

7. 収集資料一式（プロジェクトサイド作成資料）

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(1) 承認された主要な基準や法律

2000 年

分野	タイトル	発行日	法令番号	CENMA の関わり方
AREA	TITLE	PUBLICA-TION No.	DECREEE NO.	CENMA PARTICIPATION
AIR	Emission Standard for non metallic hydrocarbons for light and medium vehicles	2000.9.15	D 103	
WATER	Emission Standard for the regulation of contaminants associated to the discharges of industrial liquid wastes to sewage systems. (Revision of the DS 609/98)	2000.9.26	D3592	Implementation to support the enforcement by SISS

2001 年

分野	タイトル	発行日	法令番号	CENMA の関わり方
AREA	TITLE	PUBLICA-TION No.	DECREEE NO.	CENMA PARTICIPATION
AIR	Quality Primary Standard of lead in the air.	2001.1.6	D 136	
AIR	Atmospheric Prevention and Decontamination Plan for the Metropolitan Region. (Modification of DS 16/98)	2001.4.12	D 20	Active participation in the commissions created for public participation to evaluate and update the Plan. Generation of basic information: Inventory emission RM, Air quality campaigns RM Forecast of air pollution episodes in the RM.
WATER	Emission Standard for the regulation of contaminants associated to the discharges of liquid wastes to Marine and Surface Continental Waters.	2001.3.7	D 90	Implementation to support the enforcement by SISS.

(2) 準備中の主要な基準と法令
 PRINCIPAL STANDARDS AND LAWS IN PROCESS

分野	タイトル	状況	CENMA の関わり方
AREA	TITLE	OBSERVATION	CENMA PARTICIPATION
WATER	Quality Standard to protect uses in continental waters	Presentation of definitive Project to the Ministry council on May 2001.	CENMA has been giving support to Directemar (enforcement of coastal water quality)
AIR	Quality Standard for breathable particulate matter PM10. (Revision of DS 59/98)	Revision on year 2012	Generating data, measurements in different cities
AIR	Primary Air Quality Standards for: SO ₂ , CO, PTS, O ₃ an NO ₂ . (Revision of the Res. 1215/78 and DS 185/91 for SO ₂)	Sent to the General Controller to its register.	Participation in the CONAMA's technical groups of discussion
AIR	Emission Standard of Carbon Monoxide, Total Hydrocarbons Nitrogen Oxides (NOx) and Particulated Matter for Bus with Diesel Motor. (Revision of SD 82/93)	Presentation of Definitive Project to the Ministry Council on May 2001.	
AIR	Emission Standards for NOx for Technical Revision of vehicles with catalytic converter.	Preliminary plan of Standards on Consults.	
AIR	Revision of Emission Standards for Particulate Matter. (DS 4/92. DS 1583/92. DS 1905/93)	Preliminary plan of Standards on Consults.	
POPs	Stockholm Convention related to Persistent Organic Pollutants (POPs). Signed by the Government of Chile on year 2001.	Ratification of the signature countries is being evaluated by them.	CENMA has prepared a proposal for a basic plan to implement this Convention in the country, in order to evaluate the feasibility of the ratification.

Note: DS = Presidential Decree, D = Decree

7-1-2 調査報告書のリスト

(1) 調査報告書のリスト(2000年)

METEOROLOGY, FORECAST AND AIR QUALITY				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
1	CONAMA	Final Report	Meteorology and Air Quality Project, Episode Forecast Subprogram "Evaluation of Meteorological Potential Forecast of PMCA Atmospheric Contamination and 2000 Air Quality Models "	October 2000
2	CONAMA	Final Report	Meteorology and Air Quality Project, Episode Forecast Subprogram "Comparative Analysis of Meteorological Conditions Associated to Atmospheric Contamination Episodes, during the periods 1997, 1998, 1999 y 2000 Autumn-Winter"	October 2000
3	CODELCO	Adviser	"Equipment Certification Study of Air Quality Monitoring and Operation Procedures Advise"	December 2000
4	CONAMA	Advance N°1 and Final Report	"Development of Atmospheric Modeling Capacities"	July-December 2000
5	CONAMA	Advance N°1, N°2 (Part II) and Final Report (Part II)	"Meteorology and Air Quality Project "	September-October-December 2000
6	CONAMA	Final Report	Meteorology and Air Quality Project Subprogram of Episode Forecast "Evaluation of Algorism Performance Proposed by J. Cassmassi in 2000"	December 2000
7	CONAMA	Final Report	Meteorology and Air Quality Project Subprogram of Episode Forecast "Analysis of Meteorological Conditions Associated with Episodes of High Atmospheric Contamination in Santiago's Basin, in the 2000 Autumn-Winter Period"	December 2000
8	CONAMA	Advance and Final Report	"Meteorological and Air Quality Measurements in Temuco and Rancagua for Obtaining Technical-Scientific Background for Generation of Primary Quality Regulation for Fine Particulate Matter PM2.5" Contract N° 21-22-014/00	August-December 2000
EMISSION INVENTORY				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
9	CONAMA	Advance and Final Report	"Improvement of Emission Inventory of Metropolitan Region"	July-December 2000
10	CONAMA	Advance N°1 and N°2. (in execution)	"2 nd Phase Study of Air Quality in Urban-Industrial Regions of Chile" Emission Inventory of Atmospheric Contaminants in the V, VI and IX Regions of Chile. Contract N° 14-22-001/01	October-December 2000

ENVIRONMENTAL IMPACT ASSESSMENT				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
11	CONAMA	Advance and Final reports (25 Projects)	"Applications of Inspection to Support the Follow up and Inspection of Projects Submitted to SEIA"	May-June 2000
12	CONAMA	Final report First and Second Part	"Analysis of Environmental Impact Assessment in Air Quality in Projects Using of Mixture of Coal and Petroleum Coke in Thermoelectric Centrals" Contract N° 13-22-011/00	June-August 2000
INDUSTRIAL LIQUID WASTES				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
13	SISS (Superintendence of Sanitary Services)	Advance N°1, N°2 and Final Report	"Study of Wastewater Discharge Quality, Sampling and Industries and Wastewater Treatment Plant Analysis on the RM, IV, VI, VII, VIII, IX, X Regions"	August October 2000
14	CONAMA	Advance N°1 and Final Report	"Study of Wastewater Discharge Quality" "Diagnostic of Biocides Use in the Metropolitan Region" "Contamination of Underground Waters in the Metropolitan Region"	April - November 2000
INDUSTRIAL SOLID WASTES				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
15	CONAMA	Advance N°1 and Final Report	"Guidelines for Prevention and Control of Contamination, Metalmechanic Industries" Contract N° 21-22-018/00	October 2000
LABORATORY OF ENVIRONMENTAL CHEMISTRY				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
16	CONAMA	Advance N°1, N°2 and Final Report.	Operation Unit "QA/QC Program and Laboratories Accreditation of CENMA"	April-August-December, 2000
OTHERS				
17	CONAMA II	Final report	"Background Analysis in the Problematic Unpleasantness Odors Emanation in the Bellavista's Sector of Antofagasta City" Contract N° 14-22-003-2000	December 29, 2000

(2) 調査報告書のリスト (2001年)

METEOROLOGY, FORECAST AND AIR QUALITY				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
1	CONAMA RM	Final Report	Meteorology an Air Quality Project: Episode Forecasting Sub-Program "Evaluation of Air Quality Forecasting referred to Troposphere Ozone through the Model Developed by J. Cassmassi"	January 2001
2	CONAMA	Final Report	Meteorology an Air Quality Project: "Analysis of Meteorological Conditions Associated with Atmospheric Contamination Episodes by Ozone in Santiago's Basin in 2000 October-December Period"	January 2001
3	CONAMA	Monthly Report (6)	Meteorological Project and Support to the Episodes Management System in the MR. 1. Episode Forecasting:	April-September, 2001
4	CONAMA	Report and Monthly Report (Part of Item 3)	a) "Analysis of Meteorological Conditions Associated to Episodes of High Atmospheric Contamination in Santiago's Basin, in Autumn-Winter Period 2001" b) Meteorological Project and Support to the Episodes Management System in the MR	October 2001
5	CONAMA	Final Report	Meteorological Project and Support to the Episodes Management System in the MR. 2. Complementary Activities: a) "Proposition of a Optimized Meteorological Network for ends of Air Quality Forecast and of Application of Contaminant Dispersion Model"	Sept.-Nov. 2001
6	CONAMA	Advance Report N° 1 and N° 2 (in execution)	"Diagnostic of Atmospheric Contamination at Central Macro zone of Chile: Year 1 Preliminary Diagnostic" Contract N° 21-22-007/01	June - September, 2001
7	CONAMA	Advance Report N° 1 and N°2 (in execution)	"Characterization of Atmospheric Contamination for Particulate Matter in South Cities of Chile" Background for Generate Regulation for PM2.5" Contract N° 14-22-004/00	July 03, 2001
8	Ministry of Public Works, Transport and Telecommunications (MOP)	Advance Report N° 1 and N°2 (in execution)	"Development of an Automatic Update System of Emission Inventory of Mobil Source Sector" First Part.	September 2001
9	Construction Chilean Chamber. Agreement of Clean Production	Advance Report N° 1 and N°2. (in execution)	"Technologies for Reduction of Atmospheric Contamination in Construction Works"	June, October 2001
10	CONAMA RM	Advance Report N°1 and N°2. (in execution)	"Atmospheric Diagnosis of Street Aspirated Dust Program, Period 2000-2001"	January-November 2001
11	MINSAL (Health Ministry)	Advance report N°1	"Study of Air Quality and Meteorology Measurements at V and VI Region"	November 2001

EMISSIONS INVENTORY				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
12	CONAMA	Final Report Executive Summary	"2 nd Phase Study of Air Quality in Urban-Industrial Regions of Chile" Inventory of Atmospheric Contaminants Emissions in the V, VI and IX Regions of Chile" Contract N° 14-22-001/01	May 14, 2001
13	CONAMA	Advance Report N°1 and N°2. Final Pre-report (in execution)	"Elaboration Atmospheric Emission Inventory for the Zone Called Gran Concepción" Contract N° 14-22-001/00	June 29-July 31, October 30, 2001
INFORMATION SYSTEM				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
14	CONAMA	Advance Report N°1, N°2 and Final Pre-Report	"Design of a Project for a Integrated Information System of Emissions and Air Quality, Water, Wastes and Noise" Contract N° 21-22-009/01	August 07-October 08-November 2001
15	CONAMA	Contract in Negotiation	"Design of Support Information System to Environmental Inspection Management in Chile: First phase"	October 2001
ENVIRONMENTAL IMPACT ASSESSMENT				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
16	CONAMA	Edelnor and Guacolda Final Report	"Support for the Evaluation of Air Quality Impact Associated to the Use of Carbon and Petroleum Coke mixture (pet-coke) in Thermoelectric Centrals" Contract N° 11-22-017/00 (Modified)	May-September, 2001
17	CONAMA	Preliminar Version	"Impact Evaluation Manual on Emission Air Quality by Mega sources"	July 2001
18	CONAMA		Analysis of samples for the Pet-coke Thermoelectric Project" Contract N° 13-22-017/00	
19	CONAMA Region X	Final Report	"Support to the Environmental Impact Assessment of the Landfill Project of Industrial Organic Wastes and Domestic Waste Dumping" Contract N° 13-21-059/00	April 31, 2001
INDUSTRIAL SOLID WASTES				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
20	CONAMA Region X	Advance Report N°1, N°2 and Final	"Advise for Design, Construction, Operation and Training of a Demonstrative Installation of Sanitary Landfill. Guideline for RSD in the Localities of Paillaco-Futrono, Region X" Contract N° 21-22-021/00	February-March-May, 2001
21	CONAMA	Advance Report N°1, N°2 and Final	"Design for Plan Elaboration of Domestic Solidwastes Management" Contract N° 21-22-002/01	July 30-October 08, 2001
22	CONAMA	Final Report	"Field Visit and Technical Opinion about Wastes Pile on Different Points of 1 st Region" Contract N°13-22-005/01	October 12, 2001
23	ESCONDIDA	Final report	"Characterization of Hazardous Solidwastes	October

	MINING		for the Escondida Mining Enterprise: Recommendations of Management"	2001
24	CONAMA Region XI	Advance Report Nº1 and Nº2. Final Pre-report (in execution)	"Management of Urban Solid Wastes of 3 Sanitary Landfill in XI Region" (Advise in Design and Supervision of Management and Urban Solid Wastes and Commissioning of Sanitary Landfield for Small Communities) -Design Cerro Castillo Lanfield -Design Puerto Tranquilo Landfield -Design Caleta Tortel Landfield -Contribution EIA Cerro Castillo	September 24-October 22, November 10, 2001
LABORATORY OF ENVIRONMENTAL CHEMISTRY				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
25	CONAMA	Advance Report Nº1 and Certification	"Program of CENMA's Laboratories Accreditation"	May 2001
26	DIRECTEMAR (Chile's Navy)	Final Report Volume I, II and III. Annex.	"Program of Littoral Environment Observation" (POAL)	1 st Semester 2001
27	DIRECTEMAR (Chile's Navy)	Pre-Report Volume I, II and III. Conclusions and Annex.	"Program of Littoral Environment Observation" (POAL)	2 nd Semester 2001 October 2001
28	Analytical Chemistry Division Chemical Science and Technology Laboratory National Inst. of Stand. and Technology.	Preliminary Report	"Intercomparison CCQM-P11 Study Arsenic in Shellfish"	Sept. 18 2001
29	ESCONDIDA MINING	Final Report Laboratory Annex	"Characterization of Hazardous Solidwastes for the Escondida Mining Enterprise: Analysis of Hazardous Wastes"	October 2001
30	CONAMA	Advance Report Nº1 , Nº2 and Nº3 (in execution)	"Characterization of Polychlorate Biphenyl (PCBs) in Urban Atmosphere of Metropolitan Region" Contract Nº 14-22-003/01	July 13- August 27, 2001
31	DMC Meteorologica I Direction of Chile) - CENMA		"Campaign of Short Term Field Measurements of Atmospheric Contaminants" Characterization of Hydrocarbons, Ozone, Nitrogen Dioxide, Carbonyls and Inorganic Aerosol within the Central Zone of Chile"	March-April 2001
OTHERS				
No.	機関	報告書のタイプ	業務名 (タイトル)	時期
32	CONAMA	Advance Report Nº 1, 2, 3 and Final Report.	"Proposal of Information System to Support the Implementation in Chile of the International Convention about Persistent Organic Pollutants (POPs)" Contract Nº 21-22-005/001	July 06- September 20-Nov. 02- Dec. 03, 2001

7-1-3 研修コース実施実績

(1) 研修コース実施実績 (2000年)

No.	コース名	実施時期	参加者	参加者数	資金源	講師
1	SEIA Common Plan (1 st Version)	July 24-August 05, 2000	CONAMA, COREMA, HEALTH SERVICES	20	CONAMA	CENMA-Externs
2	SEIA Common Plan (2 st Version)	August 21 - Sept. 02, 2000	CONAMA, COREMA, HEALTH SERVICES	20	CONAMA	CENMA-Externs
3	SEIA Common Plan (3 st Versio)	September 25-October 07, 2000	CONAMA, COREMA, HEALTH SERVICES	20	CONAMA	CENMA-Externs
4	SEIA Common Plan (4 st Version)	October 16 - 29, 2000	CONAMA, COREMA, HEALTH SERVICES	20	CONAMA	CENMA-Externs
5	SEIA Common Plan (5 st Version)	November 06-18, 2000	CONAMA, COREMA, HEALTH SERVICES	20	CONAMA	CENMA-Externs
6	Guide Seminary Environmental Assessment	November 30-December 01, 2000	AGRICULTURE AND CATTLE SERVICE	28	SAG	CENMA-Externs
計				128名		

(2) 研修コース実施実績 (2001年)

No.	コース名	実施時期	参加者	参加者数	資金源	講師
1	SEIA	January 08-20, 2001	CONAMA	23	CONAMA	CENMA- Externs
2	Evaluation Workshop of Atmospheric Emissions Impact from Big Sources	May 10-12, 2001	CONAMA, COREMA HEALTH SERVICES	20	CONAMA	CENMA
3	SEIA Common Plan Contract N° 13-22-004/01	August 06-Sept. 28, 2001	COREMA	25	CONAMA	CENMA- Externs
4	SEIA Common Plan Contract N° 13-22-004/01	October 01-Nov. 23, 2001	COREMA	25	CONAMA	CENMA- Externs
5	SEIA Common Plan Contract N° 13-22-004/01	Nov. 26-Jan. 18, 2001	COREMA	25	CONAMA	CENMA- Externs
6	"Analysis of Organic chlorides Pesticides on Surface Waters"	August 24-Sept. 04, 2001	CENMA, U. Chile Public Health Institute (ISP)	4		Short Term Japanese Expert
7	"Toxics Effects and Genotoxics of Physics and Chemical Agents of Laboral Environment"	Nov. 14-30, 2001	INDUSTRIES IN GENERAL SENCE: 12-34-6362-29	20	SENCE Code	CENMA
8	"Basic Notions in Solid Waste Sampling"	Dec. 12 -14, 2001	INDUSTRIES IN GENERAL			• CENMA
計				142名		

NOTA: SEIA = System of Environmental Impact Assessment

7-1-4 セミナー開催実績

(1) セミナー実施実績 2000年

セミナー（一般公開）				
N°	場所	発表者	テーマ	年月日
1	CENMA		"Meeting of CENMA-North Catholic University"	2000年 9月5日
		Dr. Hugo Alonso (UCN)	"Hydric Resources Investigation and its Impact in Economy and Regulations"	
		Ms. Natalia Maraboli (CENMA)	"Quality Assurance Management in an Environmental Laboratory"	
		Dr. Pedro Ortega (UCN)	"Contamination of Loa's river"	
		Chem. Ana María Sancha (チリ大学)	"Environmental Regulation Background of Arsenic in Chile"	
		Mr. Mario Oyanader (UCN)	"UCN's Environmental Engineering Program"	
		Mr. Leonardo Romero (UCN)	"UCN's Post grade and Investigation Program"	
	Mr. Nestor Garrido (UCN)	"Work Group Strengths of Antofagasta's UCN"		

