STANDARD SUMMARY PROJECT FICHE - TRANSITION FACILITY

1. Basic Information
   1.1 CRIS Number: 2005/017/518.03.01
   1.2 Title: Improvement of soil protection by strengthening laboratory control of sewage sludge application on soil
   1.2 Sector: Environment
   1.3 Location: Czech Republic

2. Objectives
   2.1 Overall Objective(s):
      - Ability to face pressures and forces that could make irreversible changes of soil properties in the Czech Republic and within EU and the ability to minimize negative impacts during soil organic matter enrichment by using exogenous organic materials.
      - Ability to meet the obligations resulting from membership, including the fulfilment of measures connected with the EU Soil Thematic Strategy.

   2.2 Project purpose:
      - Improved soil protection via strengthening laboratory control of sewage sludge application on soil in the Czech Republic.

   2.3 Justification
      - It was clearly stated in the report of EU Soil Thematic Strategy that declining of soil organic matter content and its degradation is a very serious problem in most European countries. On the other hand there is an enormous potential for the recovery of soil lacking in organic matter that can bring together waste management, soil protection and organic matter enrichment. One of the valuable sources of organic matter is sludge. To ensure safe sewage sludge application on soil and to avoid all possible negative or harmful effects, both on the soil itself and on the production, it is necessary to have an effective control of the sewage sludge application. The project is an important step forward to the more comprehensive approach to the food safety, soil sustainability and environmental protection.

3. Description
   3.1 Background and justification:

      A comprehensive report from EU Soil Thematic Strategy working group “Organic Matter” defines advantages and disadvantages of application of sludge on soil. This application can be beneficiary only under very strict control not to cause an irreversible soil contamination and unpredictable food chain contamination. This control must cover the whole range of potential contaminants. Eco-toxicological tests can support chemical tests in the field of unknown and emerging pollutants and they can improve control of primary inputs of contaminants potentially presented in sewage sludge into soil, other compartments of environment and consequently into the food chain. Eco-toxicological approach can cover possible synergisms between pollutants and effects of unknown and/or emerging pollutants not determined by standard chemical analyses (residues of antibiotics, hormonal contraceptives, endocrine disruptors etc.)

      The rules of application of sewage sludge on agricultural land in the Czech Republic are given by Act No 185/2001 Coll. on waste materials and by Decree No 382/2001 Coll. on conditions of use of modified sewage sludge on agricultural soil. Improvement of the government authority in imposing legal requirements in the field of sewage sludge application is necessary. This will result in strengthening of consumers confidence into the protection of the food chain starting from the soil protection. CISTA is the national authority responsible for analysis of soils after application of sewage sludge. According to this legislation, sewage sludge applied on agricultural land must fulfilled the criteria based on chemical analyses. Nevertheless, an exhaustive identification and quantification
of substances is impractical and does not describe possible interactions between these substances and the complex soil matrix. Application of the ecotoxicological approach will reveal if sewage sludge can threaten the ability of soils to serve as a habitat for soil biota as well as their ability to adsorb pollutants in a way that they cannot be translocated via the water pathway. These tests will support chemical tests of unknown and emerging pollutants and they will improve and complete control of primary inputs of contaminants potentially presented in sewage sludge into soil.

3.2 Linked activities:
The CISTA (Central Institute of supervising and testing in agriculture) analytical instruments (part of them purchased under PHARE project CZ03.03.02) are able to provide most of the necessary chemical analysis that can support reliable decisions made according to the eco-toxicological approach. The PHARE project CZ030302 has been completed and the analytical capabilities resulting of the project are available. There is a direct link to the documents cited in the brief description, mainly to the documents from EU Soil Thematic Strategy, working group on contamination, organic matter and monitoring. Czech mirror committee of the EU Soil Thematic Strategy (STS) was established by Czech representatives at the EU STS (2 CISTA employees) to ensure wide discussion on the national basis and to disseminate the knowledge.

3.3 Results:
Results 1: Twinning light

3.3.1. Laboratory work of the CISTA improved via training in eco-toxicological testing of sewage sludge application. At least 4 CISTA specialists trained in the field via TwL.

