environmental Management Plan

#### 3 noises
3.1 The low-noise equipment is selected and the construction time is rationally planned.
3.2 The advanced low-noise construction process is used to replace the backward high-noise one.
3.3 The construction time shall be rationally arranged to avoid the continuous impacts of the strong noises on the citizens around.

| 3.1.1 The boundary around the construction site meets the Construction Noise Limit Value at Boundary (GB12523-90). |
| construction period, boundary around the construction site, once/month, twice per day (daytime and night) |
| construction unit and construction supervisor | 1.5 |

#### 4 building rubbish
4.1 The building rubbish in the construction shall be sorted and treated and the building rubbish with the recycling value shall be designated with a special person collecting it in time;
4.2 The building rubbish that cannot be recycled shall be transported to the local landfill of building rubbish.

| 4.1.1 Inspect whether it is sorted and recycled. 4.1.2 Inspect whether it is transported to the designated landfill. |
| construction period |
| construction unit and construction supervisor | cost counted in the construction cost and supervision cost |

#### 5. domestic garbage produced by the workers
5.1 Centralized and transported to Changchun urban domestic garbage landfill.

<p>| 5.1.1 Inspect whether the domestic garbage is centralized and transported to Changchun urban domestic garbage landfill. |
| construction period |
| construction unit and construction supervisor |</p>
<table>
<thead>
<tr>
<th>Concern/Problem/Impact</th>
<th>Management/Mitigative Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monitoring</strong></td>
<td></td>
</tr>
<tr>
<td>Monitoring Item</td>
<td></td>
</tr>
<tr>
<td>Time/Frequency/Duration</td>
<td></td>
</tr>
<tr>
<td>Responsible Organization</td>
<td></td>
</tr>
<tr>
<td>Cost (10 thousand yuan)</td>
<td></td>
</tr>
</tbody>
</table>
| 1. waste gas in the lab | 1.1 Keep the normal operation of the ventilation, purification and air exhaust system of the lab and inspection room and the waste gas shall be emitted in the high altitude after it reaches the standard.  
1.2 The operation producing the poisonous and hazardous chemical gas shall be completed in the fume chamber. The air exhaust system in the lab and the fume chamber collects the waste gas in the negative pressure and it shall be emitted in the high altitude after it is purified in the purification system via the pipe. The waste gas in the lab is treated via the high-efficient air filter and active carbon filter, etc. and the exhaust gas shall meet the regulations of GB 16297-1996 Comprehensive Emission Standard of Atmospheric Pollutants.  
1.3 Movable air exhaust system: The special movable air exhaust system can be set in each lab. The gas produced by the central test board and other test and inspection equipments and instruments without fixed positions can be quickly collected and emitted to the machine room for the nuisance-free treatment via the air exhaust pipes at any time and then emitted to the atmosphere.  
1.4 In the microorganism testing and purification area, the purification class is Class 10 thousand and the purification air conditioning system are the primary, intermediate and high-efficient air filtering systems.  
1.5 Periodically (every 6 months) replace the filtering board of the high-efficient air filter to assure that the filtering efficiency of the air filter shall reach more than 99.97%. | 1.1.1 The waste gas emission of the lab meets the Class 2 standard of the Comprehensive Emission Standard of Atmospheric Pollutants (GB16297-1996). Monitor the waste gas exit of the lab: TSP, SO₂ and total hydrocarbon.  
| four times tested per year | Environmental Protection Monitoring Station of Changchun City | 2.0 |
2. waste water: waste water produced in the tests and the employees’ domestic sewage

| | 1.1 The sludge in the drainage system is cleaned and split from water in the planning and design and the domestic sewage and the production waste water is set with the separated pipes and discharged.  
1.2 Keep the normal operation of the test waste water treatment facilities. |
|---|---|
| | 1.1.1 The discharge concentration of the common pollutants in the domestic sewage and test waste water meets the Class 3 standard of GB8978-1996 Comprehensive Discharge Standard of Sewage and the discharge concentration of heavy metal meets the allowed maximum discharge standard for the first-class pollutants of GB8978-1996 Comprehensive Discharge Standard of Sewage.  
ph, COD, BOD, ammonia nitrogen, heavy metal (testing of mercury, arsenic and lead, etc. according to the testing contents), total coliform groups (piece/L) four times tested per year | Environmental Protection Monitoring Station of Changchun City | 1.5 |
| 3 noises | 2.1 Keep the normal operation of the acoustic insulation device. | 2.1.1 The noise at boundary meets the Class 1 standard of the Emission Standard for Industrial Enterprises Noise at Boundary (GB12348-2008). Daytime ≤ 55dB (A) Night ≤ 45dB (A) boundary around the construction site, 4 times/year, twice per day (daytime and night) | Environmental Protection Monitoring Station of Changchun City | 0.5 |
4. solid wastes