日本人専門家によるセミナー（内部セミナー）				
N°	場所	発表者	テーマ	年月日
1	CENMA	桜井 國俊 (短期専門家)	"Industrial Solid waste Management in Japan - Teshima Case"	2000年 8月9日
2	CENMA	渡邊 靖二 (短期専門家)	"General Methodology for Curriculum Development"	2000年 8月17日
3	CONAMA	今村 清 (短期専門家)	"Analysis of Hazardous Organic Air Pollutants in PCDDs, PCDFs and PCBs"	2000年 11月17日
4	CENMA	栗谷 泰 (短期専門家)	"Analysis of Petroleum Oil Product"	2000年 11月17日

チリ側カウンターパートによるセミナー（内部セミナー）				
N°	場所	発表者	テーマ	年月日
1	CENMA	Chem. Rubén Verdugo	"Hazardous Waste Management and Regulations in USA."	2000年 6月16日
2	CENMA	CENMA, CONAMA, U. Chile, U. Cat., U. of Serena, Institute Fraunhofer- Germany	"Urban and Regional Atmospheric Modeling in Chile"	2000年 6月27日
3	CENMA	Dr. Pablo Richter	"Screening Methods in Analytical Chemistry"	2000年 7月6日
4	CENMA	Dr. Miguel Varcárcel Cases, Cordova University, Spain.	"Metrology in Chemistry and Analytical Problems"	2000年 7月21日
5	CENMA	Mr. Cristian Riquelme	"Quality Control in Microbiologic Analysis"	2000年 7月27日
6	CENMA	Mr. Rodrigo Parra	"Metal Evaluation in Drinking Water and Biomonitoring"	2000年 8月24日
7	CENMA	CENMA's Specialists in Projects and Laboratories	"Presentation of CENMA and its Principal Activities"	2000年 8月30日
8	CENMA	Ms. Natalia Marabolí	"Quality System in CENMA's Laboratory"	2000年9月

(2) セミナー実施実績 2001年

セミナー (一般公開)				
N°	場所	発表者	テーマ	年月日
1	CENMA		Week of CENMA's Seminar	2001年6月18日～22日
		Prof. Humberto Fuenzalida	"Global Climate Change"	
		Mr. Manuel Merino	"Meteorological Potential of Atmospheric Contamination"	
		Eng. Pablo Ulriksen	"Air Quality Forecast for Santiago"	
		Eng. Andrés Cabello	"Atmospheric Modeling Applications"	
		Dr. Pablo Richter	"Quality Assurance"	
		Chem. Rubén Verdugo	"Analytical Methodologies"	
		Dr. Rodrigo Romero	"Atmospheric Chemistry of Santiago"	
		Eng. Roberto Corvalán	"Emission Inventory at Regions"	
		System Analys Pía Daroch	"Administration System of Emission Inventory"	
		Eng. Alfredo Rihm	"Projects of Waste Management in the XI Region"	
		Eng. José Arellano	"Experience of Intercommunal Sanitary X Region"	
2	CENMA		"Study about Arsenic Contamination in Mining Activities"	2001年10月5日
		Ms. Nella Marchetti (CONAMA)	"Arsenic Base Line in Chile"	
		Dr. Hugo Alonso (UCN)	"Origin and Levels of Arsenic in the Environment of the II Region"	
		Dr. Enrique Román (CODELCO)	"Current and Emergent Technologies in the Control of Arsenic Dejection in National Mining"	
		Eng. Pablo Ulriksen (CENMA)	"Arsenic Concentration in Atmospheric Particulate Matter in Chile"	
		Mr. Cristian Riquelme, Sr. Manuel Ellahueñe (CENMA)	"Biologic Assays Systems for Ecotoxicologic and Genotoxic Evaluation of the Exposition to Arsenic"	
		Mr. Rodrigo Parra (CENMA)	"Arsenic Speciation Method in Environmental and Biologic Matrix"	
3	CENMA		"Endocrines Disruptors, Effects of Tributyltin (TBT)"	2001年10月10日
		Dr. Italo Serey (Faculty of Sciences. U. Chile)	"Environmental Introduction to Endocrine Disruptors Theme"	
		Dr. Carlos Gallardo (U. Austral)	"Reproduction System Alterations in Marine Snails of Chile Attributed to Contamination by TBT"	
		Dr. Koji Arizono (短期専門家)	"Advanced Investigation in Endocrine Disruptors in Japan"	
		Eng. Alfredo Rihm (CENMA)	"Applicability of Stokholm Convention's about POPs in Chile"	
		Ms. Gabriela Quiroz (CENMA)	"Analytical Techniques in Tributyltin (TBT) Determination"	
		Prof. Cecilia Osorio (Fac. of Sciences. U. de Chile)	"Investigation and Studies of Cases"	

4	CONAMA RM		"Discussion Workshop in the theme of Stokholm Convention about Persistent Organic Pollutants (POPs)"	2001年 11月13日
		Eng. Alfredo Rihm (CENMA) Dr. Chemistry, Rodrigo Romero	"Background about Persistent Organic Pollutants"	
		Mr. Raúl Campusano, Lawyer, CENMA's Adviser.	"Stokholm Convention. Analysis of the Convention Document and its Implementation in Chile"	
		Eng. Jaime Escobar, CENMA	"Life Cycle of POPs and Support System for the Stokholm Convention Implementation"	
5	UCN, Antofagasta			2001年 11月15日
6	Concepción			2001年 11月27日

日本人専門家によるセミナー（内部セミナー）

N°	場所	発表者	テーマ	年月日
1	CENMA	鈴木 行夫 (短期専門家)	"Analytical Techniques for Atmospheric Organic Compounds"	2001年 7月24日
2	CENMA	鈴木 行夫 (短期専門家)	"GC/MS Analysis of TO-14 Using Canister"	2001年 8月29日
3	CENMA	有菌 幸司 (短期専門家)	"Advanced Investigation in Endocrine Disruptors in Japan "	2001年 10月10日
4	CENMA	石橋 康弘 (短期専門家)	"Wastewater Management and Treatment for Laboratories"	2001年 10月12日
5	CENMA	西江 博 (長期専門家)	"A Case of Study of Data Check Using Red MACAM Data"	2001年 11月16日

チリ側カウンターパートによるセミナー（内部セミナー）

N°	場所	発表者	テーマ	年月日
1	CENMA	Dra. María Dolores Luque de Castro (U. Córdoba España)	"Automatization of Solid Samples Pre- Treatment"	2001年 1月31日
2	CENMA	Mr. Rodrigo Seguel (CENMA)	"Analytical Chemistry Characterization of Sewage and Industrial Liquid Waste Treatment Plant "	2001年 2月2日

7-1-5 学会発表実績

(1) 学会参加記録 2000年

N	学会名称	年月日	発表者	開催地	発表内容
1	The Sixteenth International Conference on Solid Waste Technology and Management Pittsburgh Conference	2000年 12月10日～13日	Mr. Rubén Verdugo	New Orleans, Louisiana, USA	"Evaluation of Synthetic Precipitation Leaching Procedure (SPLP) in Solid Wastes"
2	The Sixteenth International Conference on Solid Waste Technology and Management Pittsburgh Conference	2000年 12月10日～13日	Eng. Alfredo Rihm	New Orleans, Louisiana, USA	"Review of the Development of an Industrial Solid Waste Management System, Case of Chile"

(2) 学会参加記録 2001年

N	学会名称	年月日	発表者	開催地	発表内容
1	Pittsburgh Conference	March 04-09, 2001	Dr. Rodrigo Romero	New Orleans, Louisiana, USA	"Determination of Secondary Aerosols in Urban Areas-Santiago Metropolitan Region"
2	Pittsburgh Conference	March 04-09, 2001	Dr. Pablo Richter	New Orleans, Louisiana, USA	"Efficient Screening Method for Determining Polychlorinated Biphenyl in Soil and Polyaromatic Hydrocarbons in Suspended Particulated Matter"
3	V Ibero-American Congress of Mechanical Engineer, Venezuela Mérida"	October 23-26, 2001	Dr. Roberto Corvalán	Mérida, Venezuela	"Environmental Impact Assessment of Natural Gas Introduction in the Industrial Region of Metropolitan Region of Santiago-Chile."
4	2º Ibero-American Congress of Environmental Chemistry and Physics, Cuba, Varadero.	November 05-09, 2001	Eng. Andrés Cabello	Varadero, Cuba	"Trajectory Analysis in Santiago-Basin"
5	2º Ibero-American Congress of Environmental Chemistry and Physics, Cuba, Varadero.	November 05-09, 2001	Dr. Raúl Morales	Varadero, Cuba	"Spatial and Temporal Distribution of O3 in Focal Points of Santiago's City"
6	Chemical Chilean Congress	November 28-30, 2001	Dr. Rodrigo Romero	Temuco, Chile	"Ozone Precursor – Determination of Non-metallic Hydrocarbons Profiles During High Contamination Periods in the Metropolitan Area of Chile"
7	Chemical Chilean Congress	November 28-30, 2001	Ms. Katia Calderón	Temuco, Chile	"Determination of Organotin Compound (Tributyltin) in Environmental Matrix by GC-MS"
8	Chemical Chilean Congress	November 28-30, 2001	Mr. Rodrigo Seguel	Temuco, Chile	"Development and Validation of Analytical Methods for the Speciation of Arsenic in Natural and Biological Environmental Matrix"

7-1-6 研究業績 (2000年～2001年)

NO.	機関	報告者	研究名称等	時期
1	Scientific Cooperation Program with Ibero-America 1999 -2000	Pablo Richter	“Development of Automatized Methods of Soils and Sludges Pretreatment for PCBs Leaching; Use of Over-boiled Water in Continuous Regimen and of Assisted Soxhlet Extractor by Focalized Microwave” Joint Project of Investigation University of Cordoba, Faculty of Sciences Dept. of Analytical Chemistry and Ecology (with Spain's Government)	1999-2000
2	FONDECYT (National Fund of Scientific and Technologic Development)	Pablo Richter	“Development of Screening Method as an Analytical Tool of Quick Answer in the Presence of Inorganic and Organic Contaminants in Environmental Matrix” (with FONDECYT 's fund)	March 15 2001
3	UCN, CENMA, JICA		“Arsenic Project: Implementation, Analytical Methodology for As Speciation and Analysis of Real Samples” (JICA's Cooperation)	2001

7-2-1 応用プログラムのリスト、気象データリスト、気象庁との交換データリスト

(1) ワークステーションにインストールしたプログラムのリスト

Item	名称	コメント
1	Fortran 77	Compiler
2	Fortran 90	Compiler
3	C	Compiler
4	GrADS	Visualization tool
5	Misc. routines	Routines to automatically get meteorological data from Internet and observational data from local network
6	LAS	Simulation model

(2) ワークステーションに取り込んだデータ

Item	名称	コメント
1	Topography	data
2	Land use	data
3	Meteorological data	observational data from local network and meteorological fields provided by a weather forecast model ETA (CPTEC Brazil) twice a day

(3) 気象庁と相互交換しているデータのリスト

Item	名称	コメント
1	Surface Meteorological Information for the Central Zone of Chile	14 Meteorological Stations
2	Radiosonde Data	Santo Domingo Station (twice a day) Juan Fernández (when observations start again)
3	Forecasts	General Forecasts (once a day)

Le 1 de agosto de 2001

Dr. Pablo Richter Duk
CENMA
Unidad de Operaciones
Avenida Larrain 9975
La Reina, Santiago
Chile

N/Ref. : 901

Asunto : Solicitud de acreditación

Estimado Dr. Richter.

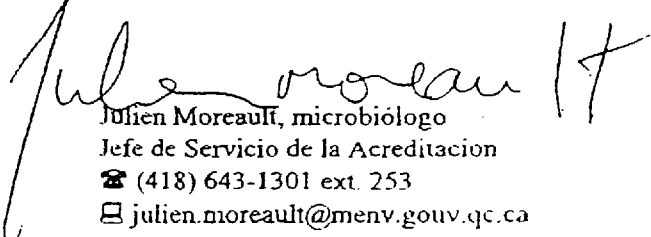
Tenemos el placer informarle de que recomendaremos al Ministro del Medio Ambiente de Quebec, el Sr. André Boisclair, la acreditación de la Unidad de Operaciones del CENMA relativo a la solicitud de acreditación para el análisis químico de la agua, de lodos, de desechos, de suelos y del aire.

La Unidad de Operaciones ha cumplido los requisitos del Programa de Acreditación del ministère de l'Environnement du Québec para los dominios presentados en el documento adjuntado.

Estamos disponibles para cualquiera pregunta relativa a este tema y le rogamos recibir nuestros saludos cordiales.

JM/BP/

Adj.


Julien Moreault, microbiólogo
Jefe de Servicio de la Acreditación
☎ (418) 643-1301 ext. 253
✉ julien.moreault@menv.gouv.qc.ca

Service de l'accréditation
1665, boul. Wilfrid-Hamel Ouest
Edifice n° 2, bureau 1 03
Québec (Québec) G1N 3Y7

Téléphone : (418) 643-1301
Télécopieur : (418) 528-1091
Internet : <http://www.menv.gouv.qc.ca/ceaeq>
Courriel : ceaeq.tra@menv.gouv.qc.ca

August 1st, 2001

Dr. Pablo Richter Duk
CENMA Operation Unit
Av. Larrain 9975
La Reina, Santiago
Chile

N/Ref. : 901

Subject: Request of Accreditation

Dear Dr. Richter,

We have the pleasure to inform you that we will recommend to the Environment Minister of Quebec, Mr. André Boisclair, the accreditation of CENMA's Operation Unit in relation to the accreditation request for chemical analysis of water, sludge, wastes, soils and air.

The Operation Unit has fulfill with the requirements of Accreditation Program of the ministère de l'Environnement du Quebec for the domains presented in the attached document.

We are available for any questions related to this theme.

Sincerely yours,

Julien Moreault, microbiologist
Chief of Accreditation Service

7-3-2 国際認証取得項目リスト

ACCREDITATION REQUEST
ACCREDITATION SCOPE

The Operation Unit has fulfilled the requirements of Accreditation Program of ministère de l'Environnement du Québec for the domains presented below:

CHEMIST OF WATER

DOMAIN 11

Barium
Boron
Cadmium
Chromium
Lead

DOMAIN 12

Mercury

DOMAIN 13

Arsenic
Selenium

DOMAIN 15

Cyanide
Fluoride
Nitrates and nitrites
Turbidity

DOMAIN 40

Biochemical Demand Oxygen
Chemical Demand Oxygen

DOMAIN 41

Suspended solids (SS)
Volatile Suspended solids (SSV)

DOMAIN 43

Total solids

DOMAIN 46

Total organic carbon

DOMAIN 49

Phenol index (colorimetric)

DOMAIN 53

Orthophosphates
Total phosphorus

DOMAIN 60

Chloride
PH
Color
Sulfates

CHEMIST OF WATER

DOMAIN 63

Arsenic
Mercury
Selenium

DOMAIN 78

Manganese
Silver

DOMAIN 67

Ammonium Nitrogen
Chlorides
Conductivity
Dissolved Matters
Nitrates and Nitrites
PH

DOMAIN 79

Hexavalent Chromium

DOMAIN 80

Detergents (SAAM)

DOMAIN 68

Aluminum
Chromium
Copper
Iron
Mercury
Nickel
Lead
Sodium
Zinc

CHEMIST OF SLUDGE, WASTES AND SOILS

DOMAIN 200

Corrosivity

DOMAIN 206

Inflammation Point

DOMAIN 210

Leaching

CHEMIST OF AIR

DOMAIN 400

Particulate matter

DOMAIN 404

Particulate matter

Metals: Pb, Cd, Cu, (AS, Fe, Ni, V)

Anions: Cl⁻, Br⁻, F⁻, NO₃⁻, NO₂⁻, PO₄³⁻, SO₄²⁻

Cations: Na⁺, K⁺, Mg²⁺, Ca²⁺, NH₄⁺, Li⁺

DOMAIN 405

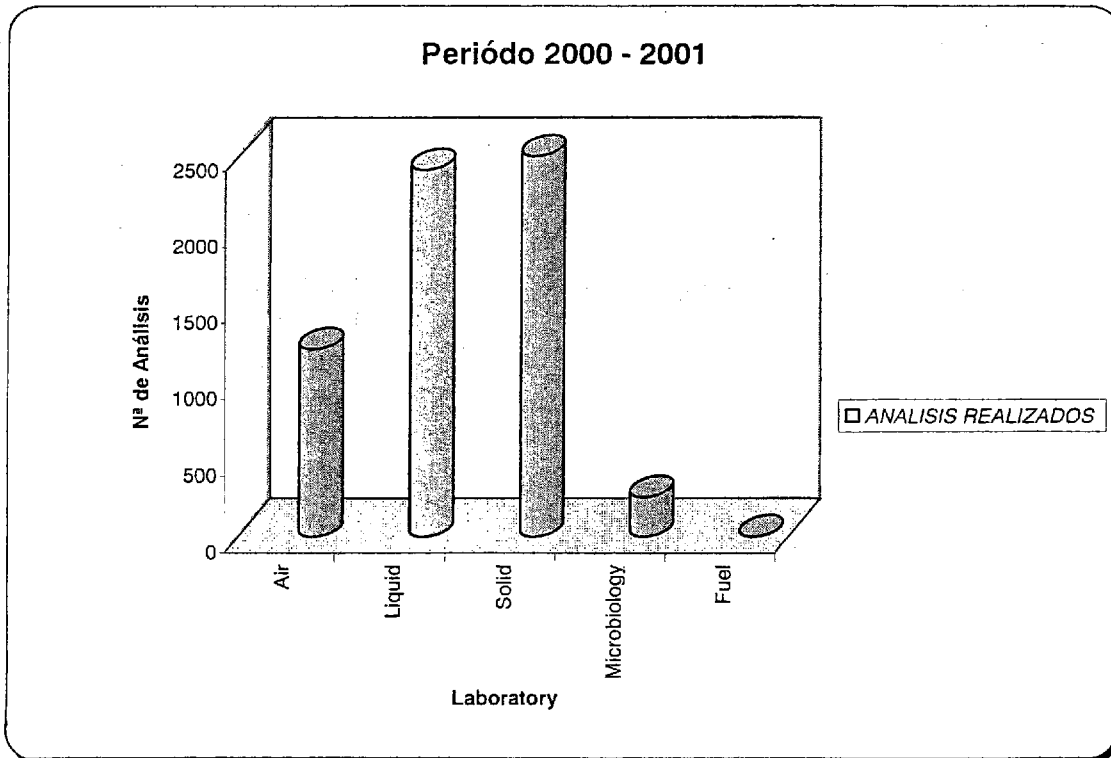
Ozone and Nitrogen dioxide (Passive Diffusion)