3.3.2. At least two new eco-toxicological methods adopted 6 months after the delivery of the laboratory equipment, at least seven methods in routine use 12 months after TwL completed. The battery of methods will include tests covering all main groups (microorganisms, flora, fauna) of soil biota with different sensitivity to various range of contaminants and will be based on available methods of ISO TC 190 Soil quality and/or CEN 345 Soil Characterization. Standard operation procedures of CISTA for ecotoxicological testing of soils will be issued 12 months after the delivery of the laboratory equipment.

3.3.3. One CISTA specialist trained in the statistical evaluation of the results. Laboratory will be able to perform data analysis by means of the current statistical approaches. Standard operation procedures of CISTA for statistical evaluation of ecotoxicological data will be issued 12 months after the delivery of the laboratory equipment.

Results 2: Supply of equipment
The new equipment will ensure detection of potential hazardous substances which cannot be detected by chemical analysis and which can pose high risk for the food chain.

3.3.4. Instruments for sample preparation.
3.3.5. Instruments for sample incubation.
3.3.6. Instruments for biological activity measurement.
3.3.7. Instruments for sterile work.

3.4 Activities:

Twinning light (0,100 M€)
The activities will be carried out at the CISTA headquarters in Brno, where is the seat of the future laboratory for ecotoxicology. The official language will be English.

3.4.1. Training by EU specialists concerning ecotoxicological testing of soil and sewage sludge materials covering soil microorganisms, flora and fauna. This will include on the spot training (1-2 weeks) by approx. 2 experts, with a follow-up in supervising through approx. 3 - 4 short expert stays (about 52 man-days in total). This training will be followed by 2 study visits of approx. 3 CISTA employees into a laboratory experienced in such analyses, aimed to practical laboratory training , each of 2 weeks (about 25 man-days). The experts should be university graduated specialists in microbiology, biochemistry, biology or ecotoxicology with at least 5 years of scientific experience. They should preferably come from a government institution or JRC (Joint Research Centre).
3.4.2. **Training in standard methods adoption and EU law implementation** by 1-2 expert for 1 week. (about 10 man-days). The key expert should come from a similar organization in a EU country or from JRC and should be well informed about ISO and CEN activities with good knowledge about the new legislative documents and about the relevant methodology. The expert should be experienced in the field of soil and sewage sludge control, EU Soil Thematic Strategy, EU Water directives and have deep theoretical and practical knowledge of the subject. The experts should be university graduated specialists in microbiology, biochemistry, biology or ecotoxicology with at least 5 years of scientific experience.

3.4.3. **Training in data handling and advanced statistical evaluation** of eco-toxicological data will be realised in the form of sharing expert’s skills in CISTA (approx. 8 man-days) and about 2 study visits of at least 1 CISTA employee in an institution experienced in such work (about 25 man-days). The experts should be university graduated specialists in biostatistics with at least 5 years of scientific experience.

Supply of equipment (see Annex 6)  
(TF 0,120 M€)

3.4.4. **Sample preparation** (Approx 0,015 M €) includes: balance (1), analytical balance (1), centrifuge (1)
   This equipment is intended for preparation of samples, solutions and standards for ecoxicological tests according to the standard methods.
   Balance for weighing of soil samples, analytical balance for preparation of standards, centrifuge for preparation of extracts for genotoxicity testing and for the luminiscence test.

3.4.5. **Sample incubation** (Approx 0,050 M €): growth chambers (2), biological incubators (2), biological incubator with orbital shaker (1)
   Samples must be kept at the constant temperature, humidity and light during ecotoxicological testing. This equipment is necessary for incubation of soil at such conditions.
   Growth chambers with controlled temperature, humidity and light will be used for tests for the estimation of inhibition of growth and reproduction of fauna and flora, biological incubators for incubation of soil samples during measurement of soil respiration curves, biological incubator with orbital shaker for incubation of soil suspension during determination of the short nitrification activity.

3.4.6. **Biological activity measurement** (Approx 0,055 M €): luminometer with fluorescence and absorbance measurement capabilities (1), respirometer (50)
   These analytical instruments will be used for determination of toxicity of soil extracts, genotoxicity and inhibition of microbial growth. Luminometer will be used for determination of genotoxicity of soil extracts and for the luminiscence test with *Vibrio fisheri*, respirometer for measurement of microbial growth by means of respiration curves.

