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Final Report

Workshop

on

“Water and Soil Remediation Technologies”

Guanajuato, Mexico

11 - 12 December 2006

UNIDO Project No.: TE/GLO/04/105

UNIDO Contract Order No.: 16001308 ML/CZ

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I. Scientific Part

INTRODUCTION

The Workshop on "*Water and Soil Remediation Technologies*" held in Guanajuato, Guanajuato, México, was sponsored and organized by the International Center for Science and High Technology of the United Nations Industrial Development (ICS-UNIDO) from Trieste, Italy, with the University of Guanajuato, México, as local organizer.

The most urgent problem to be addressed, in developing countries is the water and soil pollution due to domestic and industrial activities. This situation represents a serious risk for both public health and the ecosystem environment. For this reason, it is needed to join efforts of industrialized and developed countries to face this complex problem. In this case, the main objective of this workshop was to attend the Latin-American countries. This workshop let meet some research leaders, industrials and government authorities to identify and analyze common regional problems. They also could know some new methodologies and tools for evaluating the applicability and sustainability of the different technical options. With this, decision makers have the opportunity to perform an objective evaluation and identification of problems and suitable solutions when a wide range of information and development of the center involved.

The International Centre for Science and High Technology (ICS-UNIDO), with the aim of providing technologists and decision makers (site owners, local community representatives, environmentalists, regulators, technologists, etc.) with the state-of-the-art on water and soil treatment techniques and promoting the use of a structured approach in technology evaluation and selection, is presently developing specific strategy addressed to improve capacity building of developing countries, promote joint projects and strengthen cooperation among institutions/centres of industrialized and developing/in transition economies operating in the field. In this regard, ICS-UNIDO is organizing workshops, training courses and meetings of experts, where new methodologies, tools and techniques for proper clean-up of water as well as soil resources are presented and discussed and the possibility of concerted actions and joint projects are explored.

Within the ICS-UNIDO Work Programmer for year 2006. According to that and due to the importance of the topic for Latin American countries, within the subprograms on Remediation of the ICS-UNIDO Area of Pure and Applied Chemistry a Workshop on "*Water and Soil Remediation Technologies*", this has been held from 11 to 12 December 2006 in Guanajuato, Mexico. The event represents an implementation of the above mentioned programme.

There is the need to solve the problems of environmental pollution: research and development efforts are extending their applicability and improving their economic sustainability, leading in the years to come to their increasing use and to an interesting industrial market development, especially in developing countries. The need for decision support is widely recognized and in recent years a large number of Decision Support Tools (DSTs) have been developed, with the aim not only of facilitating decision making process

but of helping to ensure that it is transparent, documented, reproducible and hopefully robust, providing a coherent framework to explore the options available.

According to that, the ICS Workshop on "*Water and Soil Remediation Technologies*" has been focused on established and emerging technologies for water treatment and soil remediation technologies, on their applicability and sustainability in Latin American countries and on the introduction and use of Decision Support Tools for technology evaluation and selection in the decision making processes of those countries.

ORGANIZATION

The Workshop on "*Water and Soil Remediation Technologies*" was jointly organized by the International Center for Sciences and High Technology of the United Nation Industrial Development Organization (ICS-UNIDO), with headquarters in Trieste, in collaboration with the Guanajuato University, México. The following bodies took responsibility for the scientific and organizational aspects of the event:

Local Organizer:

The local organizer was the University of Guanajuato is a public institution which offers undergraduate and graduated education programs. The Hydraulics and Geomatics, Chemistry, Agriculture Departments of the University have carried out several projects related to environmental issues; some examples of these kind of projects/activities include:

- Developing soil remediation technologies.
- Experimental design for risk and environmental assessment.
- Identification and development new materials to be used as absorbents and adsorbents of organic and inorganic pollutants.
- Solid and liquid wastes management.
- Remote Sensing and Geographic Information Systems Technologies for environmental diagnostics.

The Workshop has been held in Guanajuato City, which is capital of the Stated of Guanajuato, Mexico. This state is broad and highly industrialized with a several environmental problems and research centers for attending these problems. Some of these centers belong to the Guanajuato University.