7-3-3 分析実施実績

(依頼による分析の実績、 期間： 2000年6月～2001年10月)

MUESTRAS RECIBIDAS PERIODO
JUNIO 2000 - OCTUBRE 2001

ラボ別		分析実績数
LABORATORY		ANALISIS REALIZADOS
大気質	Air	1,225
水質	Liquid	2,404
廃棄物	Solid	2,493
微生物	Microbiology	257
燃料	Fuel	2
計	TOTAL	6,381



EQUIPMENT LIST

7-3-4 機材管理台帳

DATE OF ELABORATION: DECEMBER 03, 2001

NO. EQUIP	NAME OF EQUIPMENTS	MARK/MODEL	PROVIDER	PRICE (US\$)	QUANT	YEAR/MONTH ENTRANCE	SITE OF LOCATION		RESPONSIBLE	CONDITION		REMARKS
							LABORATORY	LAB. CODE		ADMIN	USE	
A-00-01	STANDARD/CHEMICALS REAGENTS	SUPELCO/RTC/ERA/ ChemService	S & B	6,611	19	2001.01	Chemical lab.	Bod.1/Refrig.	Wilson Novoa	A	A	
A-00-02	GLASS MATERIAL	WHEATON/ADAM/ESS/ SPEC/SUPELCO	"	13,688	50	2001.01	Chemical lab.	Bod.: QA-7	Wilson Novoa	A	A	
A-00-03	REAGRENTS AND VIALS FOR MICROTOX	AZUR	TECSIS	11,779	11	2001.10	Chemical lab.	Refrig.	Wilson Novoa	A	A	
A-00-04	CONDUCTIVITY ELECTRODE	HORIBA	"	2,006	3	2001.10	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	C	
A-00-05	CARTRIDGES FOR SOLID PHASE EXTRACTION (SEP PAK PLUS)	WATERS	IADET	5,820	50	2001.10	Chemical lab.	Bod.: QL-9	Wilson Novoa	A	A	
A-00-06	DIGITAL CAMERA	CANON POWER SHOT S10	CANON CHILE	2,949	3	2000.09	Dirección-jica	DJ-4	Shiro Kikuchi	A	A	
A-00-07	METEOROLOGICAL DATALOGGER, included: WEATHER PROOF ENCLOSURE, 12 x 14 pulg. SINGLE NOTCH BRACKET MOUNT PYRANOMETER	CAMPBELL / CR10X-2M CAMPBELL / ENC12/14 CAMPBELL / 7839 CAMPBELL / LI200X-L10	TECNOL. OMEGA " " "	3,315 454 86 645	2 2 2 2	2001.01 2001.01 2001.01 2001.01	Atmospheric Lab --- --- ---	ML-1 --- --- ---	Javier Vargas --- --- ---	A --- --- ---	B --- --- ---	
A-00-08	PLATINUM CATALYST FOR TOC	SHIMADZU	IVENS	790	5	2000.11	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-09	HIGH SENSITIVITY CATALYST FOR TOC	SHIMADZU	"	991	1	2000.11	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-10	VIALS FOR T.O.C., 42 mL	SHIMADZU	"	562	2	2000.11	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-11	WIND SENSOR, formed for: 1. ANEMOMETER 2. WIND VANE 3. WIND TRANSMITTER, ANALOG SET OF BEARINGS AND GASKET FOR WIND SENSORS	VAISALA / WAA151 VAISALA / WAV151 VAISALA / WAT12 VAISALA / 16644WA	METCOM LTD " " "	989 1,067 1,610 979	2 2 2 20	2001.01 2001.01 2001.01 2001.01	Atmospheric Lab --- --- --- ---	ML-2 --- --- ---	Javier Vargas --- --- ---	A --- --- ---	B --- --- ---	
A-00-12	HUMITY AND TEMPERATURE PROBE	VAISALA / HMP45D	"	1,581	2	2001.01	Atmospheric Lab	ML-2	Javier Vargas	A	C	included accesories
A-00-13	PRESURE TRANSMITTER DIGITAL, PORTABLE WITH CASE	VAISALA / PTB220	"	4,734	1	2001.01	Atmospheric Lab	ML-2	Javier Vargas	A	A	
A-00-14	PRESURE TRANSMITTER DIGITAL	VAISALA / PTB100B	"	1,227	2	2001.01	Atmospheric Lab	ML-2	Javier Vargas	A	B	
A-00-15	GAS (MIXTURES: EPA PROTOCOL AND PRIMARY ESTANDAR)	AGA	AGA	12,939	14	2000.12	Atmospheric Lab	ML-4	Patricio Serrano	A	A	
A-00-16	REGULATOR FOR CORROSIVES GAS	"	"	6,018	6	2000.12	Atmospheric Lab	ML-4	Patricio Serrano	A	C	
A-00-17	ELECTRONIC BALANCE, for Hi-Vol filters	SARTORIUS / LA130S-F	CIENTEC	4,320	1	2000.12	Chemical lab.	QA-4	Jeanette Astudillo	A	C	
A-00-18	INTERNAL PUMP FOR AIR QUALITY EQUIPMENTS 115	API	SK ECOLOGIA	3,016	4	2000.12	Atmospheric Lab	ML-4	Patricio Serrano	A	B	
A-00-19	LAMP FOR SO2 MONITORING	API	SK ECOLOGIA	1,664	2	2000.12	Atmospheric Lab	ML-4	Patricio Serrano	A	B	

EQUIPMENT LIST

DATE OF ELABORATION: DECEMBER 03, 2001

NO. EQUIP	NAME OF EQUIPMENTS	MARK/MODEL	PROVIDER	PRICE (US\$)	QUANT	YEAR/MONTH ENTRANCE	SITE OF LOCATION		RESPONSIBLE	CONDITION		REMARKS
							LABORATORY	LAB. CODE		ADMIN	USE	
A-00-20	LAMP FOR O3 MONITORING	API	"	1,014	2	2000.12	Atmospheric Lab	ML-4	Patricio Serrano	A	B	
A-00-21	ZERO AIR GENERATOR, 220 V	API / 701	"	4,077	1	2000.12	Atmospheric Lab	ML-4	Patricio Serrano	A	B	
A-00-22	MANIFOLD SAMPLER FOR AIR QUALITY STATION	ACE GLASS	"	3,380	1	2000.12	Atmospheric Lab	ML-4	Patricio Serrano	A	C	
A-00-23	CRYOGENIC TRAPS FOR ATD	PERKIN ELMER L427-1106	PERKIN ELMER	1,062	10	2000.10	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	A	
A-00-24	THERMAL DESORTION TUBES, SS	PERKIN ELMER L427-0123	"	2,360	5	2000.10	Chemical lab.	Bod.: QA-7	Wilson Novoa	A	A	
A-00-25	CAPILARY COLUMN, BPX-624	SGE / BPX624	MELVYN BECERRA	1,461	2	2001.01	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	A	
A-00-26	MULTISTANDARD FOR ETAAS	SGE 323A-CS1	"	170	1	2001.01	Chemical lab.	Refrig.	Wilson Novoa	A	A	
A-00-27	PISTON FOR TEOM PUMP	THOMAS	ANALIT. WEISSE	1,711	2	2000.11	Atmospheric Lab	ML-4	Patricio Serrano	A	A	
A-00-28	WORKSTATION	SUN SPARC U80/4450	CIENTEC	34,200	1	2001.01	Atmospheric Lab	MA-8	Andrés Cabello	A	A	
A-00-29	GROUNDWATER SAMPLER	GEOLOG / MASTER-FLO	ECOPRENEUR	7,500	1	2001.01	Chemical lab.	QS-2	Cristian Borie	A	C	
A-00-30	GLASS MATERIAL	PYREX-CORNING, BRAND	MERCK QUIMICA	10,526	566	2001.02	Chemical lab.	Bod.: QA-7/QC	Wilson Novoa	A	A	
A-00-31	MOVIL EXTRACTION CHAMBER	LABCONCO / 69100-01	S & B	22,962	1	2001.01	Chemical lab.	QA-2	Daniel Valenzuela	A	C	
A-00-32	GLASS MATERIAL (SOXHLET)	KONTES	"	2,541	10	2001.01	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	A	
A-00-33	GLASS MATERIAL (Extractor/Concent. Apparatus)	KONTES ZX8057A	"	3,327	2	2001.01	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	B	
A-00-34	ACCESSORIES FOR AAS	TJA SOLUTIONS	DEL CARPIO	3,439	13	2000.12	Chemical lab.	Bod.: QL-9/QC	Wilson Novoa	A	B	Lamp and Cells
A-00-35	TEFLON VESSEL FOR MACROWAVE DIGESTOR	MILESTONE	"	4,520	48	2000.12	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	B	
A-00-36	COLUMN NUT	AGILENT TECHNOLOGIES	ANALITICA WEISSE	562	20	2001.03	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	A	
A-00-37	GRAPHITE FERRULE	AGILENT TECHNOLOGIES	"	995	20	2001.03	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	A	
A-00-38	HIGH PRESSURE MERLIN MICROSEAL (septa and nut)	AGILENT TECHNOLOGIES	"	1,299	5	2001.03	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-39	MANUAL DECAPPER, para tapas 11 mm	AGILENT TECHNOLOGIES	"	432	2	2001.03	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	C	
A-00-40	QUARTZ CELL, for spectrophotometer	AGILENT TECHNOLOGIES	"	480	6	2001.03	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	B	
A-00-41	CARTRIDGES FOR SPE (Envicarb y Envirochrom)	SUMTECH INC.	"	1,571	10	2001.03	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-42	CANISTER	X21LN	"	4,500	12	2001.01	Chemical lab.	QC-13	Verónica Muñoz	A	C	
A-00-43	AIR SAMPLING PUMP, 20-225 mL/min	SUPELCO	S & B	3,616	2	2001.01	Chemical lab.	QS-2	Cristian Borie	A	C	
A-00-44	AIR SAMPLING PUMP, 5-5000 mL/min.	SUPELCO	"	4,638	2	2001.01	Chemical lab.	QS-2	Cristian Borie	A	C	
A-00-45	DIGITAL FLOWMETER, Model 520 (0,5-700 mL/min)	SUPELCO / 2-2910	"	821	1	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	C	
A-00-46	CORROSIVITY ASSAY KIT	InVITRO International	"	6,302	2	2001.01	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	C	
A-00-47	CHEMICAL IDENTIFICATION SYSTEM (HAZCAT KIT)	HAZTECH SYSTEMS, INC.	"	8,399	1	2001.01	Chemical lab.	QS-2	Cristian Borie	A	C	
A-00-48	DIGITAL TACHOMETER	DAIGGER	"	603	1	2001.01	Chemical lab.	QS-2	Cristian Borie	A	C	
A-00-49	HEATING MANTLE 3-PLACE, for 500 mL, 220 V	KONTES	"	13,168	2	2001.01	Chemical lab.	QA-1	Verónica Muñoz	A	B	
	included: 3-place power controller, 220 V and											

EQUIPMENT LIST

DATE OF ELABORATION: DECEMBER 03, 2001

NO. EQUIP	NAME OF EQUIPMENTS	MARK/MODEL	PROVIDER	PRICE (US\$)	QUANT	YEAR/MONTH ENTRANCE	SITE OF LOCATION		RESPONSIBLE	CONDITION		REMARKS
							LABORATORY	LAB. CODE		ADMIN	USE	
	3-place splash guard, 500 mL Solvent Recovery System, Linear, for KD Evaporative Concentrators	(All glass)	"									
A-00-50	DIRECT FILL DRUM & TANKS SAMPLER	AMS	"	914	1	2001.01	Chemical lab.	QS-2	Cristian Borie	A	C	
A-00-51	SLUDGE SAMPLER	AMS	"	1,576	1	2001.01	Chemical lab.	QS-2	Cristian Borie	A	C	
A-00-52	FOAM FOR SAMPLES TRANSPORTER (FOAM PAC, 1 L)	ESS	"	293	2	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	C	
A-00-53	POWDER TRAIN MOLD (Ignitability of Solids)	ADAM Co.	"	1,709	1	2001.01	Chemical lab.	QS-7	Katia Calderón	A	C	
A-00-54	HAZARDOUS WASTE FILTRATION UNIT, 2,2 L	ADAM Co.	"	5,413	2	2001.01	Chemical lab.	QS-1	Jeanette Astudillo	A	C	
A-00-55	PURGE & TRAP SOIL SAMPLER	ADAM Co.	"	596	2	2001.01	Chemical lab.	QS-2	Cristian Borie	A	C	
A-00-56	AROMATIC COMPOUNDS	ADAM Co.	"	793	24	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-57	SLUDGE SAMPLER	ADAM Co.	"	4,370	1	2001.01	Chemical lab.	QS-2	Cristian Borie	A	C	
A-00-58	ZERO HEADSPACE EXTRACTOR	ADAM Co.	"	4,297	2	2001.01	Chemical lab.	QS-7	Katia Calderón	A	C	
A-00-59	CORROSIVITY COUPON	ADAM Co.	"	2,417	10	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-60	ANEMOMETERS, 20 to 2000 FPM	ALNOR	"	549	1	2001.01	Chemical lab.	QS-2	Cristian Borie	A	C	
A-00-61	POLYETHYLENE CORROSIVES STORAGE CABINETE	ADAM Co.	"	6,803	3	2001.01	Chemical lab.	QS-10/QA-17	G. Quiroz, V. Muñ	A	A	
A-00-62	ROTATORY EVAPORATORS, DIGITAL, included	BUCHI / B-490	"	8,264	2	2001.01	Chemical lab.	QS-7/QA-1	Calderón y V. Muñ	A	C	
	HEATING BATH, DIGITAL	BUCHI / R-205	"	620	2	2001.01	Chemical lab.	QS-7/QA-1	Calderón y V. Muñ	A	C	
	DESTILACIÓN FLASK, 500 and 1000 mL	BUCHI	"	620	6	2001.01	Chemical lab.	QS-7/QA-1	Calderón y V. Muñ	A	C	
	SUCTION PUMP	BUCHI	"	826	2	2001.01	Chemical lab.	QS-7/QA-1	Calderón y V. Muñ	A	C	
	WOLFF BOTTLE	BUCHI	"	620	3	2001.01	Chemical lab.	QS-7/QA-1	Calderón y V. Muñ	A	C	
A-00-63	PIPETTERS (AIR DISPLACEMENT), 1 mL, 5 mL and 10 mL (adjustable volume)	GILSON	"	1859	3	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-64	BOX VIALS AMBER	ESS	"	868	2	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-65	CAPILARY COLUMN, SUPELCOWAX 10	SUPELCO / 24080U	"	666	1	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-66	TEN-PORT VALVE FOR LC, MANUAL	FISHER	"	3,450	4	2001.01	Chemical lab.	QC-11	Wilson Novoa	A	C	
A-00-67	REPLACEMENT FILTER ELEMENTS ANS SEALS, 2 µm	FISHER	S & B	161	3	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-68	FERRULES, NUTS AND UNION, 1/16" SS	SSI	"	1,880	50	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-69	SIX-PORT VALVE FOR LC, MANUAL	FISHER	"	4,331	6	2001.01	Chemical lab.	QC-11	Wilson Novoa	A	C	
A-00-70	GAS PURIFIERS (FOR: AIR, He, H2 y N2)	FISHER	"	2,310	8	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-71	CAPILARY COLUMN, ZB-1	PHENOMENEX / ZB-1	"	439	1	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-72	PETROLEUM STANDARDS (ASTM Method: D-4815 and D-5580)	CHEM SERVICE	"	301	4	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	

EQUIPMENT LIST

DATE OF ELABORATION: DECEMBER 03, 2001

NO. EQUIP	NAME OF EQUIPMENTS	MARK/MODEL	PROVIDER	PRICE (US\$)	QUANT	YEAR/MONTH ENTRANCE	SITE OF LOCATION		RESPONSIBLE	CONDITION		REMARKS
							LABORATORY	LAB. CODE		ADMIN	USE	
A-00-73	REDUCING UNIONS, (1/4" to 1/16", external) and and (1/16" a 1/32", internal)	SSI	"	950	20	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-74	PACKING FOR COLUMN GC: TCEP	SUPELCO	"	207	2	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-75	DIGITAL FLOWMETER, Model 20 (0,5-20 mL/min)	FISHER	"	630	1	2001.01	Chemical lab.	QC-11	Wilson Novoa	A	C	
A-00-76	CAPILLARY TUBING SS, (0,010" and 0,040" ID)	FISHER	"	190	4	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-77	PACKING FOR COLUMN GC: MOLECULAR SIEVE, 3X	FISHER	"	153	1	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-78	PACKED COLUMN: 20% TCEP	FISHER	"	2,428	3	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-79	HIGHT PRESSURE PREINJECTOR FILTER, 0,5 um	FISHER	"	277	2	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-80	TEE FOR HPLC, 1/16"	FISHER	"	434	10	2001.01	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-00-81	TEMPERATURE CONTROLLER FOR HPLC	Eppendorf TC-50	"	1,136	1	2001.01	Chemical lab.	QC-11	Wilson Novoa	A	A	
A-00-82	MASS FLOWMETER, Helium Gas (0-1 L/mmin)	AALBORG	"	1,188	1	2001.01	Chemical lab.	QC-11	Wilson Novoa	A	C	
A-00-83	DIGITAL PRESSURE GAUGE	FISHER	"	300	2	2001.01	Chemical lab.	QC-11	Wilson Novoa	A	C	
A-00-84	NETSERVER	HP LH6000/550	CIENTEC	19,614	1	2001.02	Information	AI-6	Mario Leiva	A	A	
A-00-85	COMPUTERS	HP Vectra Vel DT P650	"	15,210	10	2001.02	Information	AI-3	Mario Leiva	A	A	
A-00-86	LASER COLOR PRINTERS	HP COLOR LASER JET 4500 DN	"	4,674	1	2001.02	Direcció-n-jica	DJ-3	Mercedes Takaoka	A	A	
A-00-87	BOOK: Manual of Pesticides and Sorbent Extrat. Tech	ISBN: 3-527-27017-27017	S & B	635	2	2001.03	Chemical lab.	QM-13	Pablo Richter	A	B	