Supply of equipment (see Annex 6) -  
(Czech co-financing 0,040 M €)

3.4.7. **Sterile work** (Approx 0,040 M € - Czech co-financing): biohazard safety cabinet (1), drying cabinet (1), autoclave (1) and laboratory washer (1)
   As soil after application of sewage sludge can contain microbial pathogens, it is necessary to avoid contamination of glassware, instruments and laboratory staff. This goal can be assured by means of biohazard safety cabinet for sterile work with the soil samples, drying cabinet for sterilisation of glassware, autoclave for sterilisation of liquid media and laboratory washer/disinfector for washing and disinfection of laboratory glass.

3.5 **Lessons learned:**
   Czech mirror committee of the EU Soil Thematic Strategy (STS) was established by Czech EU STS representatives (2 CISTA employees) to ensure wide discussion on the national basis and to disseminate the knowledge. The EU STS defined the urgent necessity of effective soil protection including a new approach to the waste management (sludges, biosolids etc.). Safe sludge application can help to improve organic matter content. Analytical equipment of CISTA partially purchased under PHARE 030302 can be also used for analysis of dangerous substances in soils affected by sludge application. The results of chemical analyses can substantionally support the ecotoxicology results to give a more holistic view to the soil protection.
4. Institutional Framework

**Link between Ministry of Agriculture, Ministry of Environment and CISTA**

Ministry of Agriculture and Ministry of Environment cooperate in soil protection policy and sustainable soil use including sewage sludge application on soils. Given Ministries co-operate in transposition and implementation of regulations so that all areas are covered in a corresponding manner. Government decision No 1320/2001 Strategy towards food safety in the Czech Republic brought the issue of food safety and environmental quality into very close relation (part 2, par. 2) focusing on the very beginning of the food chain – soil and its protection. This Decision also defined cooperation of different institutions for integrated food safety under coordinating group established under MoA.

A mirror national committee for implementation of EU Soil Thematic Strategy was established as a wide discussion and consultation basis. MoA and MoE are involved into the work of the mirror committee as well as the specialists from CISTA (beneficiary institution of the project). Act No 185/2001 Coll., on waste materials § 32 and § 33 deal with sewage sludges. Their application on soil is regulated by a decree No 382/2001 Coll., on conditions of use of modified sewage sludge on agricultural soil, as amended. According to the act No 156/1998 Coll., on fertilizers, additional soil substances, additional plant preparations and substrates and on agrochemical testing of agricultural soils, as amended, according to the Act No 147/2002 Coll., on the Central Institute for Supervising and Testing in Agriculture and according to the act No 317/2004 Coll. amending and changing acts No 185/2001, No 147/2002 and No 156/1998 CISTA is responsible for control of sewage sludge application on agricultural land.

**Link between CISTA and MoA**

The Central Institute for Supervising and Testing in Agriculture is an administrative authority subordinated to the Ministry of Agriculture. The Institute performs expert and testing tasks and expert activities. In accordance to the act No 147 of 20th March 2002 on the Central Institute for Supervising and Testing In Agriculture as amended and on the amendment of some related acts the Institute performs the administration and carries out some other administrative activities, expert and testing tasks and control and monitoring activities in the area of soil – the Institute is the authority in this area.

**Structure of CISTA (beneficiary institution)**

CISTA has around 1000 employees; the National Reference Laboratory (NRL) of CISTA 156 employees. Project is targeted to the Department of microbiology and biochemistry of CISTA NRL in Brno.

5. Detailed Budget (in M €)

<table>
<thead>
<tr>
<th>€M</th>
<th>Transition Facility Support</th>
<th>Co-financing</th>
<th>Total cost (TF plus cofinancing)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Investment Support</td>
<td>Institution Building</td>
<td>Total Transition Facility (=I+IB)</td>
</tr>
<tr>
<td><strong>Year 2005</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Twinning Light</td>
<td>0,120</td>
<td>0,100</td>
<td>0,220</td>
</tr>
<tr>
<td>Supply of equipment</td>
<td>0,100</td>
<td>0,100</td>
<td>0,040*</td>
</tr>
<tr>
<td>Total</td>
<td><strong>0,120</strong></td>
<td><strong>0,100</strong></td>
<td><strong>0,220</strong></td>
</tr>
</tbody>
</table>