The following members of the University of Guanajuato were involved in the organization of the Workshop:

Dr. J. Merced Martínez Rosales,

Inorganic Chemistry Research Centre

MC. Dulce María Esquivel Gómez.

Student of the Inorganic Chemistry Research Centre

Dr. Francisco Martínez González.

Chief of the Geomatics and Hydraulics Engineering Department

Dra. Natividad Ramírez Ramírez

Geomatics and Hydraulics Engineering Department Researcher

Dr. Gilberto Carreño Aguilera

Geomatics and Hydraulics Engineering Department Researcher

M.I. Josefina Ortiz Medel

Geomatics and Hydraulics Engineering Department Researcher

Dr. Roberto Zazueta Sandoval

Biology Experimental Research Institute

ICS-UNIDO:

Mr. Stanislav Miertus, ICS-UNIDO Area Chief Pure and Applied Chemistry, Trieste, Italy

Mr. Andrea Lodolo, ICS-UNIDO Scientific Expert, Pure and Applied Chemistry, Trieste, Italy

DATE AND SITE

The Meeting was held on 11-12 December 2006 in Guanajuato, Gto, Mexico. All the works took place at the Auditorium "Euquerio Guerrero", accommodation and meals have been hosted by Hotel "Mesón de los Poetas" located on the downtown of the city.

The final Agenda of the Workshop is presented in the Annex I.

OBJECTIVES

- To update information on chemistry-related soil and water remediation problems in selected Latin American countries and identifying priorities
- To survey the-state-of-the-art in the field of soil and water clean-up technologies and to present the concepts of DSTs for technology evaluation and selection, also discussing the prospects for their introduction and use in Latin American countries
- To discuss proposals for joint initiatives including relevant project ideas and strengthening of international cooperation in the region.

PARTICIPATION

Experts in technologies for wastewater treatment, water and soil remediation, water sanitation from the countries of the region, together with governmental representatives and responsible persons of international and national organizations and programs dealing with environmental protection and recovery issues participated in the Workshop.

In total 59 participants (see Annex II) attended the Workshop, as follows:

- 33 key lecturers, out of which 8 were from México.
- 14 local posters presentation, most of them from Mexicans.
- 22 other participants, representing Ministry of Environment and Water Management, research institutions.

7 countries of the region were represented: Brazil, Cuba, Peru, Uruguay, Venezuela, Guatemala, Honduras, Nicaragua, Mexico. International key lecturers came also from Italy, USA, Austria. Two UNIDO representatives attended to the Workshop. Moreover, 6 participants came from the UNIDO Cleaner Production Centres.

The keynote speakers presented 17 lectures related to the Workshop topics which were:

- International programs and initiatives

- Environmental pollution and remediation: general issues
- Open Problems and initiatives in the field of environmental pollution reduction and remediation
- UNIDO Cleaner Production Centres Initiatives/Programs
- Special Session on Decision Support Tools Development and Application

PROGRAM

The key topics of the Workshop were:

- *"Capacity building and knowledge transfer in the field of water and soil remediation technologies and management in Latin American countries"*, in which the ways for promoting the introduction of effective tools and technologies for the remediation water and soil resources in the region will be explored and discussed, also identifying priorities and promoting specific projects/initiatives in the field.
- *"Decision Support Tools for technology evaluation and selection"*, in which the introduction and use of DSTs in developing countries for soil and water clean-up technologies assessment and selection, will be discussed. Emerging techniques for soil as well as water treatment will be taken into account in order to verify their possible applicability and sustainability in Latin American countries.

Please refer to the attached final Agenda and time schedule (Annex I) for the details.

WORKSHOP MATERIALS

Each participant and lecturer obtained conference materials. The Aide Memories were distributed as an electronic version by e-mail. The invitation containing the main objectives of the forum and some details on the organization was distributed by e-mail or regular mail.

FINAL DISCUSSION AND PROPOSALS FOR FOLLOW UP ACTIVITIES

The workshop was generally considered as very successful and useful by all of the participants. Also, the balanced and interesting program of the workshop was welcomed by the participants.