EQUIPMENT LIST

DATE OF ELABORATION: DECEMBER 03, 2001

NO. EQUIP	NAME OF EQUIPMENTS	MARK/MODEL	PROVIDER	PRICE (US\$)	QUANT	YEAR/MONTH ENTRANCE	SITE OF LOCATION		RESPONSIBLE	CONDITION		REMARKS
							LABORATORY	LAB. CODE		ADMIN	USE	
A-01-01	PUF SAMPLER	ANDERSEN INST. GPS-1	AMBIENTE TECN	8,470	1	2001.01	Chemical lab.	QA-10	Verónica Muñoz	A	C	
A-01-02	SEQUENTIAL TUBE SAMPLER	PERKIN ELMER STS-25	PERKIN ELMER	10,972	1	2001.01	Chemical lab.	QC-13	Verónica Muñoz	A	C	
A-01-03	KJELDAHL DISTILATION UNIT, 220 V	GERHARDT / Vapodest 20	"	6,793	1	2001.03	Chemical lab.	QL-1	Cristian Borie	A	C	
A-01-04	MACRO KJELDAH DIGESTOR UNIT, 20-PLACE, 220 V,	GERHARDT / Kjeldatherm	"	7,636	1	2001.03	Chemical lab.	QL-1	Cristian Borie	A	C	
	CONTROLLER UNIT FOR DIGESTOR UNIT	GERHARDT / VARIOSTAT-VAP-16G	DEL CARPIO	2,992	1	2001.03	Chemical lab.	QL-1	Cristian Borie	A	C	
A-01-05	BENCHTOP DISSOLVED OXYGEN METER	YSI / 5000	S & B	2,213	1	2001.03	Chemical lab.	QL-3	Cristian Borie	A	C	
A-01-06	SELF-STIRRING B.O.D. PROBE	YSI / 5905	"	2,454	2	2001.03	Chemical lab.	QL-9	Wilson Novoa	A	C	
A-01-07	ENVIRONMENTAL SOIL SAMPLING KIT	AMS / 209.56	"	6,514	1	2001.03	Chemical lab.	QS-2	Cristian Borie	A	C	
A-01-08	LIQUID RELEASE TEST DEVICE	ADAM / 3760-LRT	"	4,059	1	2001.03	Chemical lab.	QS-2	Cristian Borie	A	C	
A-01-09	PORTABLE BALANCE	FISHER Sci. / FP-300	"	979	1	2001.03	Chemical lab.	QS-2	Cristian Borie	A	C	
A-01-10	CAPILARY COLUMN, ZB-5	PHENOMENEX / ZB-5	"	826	2	2001.03	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-01-11	HOLMIUM OXIDE FILTER for wavelength calibration	HP-08450-60117	"	207	1	2001.03	Chemical lab.	QC-11	Wilson Novoa	A	C	
A-01-12	CARRING CASES	FISHER	"	932	2	2001.03	Chemical lab.	QS-2	Cristian Borie	A	C	
A-01-13	GLASS MATERIAL: Extraction bottles	ADAM 3740-WGB	"	6,372	24	2000.11	Chemical lab.	Storeroom	Wilson Novoa	A	C	
A-01-14	METEOROLOGICAL DATALOGGER, included:	CAMPBELL CR10X-2M	TECNOL. OMEGA	2,228	1	2001.03	Atmospheric Lab	ML-1	Javier Vargas	A	A	
	PYRANOMETER	Li-Cor LI200X-L34	"	444	1	2001.03	Atmospheric Lab	ML-1	Javier Vargas	A	A	
	WEATHER PROOF ENCLOSURE, 16 x 18 pulg.	CAMPBELL / ENC 16/18	"	737	1	2001.03	Atmospheric Lab	ML-1	Javier Vargas	A	A	
A-01-15	METEOROLOGICAL DATALOGGER, included:	CAMPBELL CR10X-2M	"	2,228	1	2001.03	Atmospheric Lab	ML-1	Javier Vargas	A	A	
	WEATHER PROOF ENCLOSURE, 16 x 18 pulg.	CAMPBELL / ENC 16/18	"	737	1	2001.03	Atmospheric Lab	ML-1	Javier Vargas	A	A	
A-01-16	POWER	CAMPBELL PS12LA	"	1,056	3	2001.03	Atmospheric Lab	ML-1	Javier Vargas	A	A	
A-01-17	SOFTWARE	CAMPBELL RTDM	"	545	1	2001.03	Atmospheric Lab	ML-1	Javier Vargas	A	A	
A-01-18	WIND TRANSMITTER, ANALOG	VAISALA / WAT12	METCOM LTDA	1,199	1	2001.03	Atmospheric Lab	ML-1	Javier Vargas	A	A	
A-01-19	SET OF REARINGS AND GASKET FOR WIND SENSORS	VAISALA / 16644WA	"	1,440	20	2001.03	Atmospheric Lab	ML-1	Javier Vargas	A	A	
A-01-20	ACCESORY FOR PROBE	VAISALA HMP45DSP	"	1,083	2	2001.03	Atmospheric Lab	ML-1	Javier Vargas	A	A	
A-01-21	NETWORK SWITCH	CISCO CATALYST 2924M	NESIC	7,335	2	2001.03	Information		Mario Leiva	A	A	
A-01-22	ROUTER	CISCO ROUTER 1601	"	1,620	1	2001.03	Information		Mario Leiva	A	C	
A-01-23	HUB 24 PORT, 10/100	3COM SUPER STACK # 3300	"	5,558	3	2001.03	Information		Mario Leiva	A	A	
A-01-24	NETWORK ADMINISTRATION SOFTWARE	SNIFFER BASIC	NESIC	2,082	1	2001.03	Information		Mario Leiva	A	A	
A-01-25	GAS PURIFIERS (REMOVES: Moisture, Organics, Oxygen and Indicating Oxygen Trap)	SGE GF-10T	MELVYN BECERRA	1,181	16	2001.03	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	A	

EQUIPMENT LIST

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NO. EQUIP	NAME OF EQUIPMENTS	MARK/MODEL	PROVIDER	PRICE (US\$)	QUANT	YEAR/MONTH ENTRANCE	SITE OF LOCATION		RESPONSIBLE	CONDITION		REMARKS
							LABORATORY	LAB. CODE		ADMIN	USE	
A-01-26	GRAPHITE FERRULES AND AUTOSAMPLER SYRINGES	SGE	"	408	60	2001.03	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	A	50 ferrules and 10 syringes
A-01-27	MULTIGAS DETECTOR, WITH O2 and LEL SENSORS	MSA Pro Gard	AMSA	1,962	1	2001.02	Chemical lab.	QS-2	Cristian Borie	A	C	
A-01-28	ACCESORY FOR ICP (OPTIMA 3000) AND PERISTALTIC PUMP (AS-91)	PERKIN ELMER	PERKIN ELMER	1,902	7	2001.03	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-01-29	CARTRIDGE FOR NANOPURE	BARNSTEAD	EQUILAB	4,811	11	2001.03	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-01-30	SO2 ANALIZERS	API 100A	SK ECOLOGIA	11,500	1	2001.03	Atmospheric Lab	ML-4	Patricio Serrano	A	C	
A-01-31	MULTICALIBRATOR WITH ACCESORIES	API 700	"	17,110	1	2001.03	Atmospheric Lab	ML-4	Patricio Serrano	A	C	
A-01-32	ZERO AIR GENERATOR, 220 V	API / 701	"	4,077	1	2001.03	Atmospheric Lab	ML-4	Patricio Serrano	A	C	
A-01-33	MINI SPLITTER	GILSON SP3	DEL CARPIO	605	1	2001.03	Chemical lab.	QA-4	Jeanette Astudillo	A	C	
A-01-34	MICRO SPLITTER	GILSON SP-171X	"	927	1	2001.03	Chemical lab.	QA-4	Jeanette Astudillo	A	C	
A-01-35	PULVERIZER	GILSON LC67F	"	9,892	1	2001.03	Chemical lab.	Storeroom	por definir	A	C	
A-01-36	HIGH PRESSURE MERLIN MICROSEAL (septa and nut)	HP / 15182-3442	WEISSER	3,220	5	2001.03	Chemical lab.	Bod.: QC-11	Wilson Novoa	A	A	
A-01-37	TUBO MOLECULAR PUMP	HP / RG1946-89001	"	10,686	1	2001.03	Chemical lab.	QL-5	Katia Calderón	A	A	
A-01-38	GLASS MATERIAL: FUNNELS and VOLUMETRIC FLASK	DURAN	INTERLAB	849	36	2001.02	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-01-39	SEALER "QUANTI-TRAY", 220 V	IDEXX / 2X	ARQUIMED	4,803	1	2001.03	Chemical lab.	QM-2	Cristian Riquelme	A	C	
A-01-40	ULTRAVIOLET LAMP, 365 nm 220 V	SPECTROMIC Co / B-160/F	ARQUIMED	668	1	2001.03	Chemical lab.	QM-2	Cristian Riquelme	A	C	
A-01-41	REAGENTS DETERMINAT. OF COLIFORM AND E. COLI	IDEXX	ARQUIMED	10	2	2001.03	Chemical lab.	Storeroom	Wilson Novoa	A	C	
A-01-42	GLASS MATERIAL: DIAZOMETHANE APPARATUS	CORNING	S & B	1,558	1	2001.03	Chemical lab.	Storeroom	Wilson Novoa	A	A	
A-01-43	STAINLES STEEL SCOOPS	DAIGGER	"	555	2	2001.03	Chemical lab.	QS-2	Cristian Borie	A	C	
A-01-44	WATER/WASTEWATER SAMPLER	WHEATON	"	985	1	2001.03	Chemical lab.	QS-2	Cristian Borie	A	C	
A-01-45	PHOTOIONIZATION GAS DETECTOR	RAE / miniRAE PlusPGM-765	"	5,570	1	2001.03	Chemical lab.	QS-2	Cristian Borie	A	C	
A-01-46	UPS	APC SMART UPS 1000RM	CIENTEC	2,884	4	2001.03	Information		Mario Leiva	A	A	
A-01-47	HARD DISK FOR EXTENSION WITH CABLE	SUN Z-359	"	2,381	1	2001.03	Atmospheric Lab	MA-8	Andrés Cabello	A	A	
A-01-48	NOTEBOOK	TOSHIBA SATELLITE 2250	"	1,850	1	2001.03	Atmospheric Lab	MA-3	Gerardo Alvarado	A	A	
A-01-49	SERSWITCH FOR MAC	BLACK BOX SERV SWITCH	"	2,087	2	2001.03	Information		Mario Leiva	A	A	
A-01-50	TOOLS KIT	BLACK BOX FT103A/362/3	"	1,600	1	2001.03	Information		Mario Leiva	A	B	
A-01-51	CABLE	BLACK BOX CAT5	"	493	8	2001.03	Information		Mario Leiva	A	A	
A-01-52	CONNECTORS		"	800	4	2001.03	Information		Mario Leiva	A	A	
A-01-53	MOUNT RACK, 19 INCH	BLACK BOX RMC006	RAM	5,308	1	2001.03	Information		Mario Leiva	A	A	
A-01-54	MONITORING SOFTWARE. TIMBUKTU PRO	TIMBUKTU PRO 2000	"	1,159	1	2001.03	Information		Mario Leiva	A	A	
A-01-55	DATA BASE SOFTWARE: FILEMAKER PRO 5	FILEMAKER PRO 5 UNLIMITED	"	3,448	2	2001.03	Information		Mario Leiva	A	A	

EQUIPMENT LIST

DATE OF ELABORATION: DECEMBER 03, 2001

NO. EQUIP	NAME OF EQUIPMENTS	MARK/MODEL	PROVIDER	PRICE (US\$)	QUANT	YEAR/MONTH ENTRANCE	SITE OF LOCATION		RESPONSIBLE	CONDITION		REMARKS
							LABORATORY	LAB. CODE		ADMIN	USE	
A-01-56	WEBSERVER ADMINISTRATION SOFTWARE: SUITE 4.2	WEBSTAR SERVER SUITE 4.2	"	1,886	2	2001.03	Information		Mario Leiva	A	A	
A-01-57	POWERBOOK G4	APPLE POWER BOOK	"	3,782	1	2001.03	Information		Mario Leiva	A	A	
A-01-58	GRAPH ADMINISTRATOR SOFTWARE: ADOBE DYNAMIC MEDIA CREATOR	ADOBE DYNAMIC MEDIA CREATOR	"	1,971	1	2001.03	Information		Mario Leiva	A	A	
A-01-59	HARD DISK EXTERNAL	VST FW RAID 120	"	9,085	1	2001.03	Information		Mario Leiva	A	A	
A-01-60	SOFTWARE: MICROSOFT OFFICE 2001 for Mac	MICROSOFT OFFICE 2001	"	1,805	3	2001.03	Information	AI-6	Mario Leiva	A	A	
A-01-61	LASER COLOR PRINTERS	HP LASER JET 8500DN	"	9,439	1	2001.03	Information	AI-6	Mario Leiva	A	A	
A-01-62	CHARACTER RECOGNITION SOFTWARE: OMNIPAGE PRO	OMNIPAGE PRO V 8.0	"	1,543	2	2001.03	Information		Mario Leiva	A	A	
A-01-63	PERSONAL COMPUTER: iMac	APPLE iMAC DV	"	1,345	1	2001.03	Information		Mario Leiva	A	A	
A-01-64	MULTI-POINT DOT MATRIX RECORDER	COLE-PAR. P-80604-00	S & B	4,012	1	2001.03	Atmospheric Lab	ML-4	Patricio Serrano	A	B	
A-01-65	MULTIMETER	FLUKE 87-IV	"	539	1	2001.03	Atmospheric Lab	ML-4	Patricio Serrano	A	A	
A-01-66	MULTIFUNCTION DIGITAL BAROMETER/ALTIMETER	COLE-PAR. P-99770-00	"	287	1	2001.03	Atmospheric Lab	ML-4	Patricio Serrano	A	B	
A-01-67	FLOWMETERS WITH VALVE, aluminum, 65 mm (2 and 150 L/min)	COLE-PAR. P-32013-11 and P-32013-17	"	413	2	2001.03	Atmospheric Lab	ML-4	Patricio Serrano	A	B	
A-01-68	GAS (AIR ULTRA ZERO, MIXTURES EPA)	AGA	AGA	8,413	8	2001.03	Atmospheric Lab	ML-4	Patricio Serrano	A	B	
A-01-69	REGULATOR, TWO STEP, SS 316	AGA	AGA	1,003	1	2001.03	Atmospheric Lab	ML-4	Patricio Serrano	A	B	
A-01-70	SCANNER WITH FEEDER	EPSON PERFECTION 1640 SSU	CIENTEC	1,296	2	2001.03	Information		Mario Leiva	A	A	
A-01-71	SCANNER VISIONNER	STROBE PRO W1	"	4,123	10	2001.03	Information		Mario Leiva	A	A	
A-01-72	CONTROLLED ATMOSPHERE GLOVE BOXES (CHAMBER)	FISCHER PLAS LABS	DEL CARPIO	6,524	1	2001.03	Chemical lab.	QA-2	Daniel Valenzuela	A	B	
A-01-73	GAS (LIQUID N2, Ar, ACETIL, H2, N2 and HE)	AGA	AGA	14,358	129	2001.03	Chemical lab.	Bodega	Wilson Novoa	A	A	
A-01-74	CHEMICALS REAGENTS	FISHER / RIEDEL	ARQUIMED	2,525	114	2001.03	Chemical lab.	Bod.1/Bod.2	Wilson Novoa	A	A	
A-01-75	POWERBOOK, APPLE	APPLE POWER BOOK	RAM	3462	1	2001.03	Dirección-jica	DJ-3	Shiro Kikuchi	A	A	
A-01-76	PRINTER	EPSON STYLUS PHOTO 870	"	220	1	2001.03	Dirección-jica	DJ-3	Shiro Kikuchi	A	A	
A-01-77	NETWORK PARTS 1000 BASE-SX GBIC	CISCO WS-G5484	RAM	988	2	2001.03	Information		Mario Leiva	A	A	
A-01-78	COMPUTERS	HP BRIO BA410	"	3,674	2	2001.03	Information		Mario Leiva	A	A	
A-01-79	PERSONAL COMPUTERS, APPLE	APPLE, POWERMAC G4/466	"	4,818	2	2001.03	Information		Mario Leiva	A	A	
A-01-80	PERSONAL COMPUTERS, APPLE	APPLE, POWERMAC G4/733	"	4,880	1	2001.03	Information		Mario Leiva	A	A	

A= Good A = Habitually

B= 50 so B = 1 to 3 times per week

C = Bad C = According to the necessity

D = 3 to 5 time per year

E = Not used



cenma
Centro Nacional del Medio Ambiente

MANTENCION PREVENTIVA
DETECTOR DE MASAS
UNIDAD DE OPERACIONES

7-3-5 機材整備台帳のコピー

Modelo: HP 5973

Fecha: 11/07/2001

Nº de Serie: ~~00009245~~ VS 70820553

Laboratorio: CEN/INA

Fabricante: HP

Distribuidor: WEISSEN

Nº Inventario:

Mantenición 1era 2da 3era

Voltajes en línea de Alimentación

Fase - Neutro 223 v AC

Fase - Tierra 222 v AC

Neutro - Tierra 0,48 v AC

- Calidad de gas carrier 5.0 6.0

- Bomba difusora Bomba turbo molecular

Bueno Malo No disp.