(*) There will be parallel co financing from the state budget - chapter No. -MoA, year 2005. The parallel co-financing will enable to purchase the additional equipment still needed for the implementation of the project and to cover it from the Czech resources still in 2005. For details see above, Activities 3.4.7

6. Implementation Arrangements

6.1 Implementing Agency

The CFCU will be the Implementing Agency responsible for tendering, contracting and accounting with assisting in good project design and implementation and TF procurement and payment rules. Central Finance and Contracts Unit (CFCU) contact person is Mr. Jan Slavícek, Ministry of Finance, Letenská 15, 118 10, Praha 1, phone +420-2-5704-4551, fax +420 257 044 550, e-mail: jan.slavicek@mfcr.cz.
The beneficiary (CISTA) will have the responsibility for technical preparation and control (designing, selecting, monitoring). The contact person for this project within CISTA as a beneficiary institution is Dr. Stanislav Malý, CISTA- NRL, Head of Dept. of Microbiology and Biochemistry, Hroznová 2, 656 06 Brno, Czech Republic, tel: +420-543 548 292, fax: +420 543 210 444, e-mail: stanislav.maly@ukzuz.cz

The CFA is fully responsible for overall monitoring and evaluation project implementation. Main Contact - Ms. Jana Hendrichová – director of CFA, Ministry of Fianance, Letenská 15, 118 10, Praha 1, phone +420-2-5704-4568, e-mail: jana.hendrichova@mfcr.cz

6.2 Twinning
The beneficiary institution for TwL support will be CISTA. The contact person for twinning arrangements within CISTA is Mr. Petr Vaculík, Expert in Legislation and EU Relations in CISTA, Hroznová 2, 656 06 Brno, Czech Republic, tel: +420-543 548 226, fax: +420 543 211 148, e-mail: petr.vaculik@ukzuz.cz

6.2.1 Non-standard aspects n.a.

6.3 Contracts
Twinning light 0,100 M €
Supply of equipment 0,120 M€
Supply of equipment – Czech co-financing 0,040 M €

7. Implementation Schedule
7.1 Start of tendering/call for proposals
Contract 1 – Twinning Light
Call for proposals 4Q/ 2005
Contracts 2 and 3 – Supply of equipment
Start of tendering 4Q/ 2005

7.2 Start of project activity
Twinning Light
Start of project activity 3Q/ 2006
Supply of equipment
Start of project activity 2Q/ 2006

7.3 Project Completion
Twinning Light
Project Completion 3Q/2007
Supply of equipment
Project Completion 4Q/ 2006

8. Sustainability
CISTA has specialist in the field of soil quality and soil characterization. They represent the Czech Republic in ISO TC 190 Soil quality and CEN 345 Soil Characterization. They were also nominated as the national experts into different working groups and task groups in the preparatory steps of EU Soil Thematic Strategy and they are active in the respective national mirror committee. Coverage of the cost for the instrument maintenance will be assured from the CISTA budget (governmental institution) and human sources will be available from the CISTA staff.

9. Conditionality and sequencing
- TwL should start in parallel with the supply of equipment to enable training in CISTA.
- The technical specification will be reviewed by an independent expert.

ANNEXES TO PROJECT FICHE:
1: Logframe Planning Matrix
2: Detailed implementation chart
3: Contracting and disbursement schedule
4: List of Acts on soil protection and sewage sludge application in the Czech Republic
5: Technical Assessment
6: Indicative Table of Laboratory Equipment
**LOGFRAME PLANNING MATRIX**