- The following follow-up actions will be taken:
 - Establish a Latin American Expertise Network in the Application of DSTs
 - Structure: Structured around centers of excellence with expertise in specific tools or problem areas such as application of DSTs at small orphan sites such as tanneries, chrome shops, pesticides, mining, etc.
 - Goals: In the first year pilot two tools at each of the initial centers of expertise through the Guanajuato University and Puebla University.
 - Vision: Long term goal is to create a hemispheric network of experts and the adaptation of tools to local circumstances and needs. Centers would provide evaluation of tools, training, and adaptation
- Priority Topics:
 - Create a Latino-American regional network for exchange case studies, expertise, knowledge, database

- Should include, but not limited to CPC
- Use of expertise existing in various countries
- Have a further workshop (ICS-UNIDO programme 2007) on these topics to foster exchange of information and concrete proceed in creating a regional network
- Contamination by heavy metals in mine, landfill, waste disposal, tannery
- Contamination by agro-food production
- Oil spills with priority in only some countries
- improve current technologies with the criteria of lower the cost, improve efficiency, better integration of technologies

ACHIEVED RESULTS

- Capacity building of over 50 participants from 7 countries of the region in the field of remediation technologies
- Presented survey on chemistry-related issues/problems of water and soil remediation in selected Latin American countries and presentation of needs.
- Presentation of new approaches of assessment and selection of emerging remediation technologies
- Presented proposals on possible joint initiatives in the field of soil and water treatment technologies and relevant applications in selected Latin American countries with the focus on the establishment of a Latin America expertise network on remediation technologies and application of DST.

II. Financial Part

FUNDING

The total expenses for the organization were **20,018.78 €**.

The planned contribution from ICS-UNIDO, according to the signed contract, amounted to 19,000.00 €.

€ 20,018.78 was the real expenditure for the budget items specified in the terms of reference (i.e.: accommodation, meals -full board- of key lecturers and participants, travel of key lecturers and participants, internal transport, workshop materials) and the over-expenditure of € 1,018.78 was covered by the Local Organizer, the University of Guanajuato.

From the planned ICS contribution of € 19,000.00, the amount of 15,000.00 € has already been transferred by ICS-UNIDO to the Local Organizer, and the remaining final balance (to be transferred to the local organizer) is of the amount of 4,000.00 € after the approval of this Final Report.

Moreover the Local Organizer covered the expenses of space, infrastructure and human resources during the workshop development were funded by the Guanajuato University.

ITEMS TO BE COVERED WITH THE ICS-UNIDO BUDGET

(see Annex III)

ICS-UNIDO contribution in EURO:	Real (€)	Foreseen (€)
<ul style="list-style-type: none"> o Accommodation for 21 participants (13 international and 8 national participants) in 17 rooms of 53.75 euros per night/3 nights 1 room of 53.75 euros per night/5 nights, due to flying conditions 1 room of 53.75 euros per night/4 nights, due to flying conditions 1 room of 53.75 euros per night/7 nights, because the fly was cheaper for 1220€ euros and the hotel cost for 4 days was 371.5€ o meals for 30 participants: 3 dinners X 30people X 11€ =990€ 2 lunch X 30 people X 9.43€ = o Coffee breaks for 50 participants (15 international and 43 national participants). 	3558,05 €	Accomm. For 10 inviteld int'l part. € 1,800.00 Accomm. For 2 nat. part. € 360.00
<ul style="list-style-type: none"> o meals for 30 participants: 3 dinners X 30people X 11€ =990€ 2 lunch X 30 people X 9.43€ = o Coffee breaks for 50 participants (15 international and 43 national participants). 	1556,201€	Meals for 46 people € 3,564.00
Accommodation and Meals Total	825,175 €	
<ul style="list-style-type: none"> o The tickets are enclosed 	5939,41€	€ 5,724.00
Travel of 13 invited international participants:	12792,66 €	Travel of 10 invited int'l part. € 12,176.00
for air tickets and taxes for leaving their country to attend the workshop		
		Travel of 2 invited national

			part. € 600.00
Local transportation			Not foreseen
Local transport (to and from) between Airport –Guanajuato city Fuel, parking and bridge taxes : 70.97 € Cabins for participants 94.2 €	165.17 €		
Ground Transportation			Not foreseen
between México city and Guanajuato city for one international participant and one national participant	114,1 €		
Workshop Materials			€ 500
personalized portfolios and pens, printed material, photocopies, paper, CD-ROMs	1007,44 €		
ICS-UNIDO expenses TOTAL	20018,78 €		€ 19,000.00