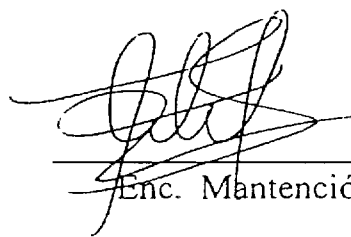
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- Fusibles	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Cable HP-IB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Comunicación	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Cable remoto	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Aceite de bomba	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
- Nivel de aceite de bombas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Trampa de aceite	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Válvula de venteo	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Bueno	Malo	No disp
- O-ring de válvula de venteo	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Vial de calibración	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Válvula vial de calibración	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- O-ring de manifold	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Interface	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Temperatura de interface	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Temperatura de cuadrupolo	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Temperatura de fuente	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Software	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Computadora	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Impresora	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Autotune	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- EMV <input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Si	No
- Cambio fusibles	<input type="checkbox"/>	<input checked="" type="checkbox"/>
- Limpieza de contactos en conectores	<input type="checkbox"/>	<input checked="" type="checkbox"/>
- Cambio de PFTBA	<input type="checkbox"/>	<input checked="" type="checkbox"/>
- Cambio de aceite en bomba	<input checked="" type="checkbox"/>	<input type="checkbox"/>
- Cambio de trampa de aceite	<input type="checkbox"/>	<input checked="" type="checkbox"/>
- Reparación de tarjeta electrónica	<input type="checkbox"/>	<input checked="" type="checkbox"/>
- Alimentación con UPS	<input type="checkbox"/>	<input checked="" type="checkbox"/>
- Pruebas de funcionamiento	<input checked="" type="checkbox"/>	<input type="checkbox"/>
- Limpieza general	<input checked="" type="checkbox"/>	<input type="checkbox"/>
- Limpieza de fuente	<input type="checkbox"/>	<input checked="" type="checkbox"/>
- Defragmentación de computadora	<input checked="" type="checkbox"/>	<input type="checkbox"/>
- Cromatogramas de estándar	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Observaciones

- SE TRANSIÓ EQUIPO DESDE LAS AIRS
HACIA LA CENTRAL. (CÓMPUTADORA, D. PLACA,
COMPUTADORA, IMPRESORA, AFD 400).
- LA MANTENCIÓN CORRESPONDIENTE AL PUNTO
DE ENGUE NO SE EFECTUÓ POR MOTIVO DE
USO CONTINUO.
- EQUIPO OK.-


Enc. Mantención

7-4-1 水質管理・産業廃水分野の分析項目リスト (PARAMETERS OF ANALYSIS)

Evaluation of CENMA laboratories activities (November 2001)

Laboratory	Anal. Param.	Place to analyses	Testing N°	Reference	Sampling		Pretreat for analysis	Anal.Method/ Instrument	Validation	Person in charge
					Water	Waste water				
LIQUID WASTES & WATER QUALITY	Temperature	Field	NCh2313/2. O195	Ø 1	#	#	-	Termometry	X	Cristian Borie
	Water level	Field			#	#	-	Metric	X	Cristian Borie
	pH	Field	ILMAL-001v*1	NCh2313/1. O195	#	#	-	Potentiometry	#	Cristian Borie
	Conductivity	Field	ILMAL-002v*2	Ø 1	#	#	-	Conductimetry	#	Cristian Borie
	Turbidity	Field	ILMAL-003v*1	Ø 1	#	#	-	Turbidimetry	#	Cristian Borie
	Dissolved O2	Field		Ø 1	#	#	-	Membrane electrode	X	Cristian Borie
	Redox potential	Field		Ø 1	#	#	-	Potentiometry	#	Cristian Borie
	T.O.C.	Laboratory	ILMAL-005v*1	Method 5310 B	#	#	#	Infrared-combustion	#	Cristian Borie
	COD	Laboratory	ILMAL-006v*1	NCh2313/24. O197	#	#	#	Closed reflux	#	Cristian Borie
	BOD5	Laboratory	ILMAL-007v*1	NCh2313/5. O196	#	#	#	Membrane electrode	#	Cristian Borie
	Total solids	Laboratory	ILMAL-008v*1	Method 2540 B	#	#	#	Gravimetry	#	C. Riquelme / Cristian Borie
	Total dissolved solids	Laboratory	ILMAL-009v*1	Ø 1	#	#	-	Gravimetry	#	
	Settleable solid	Field	ILMAL-010v*2	NCh2313/4. O195	#	#	-	Volumentry	#	C. Riquelme / Cristian Borie
	Suspended solid	Laboratory	ILMAL-011v*1	NCh2313/3. O195	#	#	#	Gravimetry	#	C. Riquelme / Cristian Borie
	Total & Reactive Phosphate	Laboratory	ILMAL-012v*3	NCh2313/15. O197	#	#	#	Spectrophotometry	#	Mónica Cavieres
	Cyanide	Laboratory	ILMAL-013v*3	NCh2313/14. O197	#	#	#	Spectrophotometry	#	Mónica Cavieres
	Sulfide	Laboratory	ILMAL-026v*1	ILMAL-026 v*1	#	#	#	Ion selective electrode		
	Phenol	Laboratory	ILMAL-016v*2	Method 5530-C	#	#	#	Spectrophotometry	#	Mónica Cavieres
	Cr (VI)	Laboratory	ILMAL-014v*2	Method 3500-D	#	#	#	Spectrophotometry	#	Mónica Cavieres
	Oils and Grease	Laboratory	ILMAL-030v*2	NCh2313/6. O197	#	#	#	Gravimetry	#	Mónica Cavieres
	Hydrocarburos fijos	Laboratory	ILMAL-031v*2	NCh2313/7. O197	#	#	#	Gravimetry	#	Mónica Cavieres
	Residual Free Chlorine	Laboratory	ILMAL-021v*1	Ø 1	#	#	-	Spectrophotometry	#	C. Riquelme / Cristian Borie
	Total Kjeldahl Nitrogen	Laboratory	ILMAL-017v*1	Method 4500-D	#	#	#	Spectrophotometry	#	C. Riquelme / Cristian Borie
	MBAS (detergent)	Laboratory	ILMAL-028v*1	NCh2313/28. O198	#	#	#	Spectrophotometry UV-VIS	#	Mónica Cavieres
	Poder Espumógeno	Laboratory	ILMAL-029v*2	NCh2313/21. O197	#	#	-	metric	#	C. Riquelme / Cristian Borie
	METALS:									
As, Al, Cd, Cu, Cr, Cr(VI), Fe, Li, Mn, Mo, Ni, Pb, Na, Zn	Laboratory	ILMAL-019v*1	Ø 1	#	#	#	AAS; ICP-OES	#	Gabriela Quiroz	
Mercury	Laboratory	ILMAL-018v*1	Ø 1	#	#	#	AAS-Cold vapor		Gabriela Quiroz	
As, Se	Laboratory	ILMAL-032v*1	Ø 1	#	#	#	AAS; ICP-OES	#	Gabriela Quiroz	
IONS:										
Br-, Cl-, F-, PO43-, NO2-, NO3-, SO4=	Laboratory	ILMAL-024v*1	Method 4110 / Method 300	#	#	#	IC	#	Ruben Verdugo	
Na+, K+, Mg2+, Ca2+	Laboratory	ILMAL-025v*1	Method 4110 / Method 300	#	#	#	CE	#	Ruben Verdugo	
N-NH4+	Laboratory	ILMAL-015v*2	Method 4110 / Method 300	#	#	#	IC	#	Ruben Verdugo	
OTHERS:										
VOC	Laboratory	X	EPA5021.8260B	#	#	#	GC-MS	X	Ruben Verdugo	
Pesticides	Laboratory	X	EPA8141A, 8081, 3510C	#	#	#	GC-NPD; GC-ECD, GC-MSD; HPLC	X	Katia Calderón	
PCB's	Laboratory	X	Method 6630-C	#	#	#	GC-ECD; GC-MSD	X	Jeannette Astudillo	
PAH	Laboratory	X	*	#	#	#	GC/MS	X	Katia Calderón	
Endocrine disrupters (TBT, TPT)	Laboratory	X	*	#	#	#	GC-MSD; HPLC	X	Ruben Verdugo/Gabriela Quiroz	
Sediments Analysis	Laboratory	X	*	#	#	#	AAS; ICP; GC, HPLC	X	Gabriela Quiroz/Katia Calderón	
Quality Program (QA/QC)	Laboratory		Guide ISO 17025	#	#	#			ALL	

* Environmental Research Methods. Ministry of Environment

Ø 1: Standard method for the examination of water and wastewater, 19 th edition, Ø 2: EPA Sampling and Analysis Method 2nd edition

#: Good. Means that the issue has received good level of research and training by japanese and chilean side

&: Not enough. Means that the issue needs more research and training in order to reach an optimum condition.

X: Means that the activity has no started yet.

7-4-2 (1) 水質管理・産業廃水分野の分析実績 (Numbers of Analyzed Samples(Liquids) in 2000-2001)

検出番号/プロシエクト番号	採取日	検出番号	サンプル数	DBO	DOO	CN	Cl	Color	Oils and Grease	N-NH3	NO3	NO2	Total solids	S	SO4	SAM	Dissolved O2	Metals	Fe	Cu	Zn	F	Cr(VI)	Pb	PH	Suspended solid	PAHs	Total Phosphate	Poder Espumogene	Pesticides	N-Kj	Toxicity	Corrosivity	TCM-TCE	Organoclorados	TKN	Phenols	TOC	Total Hydrocarbons	IR	Organic matter	Barrido UV-VIS	PO4	BETX	Conductivity	chlorophyll	Cromatography	分析数合計			
111	02.06.00	176	1	1				1	1																																					3					
111	06.06.00	179	1	1				1						1					1																													4			
111	13.06.00	186	1	1				1																																								7			
111	14.06.00	187	1	1				1																																								7			
111	16.06.00	189	1	1				1																																								7			
111	16.06.00	190	1	1				1																																								7			
111	21.06.00	195	1	1																																												2			
111	22.06.00	197	1	1																																												2			
112	23.06.00	200	10					10																																									10		
111	23.06.00	201	1	1																																												2			
111	24.06.00	203	1	1																																												2			
111	28.06.00	205	1	1																																												2			
111	29.06.00	208	1	1																																												2			
111	30.06.00	210	1	1																																												2			
111	01.07.00	211	1	1																																												2			
391	06.07.00	216	8																																													2			
111	11.07.00	218	1	1				1																																									8		
111	12.07.00	219	1	1				1																																									7		
111	12.07.00	220	1	1				1																																									7		
111	13.07.00	223	1	1				1																																									7		
111	13.07.00	224	1	1				1																																									7		
111	14.07.00	228	1	1				1																																										7	
111	14.07.00	229	1					1																																										8	
111	14.07.00	230	1					1																																										2	
111	19.07.00	236	1	1				1																																										2	
111	19.07.00	237	1	1									1																																					6	
111	20.07.00	238	1	1																																														7	
111	20.07.00	239	1	1									1																																					6	
111	21.07.00	241	1	1				1																																										7	
111	21.07.00	242	1	1																																															6
111	24.07.00	243	1	1				1																																											7
111	24.07.00	244	1	1									1																																					6	
371	02.08.00	255	10							10																																								10	
322	02.08.00	256	1																																																7
Validacion	08.08.00	262	1																																															1	
111	09.08.00	263	2	2				2																																											12
111	10.08.00	264	2	2				2																																											12
411	10.08.00	265	1	1																																															1
111	11.08.00	267	2	2				2																																											12
111	14.08.00	269	2	2				2																																										12	
111	23.08.00	274	2	2				2																																										12	
613	24.08.00	276	2																																																2
111	24.08.00	277	2	2				2																																											9
111	25.08.00	278	2	2				2																																											9
111	28.08.00	280	2	2				2																																											9
intercomparacion	28.08.00	281	1					1	1	1			1																																					9	
111	30.08.00	284	2	2				2	1																																										7
111	31.08.00	285	2	2				2	1																																										12
111	01.09.00	287	2	2				2	1																																										12
111	05.09.00	290	2	2				2	1																																										12

111	07.09.00	292	2	2						2						2																								14							
111	08.09.00	293	2	2						2						2																								14							
111	09.09.00	294	2	2						2						2																								14							
111	11.09.00	295	2	2						2						2																								14							
111	12.09.00	296	2	2						2				1		2			1		1							1		1										12							
111	13.09.00	298	2	2						2						2			2		2						1		1											14							
111	13.09.00	299	2	2						1			1			2			1		1					1		1		1										12							
111	14.09.00	301	2	2						2						2			2		2																			13							
111	14.09.00	302	2	2						1				1		2			1		1					2		1												13							
111	15.09.00	303	2	2						1			1			2			1		1					1		1		1										11							
111	20.09.00	304	2	2						2						2			2		2																			14							
111	22.09.00	308	1	1						1						1			1		1																			7							
111	25.09.00	309	1	1						1						1			1		1																			7							
113	13.10.00	316	3	3	3					3					3																									21							
111	27.10.00	320	3																																					3							
111	02.11.00	322	8																																					8							
111	14.11.00	324	9											9																										9							
111	17.11.00	325	5										5																											5							
111	17.11.00	326	6																																					6							
111	21.11.00	327	4										4																											4							
4511	01.12.00	328	8																																					8							
4511	05.12.00	329	24																																					8							
intercomparacion	07.12.00	331	1																																					24							
4511	18.12.00	332	32																																					32							
117	27.12.00	337	3	3						3		1	1		2																									20							
3912	28.12.00	338	8																																					8							
117	03.01.01	340	3	3						3		1	1	1	2																									22							
117	04.01.01	341	3	3						3		1	1	1	2																									22							
4511	04.01.01	342	8																																					8							
117	05.01.01	343	1	1										1																										6							
117	08.01.01	344	2	2						2		1	1	1	1																									16							
3111	10.01.01	346	13																																					13							
4811	19.02.01	349	1																																					2							
611	01.06.01	391	40	4		8	8	4	4		4	4	4		4		4																						64								
119	06.06.01	392	1																																					2							
711	13.06.01	401	3							2																														13							
811	27.06.01	404	6										6																											6							
3913	09.07.01	407	8																																					8							
1111	02.08.01	422	27	3						3																														33							
1111	03.08.01	423	3																																					0							
1111	03.08.01	424	3	3																																				3							
1111	03.08.01	425	4																																					12							
1111	03.08.01	426	3							3																														3							
1111	03.08.01	427	3																																					6							
1111	03.08.01	428	3																																					3							
1111	03.08.01	429	3																																					3							
1111	03.08.01	430	3																																					3							
1111	03.08.01	431	3																																					6							
1111	09.08.01	434	26	3						3																														31							
1511	29.08.01	458	8																																					8							
811	13.09.01	474	1																																					1							
	25.09.01	480	1							1																														2							
4911	27.09.01	482	1																																					1							
1611	27.09.01	483	77																																					126							
1611	27.09.01	486	2																																					3							
1611	27.09.01	493	4																																					4							
4/1 POAL (I)	2001			15	15					95	94	94																											94	11	653						
4/1 POAL (II)	2001			15	15					95	94	94																												94	11	653					
TOTAL		490	134	33	8	10	5	292	207	202	5	13	10	21	8	9	261	5	1	1	4	9	7	10	97	93	139	44	6	257	10	3	31	5	94	16	92	14	1	17	1	194	11	1	22	1	2404

7-4-2 (2) チリ国海岸線及び湖沼の環境汚染モニタリング調査 1 による分析実績 (サンプル数)

Numbers of Analyzed Samples(POAL- I) in 2000-2001

TOTAL ESTACIONES POR MATRIZ			METALES PESADOS			NITRATO, FOSFATO, AMONIO	NITRÓGENO TOTAL			FÓSFORO TOTAL	DBO, DQO	GRASAS Y ACEITES	COLIFORMES FECALES	HIDROCARBUROS AROMATICOS POLICICLICOS	HIDROCARBUROS TOTALES	CLOROFILA A	PCB	% MATERIA ORGÁNICA	TOTALES
A	S	B	A	S	B	A	A	S	B	A	A	A	A	S	S	A	S	S	
3	8	2	3	8	2	3	3	8			3	3	3		2		2	8	48
4	8	2	4	8	2	4	4	8			4	4	2		2			8	50
2	5	2	2	5	2	2	2	5			2	2						5	27
4	7	2	4	7	2	3	4	7			4	4			6			7	48
3	7	2	3	7	2	3	3	7			3	3	2		2			7	42
2	4	2	2	4	2	2	2	4			2	2	2		4			4	30
2	7	1	2	7	1	2	2	7			2	2					2	7	34
4	9	4	4	9	4	4	4	9			4	4	2		2			9	55
3	7	2	3	7	2	3	3	7			3	3	3		2		2	7	45
2	5	1	2	5	1	2	2	5			2	2					1	5	27
1	4	1	1	4	1	1	1	4			1	1					1	4	19
4	9	2	4	9	2	4	4	9			4	4	2		2		2	9	55
2	6	2	2	6	2	2	2	6			2	2					2	6	32
2	11	2	2	11	2	2	2	11			2	2	2		2			11	49
3	4	2	3	4	2	3	3	4			3	3						4	29
2	6	2	2	6	2	2	2	6			2	2	2		2		2	6	36
3	8	2	3	8	2	3	3	8			3	3	2		2			8	45
3	8	2	3	8	2	3	3	8			3	3	2		2		2	8	47
3	9	3	3	9	3	3	3	9			3	3	3		2		2	9	52
2	4	1	2	4	1	2	2	4			2	2	2		2		2	4	29
5	8		5	8		5	5	8			5	5	2		3		2	8	56
2	2	1	2	2	1	2	2	2			2	2	1					2	18
3	1		3	1		3	3	1			3	3	3					1	21
1		1	1		1	1	1				1	1							6
3	5	2	3	5	2	3	3	5			3	3					2	5	34
3	4	2	3	4	2	3	3	4			3	3	2		2			4	33
3	4	2	3	4	2	3	3	4			3	3	2		2			4	33
2	6	2	2	6	2	2	2	6			2	2	1		2			6	33
2	2		2	2		2	2	2			2	2	1					2	17
2	3		2	3		2	2	3			2	2	2		3		3	3	27
4	5	9	4	5		4	4	5		4	4	4	2		2		2	5	45
3	4	7	3	4		3	3	4		3	3	3				3	2	4	35
4	3	7	4	3		4	4	3		4	4	4				4	2	3	39
4	4	8	4	4		4	4	4		4	4	4				4	2	4	42
95	187	80	95	187	49	94	95	187		15	95	95	45		48	11	35	187	1238

7-4-2 (3) チリ国海岸線及び湖沼の環境汚染モニタリング調査2による分析実績 (サンプル数)