<table>
<thead>
<tr>
<th>Overall Objective</th>
<th>Objectively verifiable indicators</th>
<th>Sources of verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ability to face pressures and forces that could make irreversible changes of soil properties in the Czech Republic and within EU and the ability to minimize negative impacts during soil organic matter enrichment by using exogenous organic materials. • Ability to meet the obligations resulting from membership, including the fulfilment of measures connected with the EU Soil Thematic Strategy.</td>
<td>Acknowledgement of the soil protection measures by the European Commission. Adoption of the results of EU Soil Thematic Strategy. Adoption of the application of exogenous organic matter on soil.</td>
<td>Country Summary Evaluation Report (produced by the independent external consultant)</td>
<td>Other membership criteria fulfilled, especially full harmonization of the Czech and EU law in the field of sewage sludge application on soil. Full cooperation with the Co-ordination Group for food safety at the MoA and with the future CFSA that will cover also soil issues. Economic entities have access to information about sewage sludge application on soil and impacts on food safety within the whole food chain.</td>
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</table>

<table>
<thead>
<tr>
<th>Project Purpose</th>
<th>Objectively verifiable indicators</th>
<th>Sources of verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Improved soil protection in the Czech Republic in the area of sludge application on soil.</td>
<td>• New capability of the government institution in the range of eco-toxicological analyses covering all main groups of soil biota (microorganisms, flora, fauna). • Increasing of CISTA capacity in terms of work effectiveness and staff trained by the end of project. • At least two new methods applied and used 6 months after delivery of equipment, at least</td>
<td>• Implementation status report (NAC) • Monitoring report • Progress reports on project running provided by CISTA • Analytical and comparison studies provided by CISTA and EU specialists involved in the training of the CISTA employees • New methods available as SOP</td>
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</tr>
<tr>
<td>Results</td>
<td>Objectively verifiable indicators</td>
<td>Sources of verification</td>
<td>Assumptions</td>
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<tr>
<td><strong>Results 1: Twinning light</strong></td>
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<tr>
<td>1. Laboratory work of the CISTA improved via training in ecotoxical testing of sewage sludge application.</td>
<td>Twinning light 1. At least 4 CISTA specialists trained in the field via TwL. 2. Flexible method development according to the demands of legislation in the field of application of exogenous organic matter on soil. Standard operation procedures of CISTA for ecotoxicological testing of soils will be issued 12 months after the delivery of the laboratory equipment. 3. Standard operation procedures of CISTA for statistical evaluation of ecotoxicological data will be issued 12 months after the delivery of the laboratory equipment.</td>
<td>• Progress reports on project running  • Ex-post evaluation report  • Analytical studies and standard operation procedures of CISTA</td>
<td>• Other necessary measures for soil protection taken and implemented by the Czech Authorities, including legislative alignment  • Qualified staff of both CISTA and individual authorities available  • Continuation in international co-operation in the field of the application of exogenous organic materials on soil.  • Availability of national funds for future financing.</td>
</tr>
</tbody>
</table>

### Supply of equipment

<table>
<thead>
<tr>
<th>Activities</th>
<th>Means</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Twinning light</strong></td>
<td><strong>Training programmes for CISTA employees:</strong> 1. Training by EU specialists concerning ecotoxicological testing 1. Twinning light (0,1 M €) 1. Approx. 70 STE man-days of training, approx. 50 man-days of study visits : ad 1. This will include on the spot training via TwL.</td>
<td>• Co-financing from state budget.  • Skilled staff of all individual authorities, effective co-operation.  • The technical specification will be reviewed by an independent expert.</td>
</tr>
</tbody>
</table>
of soil and sewage sludge materials covering soil microorganisms, flora and fauna.

2. Training by an EU expert concerning ISO and CEN activities, EU law implementation, the new legislative documents and about the relevant methodology.

3. Training in data handling and advanced statistical evaluation of eco-toxicological data.

2. Supply of technical and laboratory equipment

**Delivery of:**

- Equipment for sample preparation.
  - balance (1), analytical balance (1), laboratory centrifuge (1)
- Equipment for sample incubation
  - growth chambers (2), biological incubators (3)
- Equipment for biological activity measurement
  - luminometer (1), respirometer (50)
- Equipment for sterile work
  - biohazard safety cabinet (1), drying cabinet (1), autoclave (1), laboratory washer (1)

Note 1: Amounts stated above are only indicative and will be subject to specification in TS.