"Water and Soil Remediation Technologies"

PROGRAM Guanajuato, Mexico

11 - 12 December 2006

Monday, 11 December

08:30-10.00 Registration of participants

Opening Session

- 010:00-10:30 Welcome address and greetings: Introduction to the Workshop on "Water and Soil Remediation Technologies"
- *Dr. Francisco Martínez Gonzalez, Guanajuato University*
 - *Dr. Andrea Lodolo, Area of Pure and Applied Chemistry, ICS-UNIDO, Italy*
 - *Dra. Mayra Sanchez-Osuna, UNIDO PTC/ECB/CPU Unit, Unit Chief and Deputy to the Director*
 - *Dr. Arturo Lara, Rector of Guanajuato University, Mexico;*

Session One

NATIONAL AND INTERNATIONAL INITIATIVES/PROGRAMS IN THE FIELD OF ENVIRONMENTAL POLLUTION REDUCTION AND REMEDIATION

Chairpersons: Mr. M. Martínez Rosales, Mr. G. Centi

- 10:00-10:30 ICS-UNIDO mandate, strategy and international programs/initiatives with the focus on water treatment and soil remediation technologies (*Mr. A. Lodolo, ICS-UNIDO, Italy*)
- 10:30-10:50 UNIDO programs and initiatives in the field of environmental protection and recovery in Latin American region (*Ms. M. Sanchez-Osuna, UNIDO PTC/ECB/CPU Unit*)
- 10:50-11:10 Survey of programs of UNIDO NCPCs in the field of water treatment, soil remediation and POPs reduction/decontamination in Latin America region (*Ms. M. Sanchez-Osuna, UNIDO PTC/ECB/CPU Unit*)
- 11:10-11:30 Challenges and opportunities for reducing environmental pollution in the oil industry (*Mr. J. M. Domínguez-Esquivel, Senior Researcher, IMP, Mexico,*)
- 11:30-11:50 World Water Council programs/initiatives in the field of water resources protection and management in Latin American Countries: results of 4^o World Water Forum in Mexico (*Mr. Ricardo Martínez,*

representative of México).

11:50-12:10 Coffee Break

Chairpersons: Mrs. M. Sanchez-Osuna, Mr. J. M. Domínguez-Esquivel

- 12:10-12:30 EU international programs/initiatives in the field of environmental pollution reduction and remediation: opportunities for Latin American Countries (*Mr. Gabriele Centi, ICS-UNIDO Scientific Expert and University of Messina, Italy*)
- 12:30-12:50 Capacity building and knowledge transfer in the field of wastewater treatment in Latin American countries: needs, challenges (*Mr. Gilberto Carreño, Researcher, Guanajuato University, México.*)
- 12:50-13:10 Other international programs and activities in the field of water treatment and soil remediation in Latin American Countries (*Mr. Carlos Pachon, US-EPA, U.S.A.*)
- 13:10-13:30 Discussion
- 13:30-14.30 Lunch Break**

Session Two

ENVIRONMENTAL POLLUTION AND REMEDIATION: GENERAL ISSUES

Chairpersons: Mr. G. Centi, Mr. A. Lodolo

- 14:30-14:50 Risk based approach for the management of contaminated sites. (*Mr. Dietmar Mueller, Federal Environment Agency, Austria*)
- 14:50-15:10 Criteria, methodologies and tools for risk analysis (*Mr. Dietmar Mueller, Federal Environment Agency, Austria*)
- 15:10-15:30 Established and emerging site characterization technologies and techniques (*Mr. Carlos Pachon, US-EPA, U.S.A.*)
- 15:30-15:50 Established and emerging technologies for contaminated groundwater treatment (*Mr. Carlos Pachon, US-EPA, U.S.A.*)
- 15:50-16:10 Soil remediation technologies: main features and applications (*Mr. Andrea Lodolo, ICS-UNIDO Scientific Expert, Italy*)
- 16:10-16:30 Coffee Break and Poster presentation**