Numbers of Analyzed Samples(POAL- II) in 2000-2001

TOTAL ESTACIONES POR MATRIZ			METALES PESADOS			NITRATO, FOSFATO, AMONIO	NITRÓGENO TOTAL			FÓSFORO TOTAL	DBO, DQO	GRASAS Y ACEITES	COLIFORMES FECALES	HIDROCARBUROS AROMATICOS	POLICICLICOS	HIDROCARBUROS TOTALES	CLOROFILA A	PCB	% MATERIA ORGÁNICA	TOTALES
A	S	B	A	S	B	A	A	S	B	A	A	A	A	S	S	A	S	S		
3	8	2	3	8	2	3	3	8			3	3	3		2		2	8	48	
4	8	2	4	8	2	4	4	8			4	4	2		2			8	50	
2	5	2	2	5	2	2	2	5			2	2						5	27	
4	7	2	4	7	2	3	4	7			4	4			6			7	48	
3	7	2	3	7	2	3	3	7			3	3	2		2			7	42	
2	4	2	2	4	2	2	2	4			2	2	2		4			4	30	
2	7	1	2	7	1	2	2	7			2	2					2	7	34	
4	9	4	4	9	4	4	4	9			4	4	2		2			9	55	
3	7	2	3	7	2	3	3	7			3	3	3		2		2	7	45	
2	5	1	2	5	1	2	2	5			2	2					1	5	27	
1	4	1	1	4	1	1	1	4			1	1					1	4	19	
4	9	2	4	9	2	4	4	9			4	4	2		2		2	9	55	
2	6	2	2	6	2	2	2	6			2	2					2	6	32	
2	11	2	2	11	2	2	2	11			2	2	2		2			11	49	
3	4	2	3	4	2	3	3	4			3	3						4	29	
2	6	2	2	6	2	2	2	6			2	2	2		2		2	6	36	
3	8	2	3	8	2	3	3	8			3	3	2		2			8	45	
3	8	2	3	8	2	3	3	8			3	3	2		2		2	8	47	
3	9	3	3	9	3	3	3	9			3	3	3		2		2	9	52	
2	4	1	2	4	1	2	2	4			2	2	2		2		2	4	29	
5	8		5	8		5	5	8			5	5	2		3		2	8	56	
2	2	1	2	2	1	2	2	2			2	2	1					2	18	
3	1		3	1		3	3	1			3	3	3					1	21	
1		1	1		1	1	1				1	1							6	
3	5	2	3	5	2	3	3	5			3	3					2	5	34	
3	4	2	3	4	2	3	3	4			3	3	2		2			4	33	
3	4	2	3	4	2	3	3	4			3	3	2		2			4	33	
2	6	2	2	6	2	2	2	6			2	2	1		2			6	33	
2	2		2	2		2	2	2			2	2	1					2	17	
2	3		2	3		2	2	3			2	2	2		3		3	3	27	
4	5	9	4	5		4	4	5			4	4	4	2	2		2	5	45	
3	4	7	3	4		3	3	4			3	3	3			3	2	4	35	
4	3	7	4	3		4	4	3			4	4	4			4	2	3	39	
4	4	8	4	4		4	4	4			4	4	4			4	2	4	42	
95	187	80	95	187	49	94	95	187			15	95	95	45	48	11	35	187	1238	

7-4-3 特定化学物質に関するマニュアルリスト (Manual List for Specific Toxic Substances)

Parameters	Methods				Note
	CENMA-SOP	S. M.	EPA	Nch (INN)	
1 Sampling	「Manual de Procedimientos de Muestro」(ILTMS-001, P.1 de 14, 16/11/00, Rev. B-01)			411/1-11	
	「Muestreo de Aguas superficiales y Efluentes Liquidos」(ILTML-001, P.1 de 35, 07/12/00 Ver. No.1)			409	
2 VOC	Under Preparation		5021, 8260B		GC/MS No problem for .Routine analysis.
3 PAHs	Under Preparation	6440B, 6410B, *	3540C		GC/MS No problem for .Routine analysis.
4 PCBs	Under Preparation	*			GC/ECD, GC/MSD No problem for .Routine analysis.
5 Pesticides	Under Preparation	6630, *	8141A, 8081, 3510C		GC/MPD, GC/ECD, GC/MSD; HPLC No problem for .Routine analysis.
6 Heavy Metals	「Determinacion de Metales Pesados por ICP-OES」(ILMAL-019, P.1 de 14, 10/04/00, Ver. No.1)	3111B, 3113B, 3120B	3050B, 3051, 3052	2313/25.0f97	AAS, ICP/OES
7 As	「Determinacion de As, Se por EAA, con GH」(ILMAL-032, P.1 de 14, 24/11/00, Ver. No.1)	3120A, B		2313/10.0f97	AAS, ICP/OES
	「Determinacion de Compuestos de Arsenico con Sistema de HG/CT-ICP(OES)」(ILMAL-xxx, P.1 de 13,0 1/11/01, Ver. No. b-1)				HG/CT-ICP/OES It is possible to analyze not only total As and other metals, but also to speciate organic As compounds by this method.
8 Cd	「Determinacion de As, Se por EAA, con GH」(ILMAL-032, P.1 de 14, 24/11/00, Ver. No.1)	3120A, B		2313/10.0f97	AAS, ICP/OES
9 Hg	「Determinacion de Mercurio por EAA, con Vapor Frio」(ILMAL-018, P. 1 de 13, 07/04/00, Ver. No.1)	3112A, B	7470A	2313/12.0f96	AAS-Cold Trap
10 Se	「Determinacion de As, Se por EAA, con GH」(ILMAL-032, P.1 de 14, 24/11/00, Ver. No.1)	3120A, B		2313/10.0f97	AAS, ICP/OES
11 Cr(VI)	「Determinacion de Cromo Hexavalente, por Espectroscopia UV-VIS」(ILMAL-14, P. 1 de 9, 19/01/01, Ver. No. 2)	3120A, B,	3500	2313/11.0f96, 2313/25.0f97	AAS, ICP/OES

S.M.: Standard method for the examination of water and wastewater, 19 th edition.

EPA: EPA Sampling and Analysis Method, 2nd edition.

* Environmental research method. Ministry of Environment, Japan

7-4-4 クロスチェック実施状況 (Cross-check Data in Liquid Lab.)

No.	時期 Y.M.D - Y.M.D	プログラム/活動の名称 Name of program/activity	主催者 Promoter/counter-part	クロスチェックの パラメーター Cross-checked Parameters	分析数/サ ンプル数 Number of analysis/ samples	担当者 Person in charge	結果 Note
1	2000-2001	World -wide Intercomparison Exercise for the Determination of Trace Elements and Methyl-mercury in Estuarine Sediment	IAEA (120 Labs. in 55 Countries)	Cd, Cr, Ni, V, Zn	15	Mr.Rodrigo Parra	Excellent Results
2	2000-2001	CCQM-P11 Pilot Study Arsenic in Shellfish	NIST	As	3	Mr.Rodrigo Parra	Excellent Results
3	2000-2001	「Operation Unit "QA/QC Program and Laboratories Accreditation of CENMA」 CONAMA, Adv. Rep. No.1&2and Final Rep., Apl.-Dec. 2000)	Centre D'expertise de Quebeq, Canada	All Accredited Parameters (69)	276 (69x4)	All Labo. Members	Excellent Results
			(Total)	(69)	(294)		

7-4-5 公表文献・データのリスト (List of Published Documents and Data(Water Quality and Effluent))

No.	Title		Contents
1	1. 「Proyecto Definitivo de Norma de Calidad para la Proteccion de las Aguas Continentales Superficiales」	(CONAMA,MPB/PMC)	<p>1. Quality Stándard Norma for Surface Water in Land (final study) Fix standards for rivers, lakes...for swimming and agriculture, first standard, for another uses and very clear water body, second standard, and to change the eutrofication situation of lakes. It fixes standard in the case of environmental emergency for swimming. The monitoring program for first standard depents on Ministry of Health and for second standard depends on the COREMA. In the situation in that the water body or water stream quality are higher then the standard, CONAMA fix like a zone of care in order to improve their quality.</p>
2	2. 「Establece Norma de Emicion para la Regulacion de Contaminantes Asocados a las Descardes de Residuos Liquidos a Aguas Marinas y Continentales Superficiales」	(Ministorio, Secretaria General de Presidencia dela Republica, Mayo 7 2001, Decreto No.90)	<p>2. Emmision Standard for the Control of Pollutant related to Industrial Wastewater Discharge to Surface Water in land and Seawater. Fix the maximum level of concentraci3n of industrial wastewater discharge to seawater and surface water.</p>
3	3. 「Establece Norma de Emision para la Regulacion de Contaminantes Asociados a las Descardes de Residuos Industiales Liquidos a Sistemas de Alcantarillado」	(Ministorio de Obras Publicas, Mayo 7 1998, Decreto No. 609/98)	<p>3. Emmision Standard for the Control of Pollutant related to Industrial Wastewater Discharge to the Sewage. Fix the maximum level of concentraci3n of industrial wastewater discharge to sewage systemes, for the case when the sewage wastewater have a treatment plant or no.</p>
4	4. 「Anteproyecto de Norma de Emision A Aguas Subterraneas」	(CONAMA, ASR/PMC, Marso 19 2001, Exenta No. 256)	<p>4. Emmision Standard to groundwater (pre-study) Fix the maximum level of concentraci3n in industrial wastewater discharge to groundwater, for two situtation. The level of concentration dependa if the industrial wastewater is discharge in a aquifer with low or no so low vulnerability. The vulnerability of the aquifer is fix by DGAls impossible discharge the effluent directly to the zone with water in the aquifer.</p>
5	5. 「Apreba Anteproyecto de Norma de Calidad en Aguas Marinas: Nivel Nacional」	(CONAMA, ASR/PMC, Exenta No.)	<p>5. Water Quality Stándard for Seawater:national level(Pre-study was accepted) Fix standards for seawater for swimming, first standard, for another uses and very clear water body, second standard, and to change the eutrofication situation of estuarine. It fixes standard in the case of environmental emergency for swimming. The monitoring program for first standard depents on Ministry of Health and for second standard depends on DIRECTEMAR. In the situation in that the water body quality are higher then the standard, CONAMA fix like a zone of care in order to improve their quality.</p>

No.	Title		Contents
6	6.「Análisis de tendencia de la calidad de las aguas superficiales en la Región Metropolitana (80-2000)」	(Data from DGA,Laboratory Study)	<p>6. Analytical Study of Surface Water Quality In Metropolitan Region</p> <p>The analysis was made for each seasons (summer, autumm, winter and spring) and we use the information from another reports (96-97). In this reports it's established that:</p> <ul style="list-style-type: none"> · The most importan inorganic pollutant discharge in Metropolitan Region was Chromium. · 5 are the most polluted monitoring stations. · Nitrogen and Phosphorus are two parameters that show same increase in concentrations between 80s-1995. <p>Results;In many monitoring station, it was found that the fosfate and nitrate concentration is increasing year by year.</p> <p style="text-align: center;">(10 Monitoring Station, 7 Parameters, 100 Samples)</p>
7	7.「Contaminación de Aguas Subterráneas en la Región Metropolitana」	(CONAMA, Informe Final, Nov.2000)	<p>7. Groundwater Quality in Metropolitan Region</p> <p>Metropolitan Región are point and areal source of groundwater impact. The objective was to detect heavy metals, by industrial discharge, VOCs, by benzine lost, pesticide and nitrate, by agricultura activity.</p> <p>In the first step, we identifiy point and areal source, and after that, using information of groudwater stream, identify the wells with more posibilty to found the pollutants.</p> <p>In a second steps, we take samples in about 33 wells, and only nitrate was found in the groundwater related to agriculture activity.</p> <p style="text-align: center;">(5 Places, 33 Wells, 4 Parameters, 33 Samples)</p>
8	8.「Programa de Observación del Ambiente Litoral (POAL- I & II)」	(DIRECTEMAR, Informe Final Tomo I, II y III, Sem. 1. & 2. 2001) Conclusiones y Anexos	<p>8. 1ST AND 2ND SEMESTER DIRECTEMAR REPORTS</p> <p>POAL correspond to an annual program from DIRECTEMAR in which the monitoring of the coastal environment allow characterization of its quality.</p> <p>On year 2001, CENMA carried out the program.</p> <p>Both report (one for campaign) contains all data related with the characterization of seawater, sediment and biota collected in all Chilean coast. It were defined 34 locations, each one containing different sampling stations.</p> <p>The parameters requested were organic, inorganic and also microbiological(please see the report).</p> <p>This work also reports the data treatment and discussion of the behavior of each contaminant in each location and some recommendation given for future programs.</p> <p style="text-align: center;">(34 Places, 19 Parameters, 1086 Samples)</p>

7-4-6 産業廃水に関わる水質検証データのリスト (Verification List of Industrial Wastewater Quality)

No	Title of Report/Note	Client/Counter-part	Duration	Treatment Plant	Treating Method	Place	Kinds of W/W	Number of data/samples	Parameters	Results
1	14. 「Study of Waste water Discharge Quality, Sampling and Industries and Wastewater Treatment Analysis on the RM, IV, VI, VII, VIII, IX, Xregions」 (Adv. Rep. No.1&2and Final Rep.)	CONAMA(SISS)	May.-Nov. 2000	With	Lagoon, Activated Sludge, Physical-Chemical	MR & IV~X Region (22)	Food 6 Cellulose 5 Chemicals 2 Metal 1 Sewage 8 (5 Kinds)	66	BOD, SS, Coliform, Oil&Grease, HC, HM, CN-, Sulfite, S04=, Phenol, N, P (12)	Lagoons have problems to control N and P.
				Without	-	-	-	-	-	-
2	Study of Wastewater Discharge to Sea Water in V Region」(Laboratory Report)	DIRECTEMAR	Jan. 2001	with	Physical-Chemical	V Region	Petroleum Refinery(1)	4	BOD, SS, Coliform, Oil&Grease, HC, HM, CN-, Sulfite, S04=, Phenol, Toluene, PAH (12)	No problem.
				without	-	V Region	Sewage(4)	8	BOD, SS, Coliform, Oil & Grease, N, P, SAAM (7)	Higher level of Coliform, N, P, and Oil & Grease are found.
				(Total)		(5)		(12)	(15)	

7-5-1 産業廃棄物分野の分析項目リスト (PARAMETERS OF ANALYSIS)

Evaluation of CENMA laboratories activities (November 2001)

Laboratory	Analytical Parameters	Place to analyses	Testing N°	Reference	Sampling			Pretreat for analysis	Anal.Method/ Instrument	Validation	Person in charge
					SW	Contaminated Soil	Soil				
SOLID WASTES	TCLP-metals	Laboratory	ILMAS-001v°1	Epa1311-6010	&(1)	&(1)	-	#	ICP-OES, AAS	#	Gabriela Quiroz
	TCLP-Volatiles	Laboratory	ILMAS-001v°1	EPA1311- 8260	&(1)	&(1)	-	#	GC-MS	X	Katia Calderón
	TCLP-Pesticides	Laboratory	ILMAS-001v°1	EPA 1311- 8081	&(1)	&(1)	-	#	GC-ECD	X	Katia Calderón
	TCLP-herbicides	Laboratory	ILMAS-001v°1	EPA 1311 - 8151	&(1)	&(1)	-	#	GC - ECD	X	Katia Calderón
	TCLP - herbicides	Laboratory	ILMAS-001v°1	EPA 1311- 8321	&(1)	&(1)	-	#	HPLC - UVD	X	Rubén/Katia
	TCLP - Semivolátiles	Laboratory	ILMAS-001v°1	EPA 1311 - 8270	&(1)	&(1)	-	#	GC - MS	X	Katia Calderón
	Flash Point	Laboratory	ILMAS-002v°1	EPA 1010	&(1)	&(1)	-	#	Pensky Martens	#	Jeannette Astudillo
	Corrosivity	Laboratory	ILMAS-003v°2	EPA 9040/1110	&(1)	&(1)	-	-	Gravimetric	#	Gabriela Quiroz
	Corrosivity	Laboratory	ILMAS-003v°2	0169-95	&(1)	&(1)	-	-	Potenciometric	#	Gabriela Quiroz
	Reactivity (H2S liberable)	Laboratory	ILMAS-005v°5	EPA 9034	&(1)	&(1)	-	-	Volumetric	X	Gabriela Quiroz
	Reactivity (HCN liberado)	Laboratory	ILMAS-004v°1	EPA 9014	&(1)	&(1)	-	-	Spectrophotometry	X	Gabriela Quiroz
	Total amenable Cyanide	Laboratory		EPA 9010/9012-9014	&(1)	&(1)	-	-	Spectrophotometry		Gabriela Quiroz
	pH	Laboratory	ILMAS-007v°1	EPA 9045	&(1)	&(1)	&	-	Potenciometría	#	Gabriela Quiroz
	Total Metals	Laboratory	ILMAS-008v°1	EPA3050/3051-6010	&(1)	&(1)	&	#	ICP-OES, AAS	X	Gabriela Quiroz
	Total VOC	Laboratory	X	EPA5035-8260	&(1)	&(1)	&	-	GC-MS	X	Rubén/Katia
	Total Semivol.	Laboratory	X	EPA3540/3550-8270	&(1)	&(1)	&	#	GC-MS	X	Rubén/Katia
	PCB's	Laboratory	X	EPA3540-8082/JIS	&(1)	&(1)	-	#	GC-ECD, GC-MSD	X	Katia/Rubén
Pesticides	Laboratory	X	EPA3540/3550-8081	&(1)	&(1)	&	#	GC-ECD; GC-MSD	X	Katia/Rubén	
Quality Program (QA/QC)	Laboratory	ISO 17025		&(1)	&(1)	&				All	

#: Good. Means that the issue has received good level of research and training by japanese and chilean side

&: Not enough. Means that the issue needs more research and training in order to reach an optimum condition.

X: Means that the activity has no started yet.