Note 2: numbers in parentheses means number of the apparatuses.

training (in 1-2 weeks’ period and 3-4 supervisory short stays) by experts preferably from a government institution or JRC (Joint Research Centre). The experts should be university graduated specialists in microbiology, biochemistry, biology or ecotoxicology with at least 5 years of scientific experience. This training will be followed by a practical laboratory training of 3 CISTA employees in a laboratory experienced in such analyses (study visits of 2 weeks).

ad 2. Training in standard methods adoption and EU law implementation (1-2 experts for 1 week). The key expert should come from a similar organization in a EU country or from JRC and should be experienced in the field of soil and sewage sludge control, EU Soil Thematic Strategy, EU Water directives and have deep theoretical and practical knowledge of the subject. The experts should be university graduated specialists in microbiology, biochemistry, biology or ecotoxicology with at least 5 years of scientific experience.

ad 3. Training in data handling and advanced statistical evaluation of ecotoxicological data via sharing expert skills and through 2 study visits in an EU laboratory.
Note 3: for details see ANNEX 6

experienced in such work (1 CISTA employee / 2 weeks). The experts should be university graduated specialists in biostatistics with at least 5 years of scientific experience.

ad 2) Supply - Technical support and laboratory equipment support (TF budget 0,120, Czech co financing 0,040 M€)

Under contract covered by TF:
- Equipment for sample preparation (Approx 0,015 M €)
- Equipment for sample incubation (Approx 0,050 M €)
- Equipment for biological activity measurement) (Approx 0,055M€)

Under contract covered by national co-financing:
- Equipment for sterile work (Approx 0,040 M €)

Preconditions
The EU Soil Thematic Strategy and national legislative documents covering possibilities of sludge application on soil.
**DETAILED IMPLEMENTATION CHART**

Project Title: **Improvement of soil protection by strengthening laboratory control of sewage sludge application on soil**

<table>
<thead>
<tr>
<th>Year Action</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) TwL contract</td>
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<td>Start of tendering</td>
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<tr>
<td>Start of project activity</td>
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<td>Project completion</td>
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<td>X</td>
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<tr>
<td>2) Supply contract</td>
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<tr>
<td>Start of tendering</td>
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<tr>
<td>Start of project activity</td>
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<tr>
<td>Project completion</td>
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# ANNEX 3

## CONTRACTING AND DISBURSEMENT SCHEDULE

### Cumulative Quarterly Contracting Schedule (mil €)

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<th>Project</th>
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<th>3Q/07</th>
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<tr>
<td>Improvement of soil protection by strengthening laboratory control of sewage sludge application on soil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.100</td>
<td>0.220</td>
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### Cumulative Quarterly Disbursement Schedule (mil €)

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<td>0.220</td>
<td></td>
<td>0.220</td>
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</table>
ANNEX 4

LIST OF ACTS ON SOIL PROTECTION AND SEWAGE SLUDGE APPLICATION IN THE CZECH REPUBLIC

**Fundamental acts**
- Act No 258/2000 Coll., on protection of public health (MH)
- Act No 63/1986 Coll., on Czech Agriculture and Food Inspectorate, in valid wording (MA)
- Act No 147/1996 Coll., on phytosanitary care, in valid wording (MA)
- Act No 147/2002 Coll., on the Central Institute for Supervising and Testing in Agriculture, as amended
- Government decision No 1320/2001 Strategy towards food safety in the Czech Republic

**Soil Protection and soil use**
- Act No 334/1992 Coll., on protection of agricultural soil resources, as amended
- Act No 156/1998 Coll., on fertilizers, additional soil substances, additional plant preparations and substrates and on agrochemical testing of agricultural soils, as amended
- Decree No 474/2000 Coll., laying down the requirements on fertilizers, as amended
- Decree No 273/1998 Coll., on collecting and chemical analysis of samples of fertilizers, as amended
- Decree No 274/1998 Coll., on storage and the technique of use of fertilizers, as amended
- Decree No 275/1998 Coll., on agrochemical testing of agricultural soil and on determination of soil characteristics of forest soils, as amended
- Act No 185/2001 Coll., on waste materials and on amendment of some other acts, as amended
- Decree No 382/2001 Coll., on conditions of use of modified sewage sludge on agricultural soil, as amended
- Act No 254/2001 Coll., on waters and on amendment of some other acts (water act), as amended
- Regulation of government No 103/2003 Coll., on determination of vulnerable areas and on use and storage of fertilizers, variation in crops and pursuit of anti-erosion measures in such areas