<table>
<thead>
<tr>
<th>4.1 Treatment of common solid wastes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some common solid wastes such as waste animal, poultry and aquatic product samples produced in the tests and domestic garbage, etc. shall be centralized and sent by the environmental and sanitary authority to the urban landfill of refuse for sanitary landfill.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4.2 Treatment of dangerous wastes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.1 Waste veterinary medicine, pesticide and fertilizer samples are the dangerous wastes, uniformly collected and returned to the original production unit for the uniform treatment;</td>
</tr>
<tr>
<td>4.2.2 Some dangerous wastes such as test equipments and appliances (one-off), culture fluid, overdue test medicine or agents, sludge containing heavy metal produced in the sewage treatment station, waste active carbon, animal feces and urine as well as residual feedstuff, etc. are sorted, collected and periodically sent to Changchun Lantian Dangerous Waste Treatment Center Co., Ltd. for treatment.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4.1.1 Inspect whether the different solid wastes are sorted, centralized and sent to the designated treatment plant or landfill.</th>
</tr>
</thead>
<tbody>
<tr>
<td>once inspected per month</td>
</tr>
<tr>
<td>Environmental Protection Bureau of Changchun City</td>
</tr>
</tbody>
</table>
5 Monitoring and Estimate of the Environmental Management Plan

The implementation of the EMP measures involves many units, so the channels for the capital sources are different. Most of the environmental protection activities are the measures of the project; therefore, they shall be provided by the construction unit and the operation unit and counted in their project costs, which will be determined and listed in their bidding documents.

See Table 6.1-1 for the temporary budget of the environmental management plan.

<table>
<thead>
<tr>
<th>Monitoring Item</th>
<th>Environmental Supervision/Management Cost</th>
<th>Monitoring Expense</th>
<th>Training Expense</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget in the construction period (yuan)</td>
<td>10000</td>
<td>15000</td>
<td>27000</td>
<td>52000</td>
</tr>
<tr>
<td>Budget in the operation period (yuan/year)</td>
<td>-</td>
<td>40000</td>
<td>25000</td>
<td>65000</td>
</tr>
</tbody>
</table>

It is budgeted that the total cost for the EMP of the project is 117000 yuan.

6 Report

The contractor, construction unit, supervision unit and project office shall record progress of the project, implementation of the environmental management plan (EMP) and environmental quality monitoring results, etc. and report them to the relevant departments in time. The main contents include the following 6 parts:

(1) The environmental supervision engineer of the project carries out the detailed monthly records of implementation of the EMP and submits the monthly report to the project employer and the project office of the city (prefecture) in time. The monthly report shall include implementation of the environmental protection measures, implementation of the environmental monitoring and monitoring data.

(2) The contractor and the operator carry out the detailed quarterly records of the
project progress and implementation of the EMP, report the monthly report to the project office and deliver it to the environmental protection bureau of the city (prefecture).

(3) The supervision unit shall submit the monitoring report to the contractor (operator) and the environmental supervision engineer in time after completing the entrusted monitoring tasks.

(4) The project office of the city (prefecture) shall submit the project progress report to the provincial project office in time and deliver it to the provincial environmental protection bureau. The project progress report (semi-annual report) prepared by the project office shall include the contents of schedule of the EMP such as schedule and effects of implementation of the EMP, and especially the environmental monitoring results, etc.

(5) When any action, especially violation of regulations occurs to the environmental protection, the environmental supervision engineer and the project office will report it to the local administrative department in charge of environmental protection and report it level by level if necessary.

(6) The EMP implementation report shall be completed in the time required by the World Bank and submitted to the World Bank.