Chairpersons: Mr. D. Mueller, Mr. C. Pachon

- 16:30-16:50 Waste water treatment technologies: main features and applications (*Mr. Gabriele Centi, ICS-UNIDO Scientific Expert and University of Messina, Italy*)

- 16:50-17:10 Evaluation of electro-remediation process on hydrocarbon polluted soils (*Mr Ignacio Gonzalez, UAM-I, Mexico*)
- 17:10-17:30 Combined Indirect techniques to delimitate oil spills soil plumes (*Mr David Flores, IMP/Environment & Security*)
- 17:30-17:50 "Slurry bioreactors as a feasible alternative for bioremediation of heavy soils polluted with agrochemicals" (*Miss Xochilt Dominguez Benneton, IPN and Cinvestav, Dept. Biotechnology, Environ., Mexico*)
- 17:50-18:10 Discussion
- 19:30-21:30 **Dinner**

Tuesday, 12 December

Session Three

SPECIAL SESSION ON DECISION SUPPORT TOOLS DEVELOPMENT AND APPLICATION

Chairpersons: Mr. J. M. Domínguez-Esquivel, Mr. D. Mueller

- 09:00-09:30 Development of Decision Support Tools for environmental recovery technologies. ICS-UNIDO experiences in the field (*Mr. A. Lodolo, ICS-UNIDO Scientific Expert, Italy*)
- 09:30-09:50 Decision Support Tools for water treatment technologies assessment and selection: ICS-UNIDO experiences and products (*Mr. G. Centi, ICS-UNIDO Scientific Expert and University of Messina, Italy*)
- 09:50-10:10 Decision Support Tools for contaminated land characterization (*Mr. Carlos Pachon, US-EPA, U.S.A.*)
- 10:10-10:30 Experiences of DSTs development in the field of soil and groundwater remediation technologies assessment and selection (*Mr. A. Lodolo, ICS-UNIDO, Italy*)
- 10:30-11:00 Discussion
- 11:00-11:30 **Coffee Break**

Session Four

OPEN PROBLEMS AND INITIATIVES IN THE FIELD OF ENVIRONMENTAL POLLUTION REDUCTION AND REMEDICATION

Environmental situation, open problems, ongoing and planned initiatives and possible follow-up actions in Mexico and other Latin American countries

Chairpersons: Mr. M. Martínez Rosalez, Mr. C. Pachon

Country / Institutional programs' Reports.

Urgent problems, needs and initiatives in water and land resources management in Latin American countries. Main topics to be dealt with:

- General strategy for water resources management, water treatment and soil remediation, priorities, long and short term objectives.
- Gaps and needs for remediation technologies, tools for contaminated water and soil treatment,
- Eco-toxicology and industrial pollution
- On-going and planned projects.
- Funding opportunities and schemes Project proposals' presentation

11:30-13:00

- (6 Country/Institute representatives contribution, 15 min. each):
- **Brazil** (Mr. Eudiseo Vilar, Electrochemical treatment in waste water)
- **Cuba** (Tratamiento de aguas para consumo humano, Mrs. María del Carmen Espinosa, CNIC)
- **Peru Research in** Electro-remediation process (Mrs. Flora Nelly Bravo)
- **Uruguay** (Risk in contaminations of rivers for industrial activity Mrs. Anahit Aharonian, Multisectorial Organization.)
- **Mexico** Bio-treatments of contaminated soils (Mr. Roberto Zazueta, Universidad de Guanajuato)
- **Mexico** (Bio-remediation of soils contaminated with organochloride pesticides. Mrs. Refugio Rodríguez Vazquez, Cinvestav, Mexico).
- **Venezuela** (Experiences of Biodegradation in soil. Venezuela case of Study Dra. Carmen Infante, *Universidad Central de Venezuela*)

13:00-14:30 Lunch Break

Session Five

**UNIDO CLEANER PRODUCTION CENTRES
INITIATIVES/PROGRAMS
RELATED TO POLLUTION REDUCTION/PREVENTION**

Chairpersons: Mrs. M. Sanchez-Osuna, Mr. J. M. Domínguez-Esquivel

14:30-15:45 Contribution of representatives of UNIDO Cleaner Production Centres from the Region (15 min. each):