**Other acts connected with the project**
- Act No 242/2000 Coll., on ecological agriculture (MA)
- Act No 157/1998 Coll., on chemical substances and chemical preparations, in valid wording (ME)
- Act No 552/1991 Coll., on state inspection, in valid wording (MIT)
The Central Institute for Supervising and Testing in Agriculture (CISTA) is the responsible national authority in the area of input of contaminants into agricultural soil in the Czech Republic. According to the Decree 275/1998 Coll. on Agrochemical Testing of Agricultural Soil and on Determination of Soil Characteristics of Forest Soils implemented into the Act 156/1998 Coll., CISTA performs numerous chemical and microbial analyses of soils.

The project is intended for substantial strengthening of certainty of consumers and land users in the process of soil protection and soil improvement especially in the field of soil organic matter enrichment. Government authority in imposing legal requirements in the field of sewage sludge application on soils and consequently in the food safety measures will be improved via the project. Moreover, the project will enable to implement the principles of the Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment and the principles defined in Council Directive 1986/278/EEC of 12 June 1986. The project is in agreement with the European Parliament resolution on Soil Thematic Strategy, which was adopted November 19, 2003. The EP urges the Commission to revise Directive 1986/278/EEC on the use of sewage sludge and draw up a directive on compost; stresses the need to intensify research in this field so as to boost its potential for the recovery of soil lacking in organic matter and bring together waste management and soil protection and enrichment. A comprehensive report from Soil Thematic Strategy working group “Organic Matter” defines advantages and disadvantages of application of sludges on soil. This application can be beneficiary only under very strict control not to cause an irreversible soil contamination and unpredictable food chain contamination. To cope with the pressures an effective control system is inevitable. This control must cover the whole range of potential contaminants.

An exhaustive identification and quantification of substances is impractical and does not fully describe possible interactions (synergy/antagonism) between these substances and the complex soil matrix. In this case ecotoxicological testing of soils can be used for investigating the potential toxicity of complex mixtures. Ecotoxicological tests are able to support chemical tests of unknown and emerging pollutants and they can improve and complete control of primary inputs of contaminants potentially presented in sewage sludge into the food chain.

The project is aimed specifically to strengthen and support food safety policy as well as training of laboratory staff specialists. To fulfil all demands for ecotoxicological testing it is necessary to update and to improve the quality of CISTA laboratory equipment. Improvement of the CISTA laboratory equipment is necessary for wider scope of analytical techniques, analyses and parameters focused mainly on detection of contaminants with high risk to the soil. The ideal approach for the precise ecotoxicological characterization of the soil toxicity is to use a suitable set of more tests with several species belonging to different taxonomic trophic groups. It is therefore recommended to test at least a microbial process, a species from the plant kingdom, and one from the animal kingdom.

It is expected that all the needs in the field of soil ecotoxicological testing could be fulfilled by this project. The specialisation and experience of laboratory staff ensures the most effective usage of the laboratory equipment. Staff and a sustainable use of the equipment will be provided by CISTA.

Drafted by Dr. Stanislav Malý, CISTA-NRL
Date: January 6, 2005
## Indicative Table of Laboratory Equipment

<table>
<thead>
<tr>
<th>Article</th>
<th>Description of article</th>
<th>Quantity</th>
<th>Site*</th>
<th>Unit costs ( € )</th>
<th>TF budget ( M€ )</th>
<th>CZ budget ( M€ )</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Equipment for sample preparation</td>
<td>15 000</td>
<td></td>
<td>0,015</td>
<td>0,015</td>
<td>0,015</td>
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<tr>
<td></td>
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<td>1 500</td>
<td>0,0015</td>
<td>0,0015</td>
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<tr>
<td></td>
<td>analytical balance</td>
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<td></td>
<td>4 000</td>
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<td>0,0040</td>
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<td>centrifuge</td>
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<td>0,0095</td>
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<tr>
<td>2.</td>
<td>Equipment for sample incubation</td>
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<td>0,050</td>
<td>0,050</td>
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<td>4.</td>
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</table>

Technical specification of equipment
(Note: Amounts stated in the tables below are only indicative and will be subject to specification in TS).