The EMP implementation report includes the following main contents:

1) Project progress;

2) Implementation of the EMP: including implementation of the training plan, implementation of the project environmental protection measures, implementation of the environmental monitoring and main monitoring data;

3) Is there any public complaint. If there is, record the main contents of the complaint, resolution and public satisfaction;

4) EMP implementation plan in the next year.
7 Public Participation

7.1 Information publicity

According to the relevant provisions of the Provisional Measures for Public Participation of Environmental Impact Assessment (HF [2006] No. 28), the environmental assessment unit pastes the notices in the residential districts around the project area on May 12, 2009, releases the notice on the environmental impact assessment information of the project in Jilin Environmental Information Website on June 5, 2009 and submits the simplified edition of the environmental impact assessment report and the first draft of the environmental management plan of the project to the Provincial Project Office and the Academy of Environmental Sciences to further inquire about the public opinions. During the publicity, neither public report or complaint nor feedback opinion is received.

7.2 Investigation of public participation

The investigated objects in the public participation are mainly the citizens in the affected districts. In the whole process of public participation, the principle of coexistence of representativeness and randomness is followed. On June 6, 2009, the Construction Project Group of the Quality Safety Testing Center of Animal Products of Jilin Province informs the citizens in the written notice of the public symposium on the environmental impact assessment of the Construction Project of the Quality Safety Testing Center of Animal Products of Jilin Province held on June 10. 22 persons attend the symposium on the Construction Project Group of the Quality Safety Testing Center of Animal Products of Jilin Province and listen to the opinions and suggestions of the citizens nearby on the environmental protection of the project. See the photos below.
Site of the symposium: Meeting Room of the Quality Safety Center of Animal Products of Jilin Province

Date: June 10, 2009

List of the symposium organizers: Liu Shijun and Ji Yue, etc. (see Table 7.2-1)

List of the symposium attendants (citizens): Zhang Tianying, etc. (see Table 7.2-2)

<table>
<thead>
<tr>
<th>Name</th>
<th>Place of Residence/Unit</th>
<th>Post</th>
<th>Contact Tel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liu Shijun</td>
<td>Provincial Bureau of Animal</td>
<td>Post</td>
<td>13314397880</td>
</tr>
<tr>
<td></td>
<td>Husbandry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ji Yue</td>
<td>Provincial Bureau of Animal</td>
<td>Post</td>
<td>13624305286</td>
</tr>
<tr>
<td></td>
<td>Husbandry</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary of the Symposium:

On June 10, 2009, the Construction Project Group of the Quality Safety Testing Center of Animal Products of Jilin Province convened the citizens’ symposium in the Meeting Room of the Quality Safety Center of Animal Products of Jilin Province and the attendants were mainly 22 citizens in the Shengyang Community of Liaoyang Street near the lab.

The Lab Project Group first issued the duplicate of the first draft of environmental management plan, introduced the overview of the project, environmental management plan, possible environmental impact factors, strength and range as well as environmental protection measures planned to be taken and described the reconstruction of the project based on the original lab, and especially inquired about the citizens possibly influenced by the project, deeply knew the public understanding of the significance and roles of construction of the project and opinions on the regional
environmental quality conditions, carefully listened to the citizens’ suggestions and opinions on the environmental protection of the project and filled in the questionnaires. In the symposium, the progress of the project and the benefits to the quality safety of agricultural products were discussed and a number of public opinions and suggestions were received.

The attendants think that the implementation of the project will effectively contain the residual poisonous and hazardous substances of pesticides and heavy metals, etc. of agricultural products, effectively assure the consumers’ health and improve the people’s living standard. It will be favorable to the improvement of quality safety of animal products of our province. Therefore, it shall be implemented as soon as possible. Some citizens presented their opinions and suggestions on the project, summarized as follows:

1) Yang Liwei, Secretary of China Southern Airline Jilin Branch, 45, 271 Liaoyang Street,
Question presented: reduce the noise impacts in the construction period as less as possible.
Reply of the Project Group: some citizens close to the project area may be affected in the construction period. The scientific construction plan shall be made, the management in the construction shall be strengthened, the construction at night shall be prohibited and the impacts on the citizens around in the construction shall be reduced as less as possible. It is hoped that the citizens will understand it.