- **Cuba** (*Mr. Alejandro Rivera, Mr. Julio Antonio Martinez, NCPC*)
- **Guatemala** (*Mrs. Maria Amalia Porta, NCPC*)
- **Honduras** (*Mr. Daniel Ayes, NCPC*)
- **Mexico** (*Mr. Guillermo Morales, NCPC*)
- **Nicaragua** (*Mr. Cesar Barahona, NCPC*)

15:45-16:15 Coffee Break

Session Six

FOLLOW-UP ACTIVITIES, COMMON INITIATIVES, RECOMMENDATIONS AND CONCLUSIONS

Panelists: *Mrs. M. Sanchez-Osuna, Mr. J. M. Domínguez-Esquivel, Mr. M. Martínez Rosales, Mr. C. Pachon, Mr. D. Mueller, Mr. G. Centí, Mr. A. Lodolo.*

16:15-17:30 Identification and development of possible common initiatives: follow-up activities development :

- Proposals development
- Presentation and discussion of results
- Definition of follow-up activities and relevant action plan

17:30-18:00 Recommendations and conclusions of the Workshop.

Annex II

ICS-UNIDO Workshop on "Water and Soil Remediation Technologies"
Guanajuato, Mexico 11 – 12 December 2006

LIST OF PARTICIPANTS

Invited int.l lecturers	Country	Address
Mr. Francisco Martínez González		Director de la Facultad de Geomática e Hidráulica Universidad de Guanajuato, Mexico Tel 01 473 73 21185 ext. 2203, 2211. fmarti@quijote.ugto.mx
(2) Mr. Andrea Lodolo	Italy	ICS-UNIDO Scientific Advisor Area of Pure and Applied Chemistry AREA Science Park, Padriciano, 99 34012 Trieste, Italy Phone: +39-040-9228112/8116 Fax: +39-040-9228115 E-mail: Andrea.Lodolo@ics.trieste.it
(3) Mrs. Mayra Sanchez Osuna	Austria	Cleaner Production and Environmental Management UNIDO – Vienna, Austria Tel: +43 1 26026/3945, E-mail: msanchez-osuna@unido.org
(4) Mr. Carlos S. Pachon	USA	US-EPA Office of the United States Trade Representative

		<p>Executive Office of the President Washington, Washington D.C. - USA Phone: (202) 395-6130 E-mail: Carlos_Pachon@ustr.eop.gov</p>
(5) Mr. Gabriele Centi	Italy	<p>Department of Industrial Chemistry and Materials Engineering University of Messina Salita Sperone, 31 98166 Messina, Italy Phone: +39-90-676765609 fax: +39-90-391518 E-mail: centi@unime.it</p>
(6) Mr. Dietmar Mueller	Austria	<p>Umweltbundesamt Spittelauer Lände 5 1090 Vienna - Austria Phone: +43 (1) 31304 5913 E-mail: dietmar.mueller@umweltbundesamt.at</p>
(7) Mr. J. M. Dominguez-Esquivel	Mexico	<p>Jose' Manuel Dominguez Esquivel Petroleum Institute of Mexico Catalysts and Chemical Products Competency Eje Central Lázaro Cárdenas 152 07730 México D.F. MÉXICO Fax: +525-333-6239 Email: jmdoming@imp.mx</p>
(8) Mr. Eudiseo Vilar	Brazil	<p>Universidade Federal de Campina Grande – PB, Brasil Unidade Acadêmica de Engenharia Química</p>