&(1): Safety items are missed

7-5-2 産業廃棄物分野の分析実績 (Numbers of Analyzed Samples(Solids) in 2000-2001)

発注番号/プロ号 ジェット番号	受取日	依頼番号	サンプル数	TCLP Inor.	TCLP Org.	total metals	Corrosivity	Reactivity	Pb	As	GRO	DRO	BTEX	TPH	Phenols	PCBs	Ignitability	Fe	Cr (V)	TCLP-VOC	n-octanol	Kjeldahl Nitrogen	%Mat. Organica	Humidity	Tamizado	分析数合計
342	06.06.00	178	20	20		20																				40
342	07.06.00	180	5	5		5																				10
202	13.06.00	185	2	2		2	2	2																		8
221	23.06.00	198	3	3																						3
122	23.06.00	199	5	5		5																				10
381	29.06.00	206	4				4	4																		8
122	30.06.00	210	4	4		4																				8
122	06.07.00	217	5	5		5																				10
322	17.07.00	231	9						9																	9
322	18.07.00	240	10								9	9	10													28
322	25.07.00	248	8										8													16
322	24.07.00	249	28						19		22	19	24													84
322	25.07.00	250	23						7		18	18	21													64
322	31.07.00	252	5										5	5												10
122	03.08.00	257	3	3		3																				6
322	11.08.00	268	2						2		2	2	2													8
341	30.08.00	283	3	1											2											3
122	01.09.00	288	5	5													5									10
323	20.09.00	297	15								15	15	15													45
323	20.09.00	305	9								9	9	9													27
431	02.10.00	312	4	4					4																	8
202	04.10.00	313	4												4											4
202	04.10.00	314	4	4		4									3											11
441	05.10.00	315	4	4														4								8
131	17.10.00	317	1	1																						1
342	20.10.00	318	5	5			5	5							5		5									25
342	26.10.00	319	4	4			4	4	4	4					4		4									28
343	31.10.00	321	6	6			6	6	6	6					6		6									42
343	08.11.00	323	6	6			5	5	5	5					5		5									36
223	05.12.00	330	3	3		3	3	3									3									15
224	18.12.00	333	5	5		5		5											5							20
224	19.12.00	334	2	2		2																				4
224	21.12.00	335	5	5		5																				10
461	25.12.00	336	2	2				2																		4
224	28.12.00	339	5	5		5																				10
223	08.01.01	345	4	4																						4
224	16.01.01	347	19	19		19																				38
224	19.02.01	348	16	16																						16
172		361	1	1	1	1	1	1										1								6
118		366	6	6		6																				12
24		373	37	37	37	37	37	37										37			37					259
132	15.05.01	388	2	2	2		1	1										1								7
501	23.05.01	389	1	1	1		1	1										1								5

番 号 / シ ェ ト 番 号	取 得 日	体 積 番 号	サ ン プ ル 数	TCLP Inor.	TCLP Org.	total metals	Corrosivity	Reactivity	Pb	As	GRO	DRO	BTEX	TPH	Phenols	PCBs	Ignitability	Fe	Cr (V)	TCLP-VOC	n-octanol	Kjeldahl Nitrogen	%Mat. Organica	Humidity	Tamizado	分 析 数 合 計
491	30.05.01	390	8														1									8
224	06.06.01	393	4	4																						4
1312	08.06.01	394	1	1	1																					2
224	12.06.01	395	3	2		2			1																	5
3813	12.07.01	408	1														1									1
3112		420	4						4	4																8
2813 ó 3813	31.08.01	461	2														2									2
	10.09.01	470	5	5					5	5																15
3814	11.09.01	471	10	10		10																				20
224	20.09.01	477	8	8					8																	16
521	24.09.01	479	19			19																				19
224	08.10.01	488	2	2																						2
5113	19.10.01	494	9																					9	9	18
	22.10.01	495	4														4									4
5113	24.10.01	497	3																					3		3
4/1 POAL (I)	2001					236							48		35							187	187			693
4/1 POAL (II)	2001					236							48		35							187	187			693
TOTAL			397	227	42	634	69	76	74	24	75	72	94	109	29	70	82	4	5	37	1	374	374	12	9	2,493

7-5-3 一般廃棄物処分場ガイドラインの表紙コピー



GOBIERNO DE CHILE
COMISIÓN NACIONAL
DEL MEDIO AMBIENTE

**Proyecto "Vertedero Intercomunal de Residuos Sólidos
Domiciliarios, Paillaco-Futrono"**

**MANUAL
RELLENO SANITARIO PARA PEQUEÑAS LOCALIDADES**

7-6-1 大気汚染管理分野の分析項目リスト (PARAMETERS OF ANALYSIS)

Evaluation of CENMA laboratories activities (November 2001)

Laboratory	Anal. Param.	Place to analyses	Testing N°	Reference	Sampling		Pretreat for analysis	Analytical Mtd/ Instrument	Validation	Person in charge
					Aire	Fuentes				
Air	C2-C6	Laboratory	ILMAA-001v°1	*	#	#	-	GC-FID	#	Verónica Muñoz
	R-CHO	Laboratory	ILMAA-003v°1	*	#	#	#	HPLC - UVD	&	Verónica Muñoz
	BTX	Laboratory	ILMAA-009v°1	*	#	#	#	GC-MSD	&	Verónica Muñoz
	NO2	Laboratory	ILMAA-004v°1	OGAWA	#	#	#	IC	#	Gonzalo Rocha
	O3	Laboratory	ILMAA-004v°1	OGAWA	#	#	#	IC	#	Gonzalo Rocha
	SO2	Laboratory	X	OGAWA	&	&	&	IC	X	M. Rosa Gonzales
	Metals/filters	Laboratory	ILMAA-005v°1	*	#	&	#	AAS, ICP	&	M. Rosa Gonzales
	PM10 /filters	Laboratory	ILMAA-011v°1	EPA	#	&	#	Gravimetry	#	Verónica/Jeanette
	Aerosols/Denuders	Laboratory	ILMAA-002v°1	R&P	#	-	#	IC	#	M. Rosa/Verónica
	PCB's	Laboratory	X	EPA	#	-	#	GC-MSD	X	Verónica Muñoz
	PAH's	Laboratory	X	EPA	#	-	#	GC-MSD	X	Verónica Muñoz
	Quality Program (QA/QC)	Laboratory	Guide ISO 17025	ISO				&	&	&

#: Good. Means that the issue has received good level of research and training by japanese and chilean side

&: Not enough. Means that the issue needs more research and training in order to reach an optimum condition.

X: Means that the activity has no started yet.

7-6-2 大気汚染管理分野の分析実績 (Numbers of Analyzed Samples(Air) in 2000-2001)

客先番号/プロジェクト番号	受取日	申請番号	サンプル数	陰イオン	陽イオン	C2-C6	BTXs	比重	分析数合計
Client N°/ Project N°	Reception	Solicitud N°	Sample	Anions	Cationes	C2-C6	BTXs	Gravimetry	
211	2-Jun-00	175	2	2	2				4
211	5-Jun-00	177	4	4	4				8
211	8-Jun-00	181	4	4	4				8
211	9-Jun-00	182	8			8			8
211	8-Jun-00	182	4				4		4
211	12-Jun-00	183	5	5	5				10
211	12-Jun-00	184	5	5	5				10
211	15-Jun-00	188	4	4	4				8
211	16-Jun-00	191	8			8			8
211	16-Jun-00	192	4				4		4
211	19-Jun-00	192	3	3	3				6
1311	20-Jun-00	193	2			2			2
211	19-Jun-00	193	2	2	2				4
211	20-Jun-00	194	2	2	2				4
211	22-Jun-00	196	3	3	3				6
211	24-Jun-00	202	2	2	2				4
1311	20-Jun-00	203	2	2	2				4
211	27-Jun-00	204	4	4	4				8
211	28-Jun-00	207	9			9			9
211	29-Jun-00	209	5	5	5				10
211	1-Jul-00	212	4	4	4				8
211	5-Jul-00	213	4	4	4				8
211	5-Jul-00	214	9			9			9
211	6-Jul-00	215	4				4		4
211	6-Jul-00	221	5	5	5				10
211	11-Jul-00	222	4	4	4				8
211	12-Jul-00	226	4	4	4				8
211	12-Jul-00	227	9			9			9
211	20-Jul-00	232	6	6	6				12
211	17-Jul-00	233	1	1	1				2
211	17-Jul-00	234	15			15			15
211	17-Jul-00	235	8				8		8
211	24-Jul-00	245	5	5	5				10
211	24-Jul-00	246	5	5	5				10
211	24-Jul-00	247	4	4	4				8
211	27-Jul-00	251	4	4	4				8
211	31-Jul-00	253	4	4	4				8
211	2-Aug-00	254	5	5	5				10
211	3-Aug-00	258	5	5	5				10
211	4-Aug-00	259	1			1			1
211	7-Aug-00	260	4	4	4				8
211	8-Aug-00	261	4	4	4				8
211	11-Aug-00	266	4	4	4				8
211	14-Aug-00	270	5	5	5				10
211	16-Aug-00	271	4	4	4				8
211	18-Aug-00	272	4	4	4				8
211	21-Aug-00	273	5	5	5				10
211	24-Aug-00	275	4	4	4				8
211	26-Aug-00	279	4	4	4				8
211	29-Aug-00	282	4	4	4				8
211	31-Aug-00	286	4	4	4				8
211	5-Sep-00	289	4	4	4				8
211	6-Sep-00	291	4	4	4				8
211	13-Sep-00	300	5	5	5				10
211	21-Sep-00	307	4	4	4				8
211	25-Sep-00	310	15			15			15
211	25-Sep-00	311	4	4	4				8
1110	8-Jun-01	396	14	14					14
1110	8-Jun-01	397	14	14					14
1110	18-Jun-01	398	23	23					23
1110	22-Jun-01	399	18	18					18
1110	29-Jun-01	403	19	19					19
1110	6-Jul-01	405	18	18					18
5111	27-Jul-01	412	1					1	1
5111	20-Aug-01	412	17					17	17
5111	1-Oct-01	413	37					37	37
1110	7-Sep-01	415	40	40					40
5111	27-Aug-01	417	28					28	28
5111	27-Aug-01	418	2					2	2
5111	31-Aug-01	419	5					5	5
1110	1-Aug-01	421	2	2					2
5111	20-Aug-01	440	4					4	4
5111	24-Oct-01	440	44					44	44
5111	20-Aug-01	446	1					1	1
5111	24-Oct-01	449	48					48	48
5111	25-Oct-01	452	24					24	24
5111	27-Aug-01	452	1					1	1
5111	1-Oct-01	460	23					23	23
1110	7-Sep-01	482	2	2					2
5111	24-Oct-01	483	50					50	50
5111	25-Oct-01	465	16					16	16
5111	24-Oct-01	476	24					24	24
5111	24-Oct-01	481	24					24	24
5111	24-Oct-01	487	18					18	18
1110	9-Oct-01	489	61	61					61
1110	16-Oct-01	490	7	7					7
Intercomparación	16.10.01	492	1						
5111	16-Oct-01	491	69					69	69
1110	24-Oct-01	498	63	63					63
5111	25-Oct-01	500	64					64	64
TOTAL			1.052	455	174	76	20	500	1,225

7-6-3 大気汚染管理分野のクロスチェック実施状況 (List of Cross-check Analysis in Air Lab.)

No.	時期	プログラム/活動の名称	主催者	クロスチェックの パラメーター	分析数/サ ンプル数	担当者	備考
No.	Duration	Name of program/activity	Promoter/ counter-part	Cross-cheded Parameters	Number of analysis/ samples	Person in charge	Note
1	November 2000 - November 2001	Metals and Anion in Filter of High-Volumen Sampler Intercomparison with NIES Tsukuba	Dr. Masataka Nishikawa National Institute for Environmental Study, Japan	5 Metals: Pb, Cd, Ni, Fe, V 2 Anions: NO3-, SO4--	2 samples	Maria Rosa Gonzales	Metals: by ICP Anion: by Ion Chromatography
2	On going activity Start June 2001	Exchange of real samples of PCBs collected in Santiago, Chile and Osaka Env. Center (Japan)	Dr. Kiyoshi Imamura Environmental Pollution Control Center Osaka Prefectural Gov.	PCB in urban air	4 samples	Rodrigo Romero, Veronica Muñoz	
				計	6 サンプル		

7-6-4 機材調整室機器リスト

Laboratorio de Calidad de Aire

機器名称 Equipos	数量	メーカー名 Marca	モデル名 Modelo
Monitoreo continuo de gases y particulas			
Monitor de SO2	1	API	100A
Monitor de O3	1	API	400A
Calibrador y dilutor de gases	1	API	700
Generadores de aire cero	2	API	701
Cilindro aire ultra cero	2	AGA	
Cilindros con Gases (SO2,CO,NO,CH4)	6	AGA	
Toma muestras de gases		ACE Glass	
Modulo Meteorologico			
Sensor de velocidad de viento	1	Met One	010 C
Sensor de direccion de viento	1	Met One	020 C
Sensor de temperatura y humedad	1	Met One	083 V
Respaldo y transferencia de datos			
Datalogger	1	ESC	8816
Datalogger	1	Campbell Sci	CR10x
Registrador (6 canales)	1	cole-parmer	
UPS (1500 VA)	1	Powerware	5000
		基準	メーカー名
Otros instrumentos		Norma	Marca
Bomba manual generadora de presión	1	NIST	VETO
Bomba manual generadora de vacío	1	NIST	VETO
Rotámetros de precisión (0 - 2lpm, 0 - 10lpm)	2	NIST	Cole-Palmer
Manómetros digitales (máximo 30 psi)	1	NIST	DWYER
Manómetros digitales (0 - 200 psi)	2	NIST	AMETEX
Vacuómetro digital (0 - 30Hg)	1	NIST	AMETEX
Barómetro (400mb - 1070 mb)	1	Estándar	Cole-Palmer
UPS Taurus (350 VA)	2	Baja Potencia	300
Kit de calibración de masa para TEOM	2	Especial	R & P
Unidad de calibración flujo diferencial TEOM	1	NIST	R & P
Unidad de calibración alto volumen - variflo	1	NIST	Grasebi
Unidad de calibración de flujo BIOS	2	NIST	BIOS
Multímetro, digital	1	Especial	Fluke

7-6-5 大気汚染測定実績リスト (List of Air Quality Monitoring)

Column 1: Type of sampling C = Continuous Monitoring Equipments, M = Manual or others

Column 2: Use of mobile station Y = yes, N = no

(2000年)

No	Name of project/activity	Client/ Counter-part	1	2	Place	Duration	Parameters	Ratio of Valid data/ Number of samples	Type of Report/ Report No.
1	Equipment certification study of air quality monitoring and operation procedures advice.	Codelco	C	N	Calama (II región)	December 2000	Calibration of SO2 monitor and PM10 (TEOM, PM10 sampler)	7 SO2 4 TEOM 5 PM10 sampler	Advice Report No. 2000-03
2	Meteorology and air quality project	CONAMA RM	C	Y	Talagante (Metropolitan Region)	01-Jan-2000 to 31-Oct-2000	SO2, CO, O3, NOx, PM10, Temp, HR, WS, WD	90%	Advance N°1, N°2 y Final report Report No. 2000-05
				Y	Peldehue (Metropolitan Region)	01-Jan-2000 to May-2000	SO2, CO, O3, NOx, PM10, Temp, HR, WS, WD	50%	
3	Meteorological and air quality measurements in Temuco and Rancagua for obtaining Technical-scientific background for generation of primary quality regulation for fine particulate matter PM2.5	CONAMA	C	N	Temuco (IX region)	19-Jun-2000 to 31-Oct-2000	PM10, PM2.5 Temp, HR, WS, WD	95%	Advance y final report Report No. 2000-08
					Rancagua (VI region)		Temp, HR, WS, WD	95%	

(2001年)

4	Diagnostic of atmospheric contamination at central macrozone of Chile, Year 1 (in execution)	CONAMA	C	N	Casablanca (V region)	May-2001 to Dec-2001	Temp, HR, WS, WD	40%	Advance N°1, N°2 report Report No. 2001-06
					Arauco (VIII region)		Temp, HR, WS, WD	80%	
					Chiguayante (VIII region)		Temp, HR, WS, WD	80%	
				M	8 point in central región of chile		Passive tube for SO2, O3, NOx	90%	
5	Characterization of atmospheric contamination for particulate matter in South Cities of Chile, background for generate regulation for PM2.5 (in execution)	CONAMA	C	N	Temuco (IX Region)	1-Nov-2000 to 31-Jul-2001	PM10, Temp, HR, WS, WD	95%	Advance N°1, N°2 report Report No. 2001-07
				C/M	Osorno/2 places (X region)	10-Dec-2000 to 31-Dec-2001	PM10, Temp, HR, WS, WD, DICOTOMOS	90%	
6	Reduction technologies of atmospheric contamination in construction works (in execution)	CCHC	C	N	Santiago/ Sampling for 6 construction sites	May to Sep 2001 2 week in each point.	PTS, PM10, PM2.5, PM1, Temp, HR, WS, WD	6 construction sites	Advance N°1, N°2 report Report No. 2001-09
				N	Tunnel in CENMA	Sep to Nov 2001	PTS, PM10, PM2.5, PM1	14 construction activities	
7	Atmospheric diagnostic of street aspirated program	Intendencia RM	M	N	Santiago/ Sampling in 5 street	Aug to Sep 2001	PM10, PM2.5, silt content	1 time a week	Advance N°1 report Report No. 2001-10
8	Air quality and meteorological measurements in V y VI region of Chile (in execution)	MINSAL	C	N	Valparaiso (V region)	15-Nov-2001 to 15-Jan-2002	PM10, Temp, HR, WS, WD	100% on meteorology	Advance N°1 report Report No. 2001-11
				Y	Viña del mar (V region)	do not start yet	SO2, NOx, O3, Temp, HR, WS, WD	do not start yet	
				Y	Rancagua (VI region)	15-Nov-2001 to 15-Jan-2002	SO2, NOx, O3, Temp, HR, WS, WD	100% on meteorology	

7-6-6 燃料関連の分析項目リスト (PARAMETER OF ANALYSIS)

Evaluation of GENMA laboratories activities (November 2001)

Laboratory	Anal. Param.	Place to analyses	Testing N°	Reference	Sampling	Pretreat for analysis	Analytical Mtd/ Instrument	Validation	Person in charge
FUEL									
(Diesel)	Flash Point	Laboratory	NCh 69 OF 83	ASTM	X	-	Pensky Martens	#	Jeannette Astudillo
	Density	Laboratory	NCh 822 OF 85	ASTM	X	-	Hydrometer	X	Jeannette Astudillo
	Calculated Cetane index	Laboratory	NCh 1988 OF 87	ASTM	X	-	Calculated	X	Jeannette Astudillo
	Distillation Features	Laboratory	NCh 66 OF 83	ASTM	X	-	Thermometry	X	Jeannette Astudillo
	Sulfur	Laboratory	NCh 2294 OF 95	ASTM	X	-	X-Ray Fluorescens	X	Rubén/Jeannette
(Gasoline)	Reid vapour pressure	Laboratory	NCh1845Of83	ASTM	X	-	Pressure measurement	X	Jeannette Astudillo
	Destillation	Laboratory	NCh66Of83	ASTM	X	-	Thermometry	X	Jeannette Astudillo
	Sulfur	Laboratory	NCh2294Of95	ASTM	X	-	X-Ray Fluorescens	X	Jeannette Astudillo
	Quality Program (QA/QC)	Laboratory	Guide ISO 17025	ISO					All

#: Good. Means that the issue has received good level of research and training by japanese and chilean side

&: Not enough. Means that the issue needs more research and training in order to reach an optimum condition.

X: Means that the activity has no started yet.