2) Zhang Lina, 35, Changchun Laobaixing Pharmacy, Chuncao Road, Changchun City
Question presented: Is there any foreign flavor in the test? It is suggested that the effective prevention and control measures shall be taken.
Reply of the Project Group: There are labs in the building now, which has not influenced the residential districts around in recent years, and the ventilation and exhaust systems shall be built and the waste gas shall not be emitted until it is treated and reaches the standard so as to reduce the impacts on the citizens around in the construction of the project according to the relevant national regulations and requirements.

3) Dong Juan, doctor, 45, 311 Liaoyang Street
Question presented: Like a hospital producing the medical wastes, the lab may produce waste water and lab wastes, etc., which shall be treated and emitted after they reach the standards according to the regulations and shall not influence the citizens.

Reply of the Project Group: According to the relevant regulations, the different treatment and recycling measures will be taken for the waste water and different dangerous chemical products. We have signed an agreement with Changchun Lantian Dangerous Waste Treatment Center Co., Ltd. and entrusted it to treat the dangerous wastes discharged in the project. The waste water shall not be discharged until it is treated by the sewage treatment facilities.

The citizens are very concerned about the treatment of dangerous wastes. We will strictly abide by the test system of the lab, entrust the treatment unit with the qualification for treatment, and we will not carry out treatment without approval and we will assure no impact on the citizens around.

Dong Juan thinks that she is satisfied with the treatment.

Statistical analysis of the summarized results of the public questionnaires:

All the investigated about the quality of agricultural products of Jilin Province at present think that it shall be improved. 95% of the investigated think that the construction of the project will be favorable to improvement of the quality safety of agricultural products. What the citizens will be mostly concerned about in the construction period is noise, and those citizens account for 82% of the total and the secondary are solid wastes, and those citizens account for 18%. For the environmental impacts in the operation period, what the citizens will be mostly concerned about is solid wastes, and those citizens account for 73%. 86% of the citizens think that these impacts can be prevented and controlled by taking the effective measures and 100% of the citizens support the construction of the project.

Conclusion: The citizens attending the symposium unanimously think that the quality safety of agricultural products is a major topic related to the national economy and the people’s livelihood. It is very necessary to improve the quality safety level of agricultural products, assure the customers’ health, strengthen the competitive power of agricultural products in the market and build the quality safety testing lab of agricultural products.
products. However, they are concerned about treatment of solid wastes, requiring that the construction shall carry out well the treatment of dangerous wastes and assure no impacts on the living environment of the citizens around. On the whole, all the citizens greatly support the construction of the project.

8 Channels for Filing Complaints for Disputes

8.1.1 Establishment and compositions of the complaint organization

In order to better support the legitimate rights and interests of the influenced persons, build a complaint mechanism and provide a convenient, transparent, fair and effective complaint approach for the influenced persons, the environmental impact complaint acceptance leading group of the project shall be established. The group leader is the Leader of the Supervision Group of the Environmental Protection Bureau of Changchun City and the group members come from Jilin Province World Bank Loan Project Leading Group Office (Provincial Project Office), Environmental Monitoring Station of Changchun City and environmental assessment unit, etc. The environmental impact complaint acceptance office collects and arranges the documents and presents the opinions on treatment after negotiating with the relevant responsible units.

8.1.2 Complaint procedure

The complaint acceptance leading group and the office will begin acceptance of complaints within 1 week after the project is started and open the special telephone and mail box for complaints. The detailed complaint procedure is as follows:

When the influenced person thinks that his or her rights are infringed upon in any aspect of environmental protection, he or she can file a complaint to the complaint acceptance office in the written or oral form, the member of the complaint acceptance office will carry out the detailed records and arrange them and then submit the opinions on treatment within 2 weeks.

If the complainant is not satisfied with the opinions of the complaint acceptance office, he or she can file a complaint to the Environmental Protection Bureau of Jilin Province within 1 month after he or she receives the opinions on treatment and the
Bureau will give the opinions on treatment within 1 month.

If the complainant is still unsatisfied with the opinions on treatment of the Provincial Environmental Protection Bureau, he or she can institute a lawsuit to the local people’s court for arbitration according to the Civil Procedure Law of the People’s Republic of China after he or she receives the opinions on treatment.