			<p>Laboratório de Engenharia Eletroquímica vilar@deq.ufcg.edu.br</p>
(9) Mrs. María del Carmen Espinosa	Cuba	<p>CNIC Dpto. de Estudios sobre Contaminación Ambiental (DECA). Centro de Investigaciones del Ozono. Centro Nacional de Investigaciones Científicas (CNIC). Calle. 25 y 158. Cubanacán. Playa. Ciudad de La Habana. Cuba. tel. (537) 271-8897. mail: maria.espinosa@cnic.edu.cu; msuarez@infomed.sld.cu</p>	
(10) Mrs. Flora Nelly Bravo Nahui	Peru-Brazil	<p>Universidade Federal de Campina Grande – PB, Brasil Unidade Acadêmica de Engenharia Química Laboratório de Engenharia Eletroquímica floranelly@yahoo.com</p>	
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(13) Mr. Cesar Barahona	Nicaragua	<p>NPC Nicaragua Phone: (505) 2783136 mobile: (505) 8850825 e.mail : ceb@cpmlnic.org.ni</p>
(14) Mr. Guillermo Morales	Mexico (Tabasco)	<p>NPC Mexico Phone: (52) 993 357-51-97 gmorales@cmpl.ipn.mx</p>
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(16) Mr. Alejandro Rivera	Cuba	<p>NPC Cuba Phone: (537) 2041046 e.mail: aiejandropml@enet.cu</p>
(17) Mr. Julio Antonio Martinez	Cuba	<p>NPC Cuba Phone: (537) 55 70 06 e.mail: esperanza.valdes@icidca.edu.cu</p>
(18) Mr. Hector Poggi-Varaldo,	Mexico	<p>Dept. Biotecnología y Bioingeniería (CINVESTAV) P.O. Box 14-740, Mexico D.F., 07000, Mexico.</p>

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(25) Mr. Elias Razo Flores	México	División de Ingeniería Ambiental y Manejo de Recursos Naturales	

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(26) Mr Raúl Aranda Torres	México	<p>Protección Ambiental Asociación Civil Guanajuato</p>
(27). Mr Sergio Antonio Vallejo Aguilar	México	<p>Profesor Investigador de la Universidad Autónoma de Puebla, Mex. Coordinador del Area de Remediación de Suelos</p>
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Total accommodation and meals and coffeebreak

Annex III

Exponents	admission	departure	Euros		Total room cost	Coffe break
			Room Cost	Euros		
Mr. Ricardo Martinez	10/12/2006	12/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
Mr. Manuel Hernandez Cortazar	10/12/2006	12/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
DMr. Ignacio Gonzalez y Dr. Nava	10/12/2006	12/12/2006	59,94 €	179,83 €	110,82 €	32,94 €
Mr. Eudiseo Vilar	10/12/2006	13/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
Mr. Gabriele Centi	09/12/2006	13/12/2006	53,73 €	214,93 €	55,41 €	16,47 €
Mr. Dietmar Mueller	10/12/2006	13/12/2006	92,81 €	278,44 €	55,41 €	16,47 €
Mr. Anahit Aharonian	09/12/2006	14/12/2006	53,73 €	268,67 €	55,41 €	16,47 €
Mr. Carlos S. Pachon	10/12/2006	13/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
Mrs. Maria Amalia Porta	10/12/2006	13/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
Mr J.M Dominguez Esquivel	10/12/2006	13/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
Mr. Julio Martinez y Mr. Alejandro Rivera	10/12/2006	13/12/2006	59,94 €	179,83 €	110,82 €	32,94 €
Mr. Cesar Barahona	10/12/2006	13/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
Mr. Guillermo Morales	10/12/2006	13/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
Mr. Daniel Ayes	09/12/2006	13/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
Mrs. Carmen Infante	10/12/2006	13/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
Mrs. Refugio Rodriguez y Mrs. Martha Barajas	10/12/2006	13/12/2006	59,94 €	179,83 €	110,82 €	32,94 €
Mrs. Maria del Carmen Espinosa	10/12/2006	13/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
Miss Xochilt Ezquivel Benneton	10/12/2006	10/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
Mr. Elias Razo Flores	10/12/2006	10/12/2006	53,73 €	161,20 €	55,41 €	16,47 €
Mrs. Flora Nelly Bravo Nahui	10/12/2006	13/12/2006	53,73 €	161,20 €	55,41 €	16,47 €

3.558,34 € 1.274,39 € 378,79 €

1.653,18 €

Lodging rooms by
exponents

3.558,34 €

Foods for Exponents

1.653,18 €

Foods By Local Exponents and coffee break of participants

728,19 €

5.939,71 €