7-6-7 燃料関連の分析実績

Numbers of Analyzed Samples(Fuel) in 2000-2001

客先番号/プロジェクト番号	受取日	申請番号	サンプル数		分析数合計
Client N°/ Project N°	Reception	Solicitud N°	Sample	Flash Point	Total análisis por Solicitud
17\2	15.06.01	402	1	1	1
49\1	30.10.01	501	1	1	1
TOTAL			2	2	2

7-7-1 環境情報分野の詳細活動とその成果についての計画表

30-Nov-2001

CENMA: Output (Product) and Activities during the Extended Period

(Environmental Information)

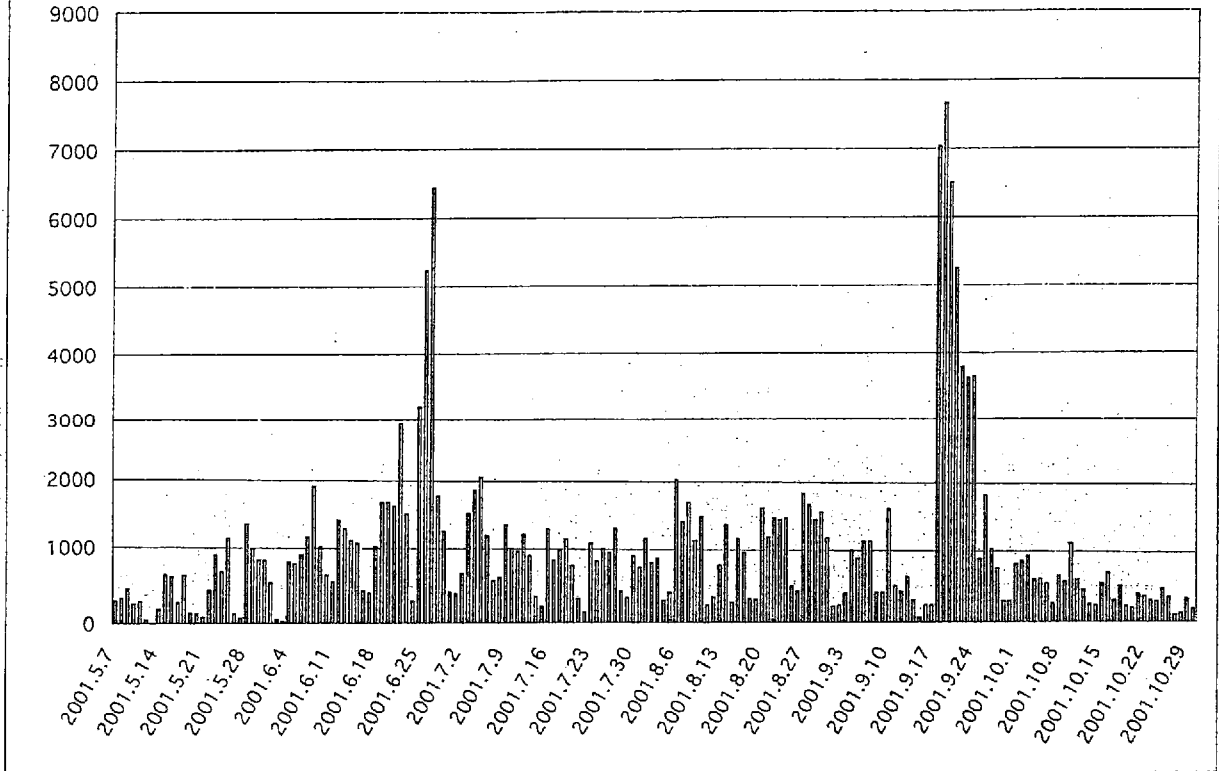
■ Project Output : Contribution to the establishment of an environmental information system in both the MR and at the national level														
■ Activities	■ Detail Activities & Output	Person in charge	Staff	(2001)					(2002)					memo
				10	11	12	1	2	3	4	5			
1. IT (Information Technology) Network infrastructure														
5.1.1 To establish well maintain LAN system	(To install http, pop/smtp server) (Network Configuration Map) - Ethernet Map - Computer Map - IP Address List - PC Mg List (Database) - E-mail op/mg manual - HTTP op/mg manual - End user's manual	Sr.Mario	Sr.Manuel	-----	-----	-----	-----	-----	-----	LE Equipment (HW: Server) (SW)	√ √ √ √			
5.1.2 To establish a integrated file sharing system	(To install ftp or other file sharing server) - FTP op/mg manual - Document standardization (ex. PDF) - File sharing rules - User manual - Back-up rules - Security rules	Sr.Mario	Sr.Manuel	-----	-----	-----	-----	-----	-----	LE (HW:Server)				
5.3.2 To establish well maintain and secured WAN ⁷ system	- Routing manual (discuss with CTC) - Routing Table - Daily/Weekly/Monthly Maintenance manual - Trouble shooting Manual (Monitoring (Network)) - Monitoring report	Sr.Mario	Sr.Manuel	-----	-----	-----	-----	-----	-----	LE (HW) (SW) ⁸ SE				
2-1. Output (Information) Homepage, P.R, Training etc														
5.1.3 To collect necessary environmental information	(To collect necessary environmental information or resource of data)	Sr.Mario Sr.Jaime	Sr.Manuel	-----	-----	-----	-----	-----	-----	LE				
5.2.1 To establish Internet Web-site (HTTP ³ server) of CENMA	(To establish Internet Web-site) - Web-site map - Operation rule - Data flowchart for Meteorological Section. (Input data / Output information) (Committee) - Basic Design (Concept) - To reserve Individual Homepages	Sr.Mario	Sr.Manuel	-----	-----	-----	-----	-----	-----	LE (SW)	√			
5.2.2 To develop dynamic web-site working with DBMS ⁴	(To install Intranet server) (To develop database) - Training participants & certifications ① Staff database - Equipment inventory - News paper clipping - Library Information	Sr.Mario	Sr.Manuel	-----	-----	-----	-----	-----	-----	LE (SW)	√ √			
5.2.3 To establish Intranet Web-site and to develop LIMS ⁵	(To develop application for LIMS) - Equipment Inventory - Application x... - Process Management (Lab.) special for Analysis orders	Sr.Mario Sr. PabloR	Sr.Manuel etc...	-----	-----	-----	-----	-----	-----	LE (SW)				
5.4.1 To develop non-linear VIDEO editing system (refer 6.2.1)	(To make training Video on CD and/or DVD) (To establish DTV ⁹ & DTP ¹⁰ Lab.) - Training materials -	Sr.Mario Srta.Paola	Sr.Boris Sr.Manuel etc...	-----	-----	-----	-----	-----	-----	LE (HW+SW) Solution				
5.4.2 To develop POD ¹¹ system and to publish necessary information and environmental education material	(To learn basic DTP Application) (To publish newsletter) - Working group (To publish annual report) - Annual report	Sr.Mario Srta.Paola	Sr.Boris Sr.Manuel etc...	-----	-----	-----	-----	-----	-----	LE (HW+SW) Solution Cost				
2-2. Output (Environmental Information)														
5.3.1 To coordinate with ⁶ SINIA	(To coordinate and discussion with SINIA staff) - SAIE -	Sr.Mario Sr.Jaime		-----	-----	-----	-----	-----	-----	LE				
5.3.3 To link between SINIA web-site and CENMA web-site	(To link between SINIA web-site and CENMA web-site)	Sr.Mario Sr.Jaime		-----	-----	-----	-----	-----	-----	LE				
5.1.3 To collect necessary environmental information	(To collect necessary environmental information or resource of data)	Sr.Mario Sr.Jaime		-----	-----	-----	-----	-----	-----	LE				

(Note) ¹LE: Long-term expert ²FTP: File Transfer Protocol ³HTTP: HyperText Transfer Protocol ⁴DBMS: DataBase Management System
⁵LIMS: Laboratory Information Management System ⁶SINIA: National System of Environmental Information ⁷WAN: Wide Area Network
⁸SE: Short-term expert ⁹DTV: Desktop Video ¹⁰DTP: Desktop Publishing ¹¹POD: Print on Demand

7-7-2 ホームページへのアクセス状況表

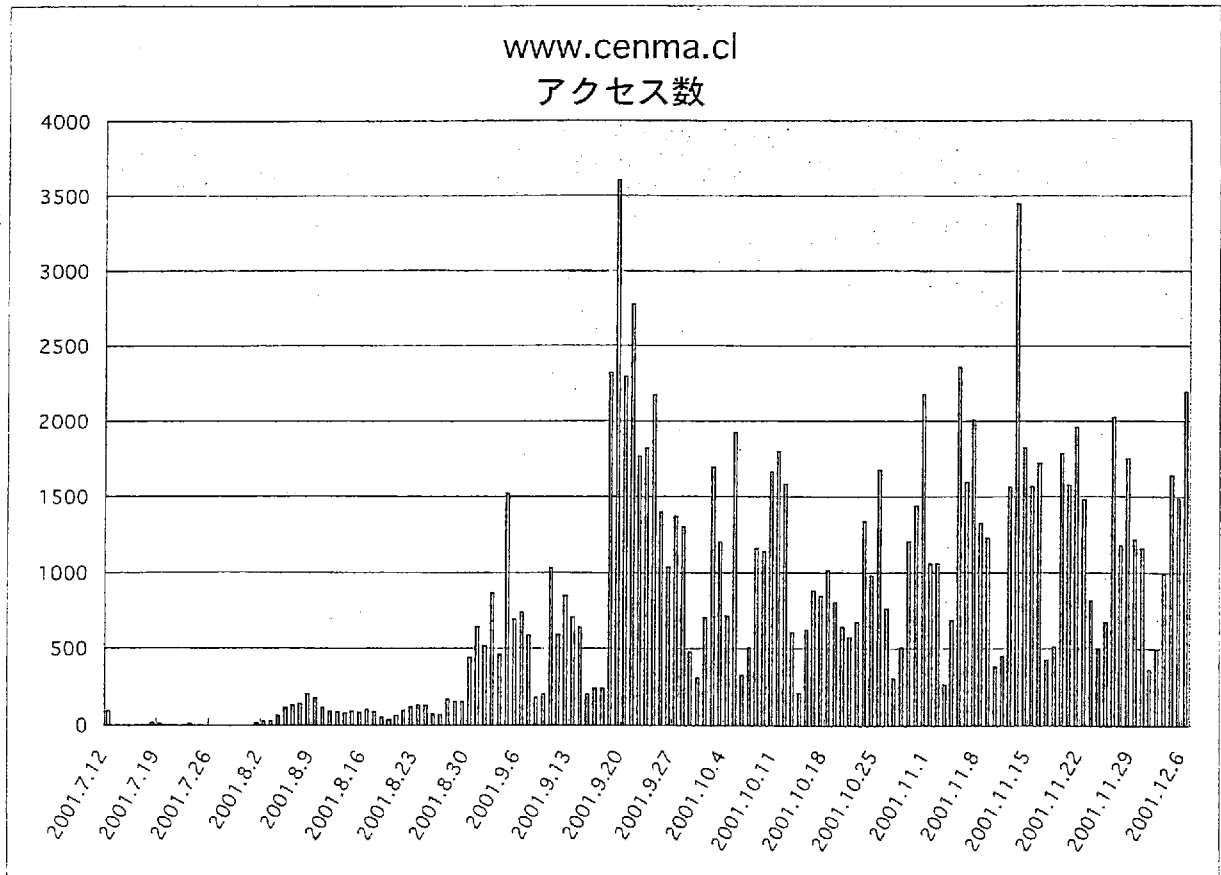
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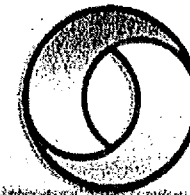
Ing. Regina Massai
Jefe de Unidad de Coordinación y Control de
Proyectos

LABORATORIOS

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Jefe de Laboratorio de Química Ambiental

Ing. Pablo Ulriksen
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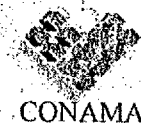
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SEMINARIO

*Taller de diseño ambiental
Convento de Escovalte sobre
Contaminantes Orgánicos
Persistentes (COP)*

Centro EULA
Martes, 27 Noviembre 2001

Concepción



PROGRAMA

La Fundación Centro Nacional del Medio Ambiente (CENMA) es una Institución sin fines de lucro, creada por la Universidad de Chile, con el objetivo principal de entregar apoyo científico-técnico al Estado, a nivel de Investigación, Desarrollo y Formación de Recursos Humanos para la formulación e implementación de políticas de protección ambiental en el país, en conformidad con la Constitución Política de Chile.

Con el objeto de potenciar al máximo nuestra capacidad instalada y recursos humanos, hemos iniciado un vigoroso programa de desarrollo de líneas de investigación de problemas ambientales del país en distintos ámbitos, destacan entre ellas los temas en Ciencias Atmosféricas, conducente a caracterizar la calidad del aire de la Zona Central de Chile, problemas de contaminación por Tributildesafeno (TBT), dada su importancia como disruptor endocrino, una tercera área emergente la constituye el estudio de ecosistemas acuáticos, tanto en aguas continentales como marinas y comienza a cobrar progresiva importancia el tema de la gestión y manejo de compuestos químicos en el medio ambiente nacional, tanto en medio aire, suelo y aguas.

CENMA también ha orientado actividades a reforzar contactos internacionales de manera de actualizar conocimiento, compartir experiencias y dar apoyo a las autoridades en materia de acuerdos y tratados internacionales ambientales.

En este contexto, el presente Taller se inserta en el marco de las actividades que CENMA se encuentra realizando para el Proyecto licitado por CONAMA denominado "Levantamiento de información para la implementación del Convenio de Estocolmo, sobre Contaminantes Orgánicos Persistentes (COPs)".

El objetivo general de este proyecto es la elaboración de una propuesta de programa nacional de implementación, seguimiento y apoyo del Convenio de Estocolmo en un enfoque transectorial a nivel nacional que potencie el Sistema Nacional de Gestión Ambiental y le permita al país cumplir con los acuerdos internacionales en materia de la protección de la salud y el medio ambiente, así como el establecimiento de una base para las futuras negociaciones de otros instrumentos internacionales jurídicamente vinculantes a los que Chile pudiera adherirse.

Dr. Raúl G. E. Morales S.
Director Ejecutivo

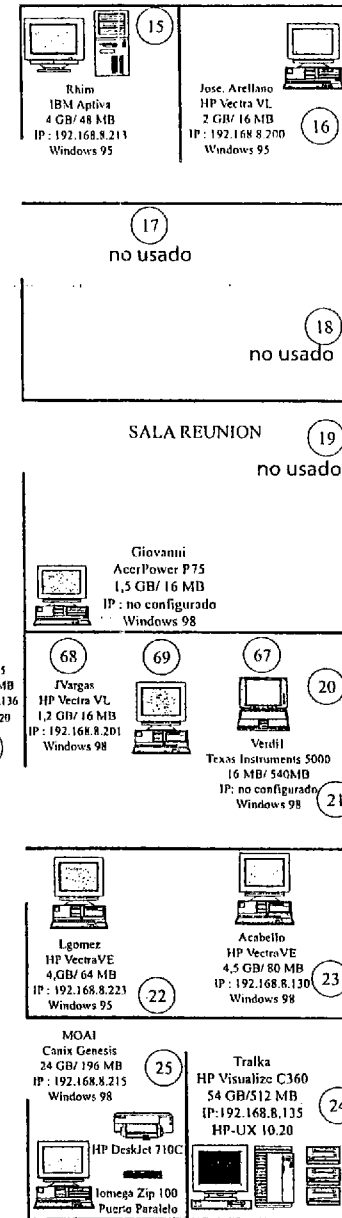
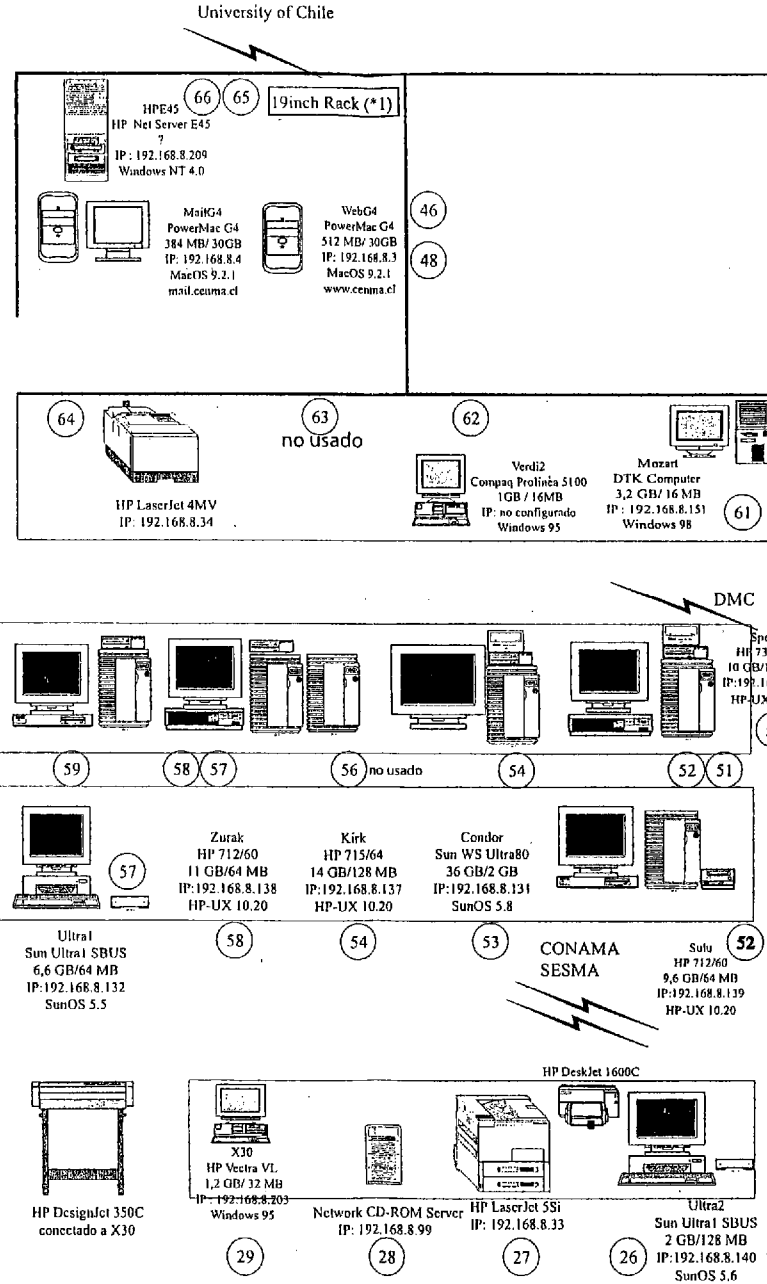
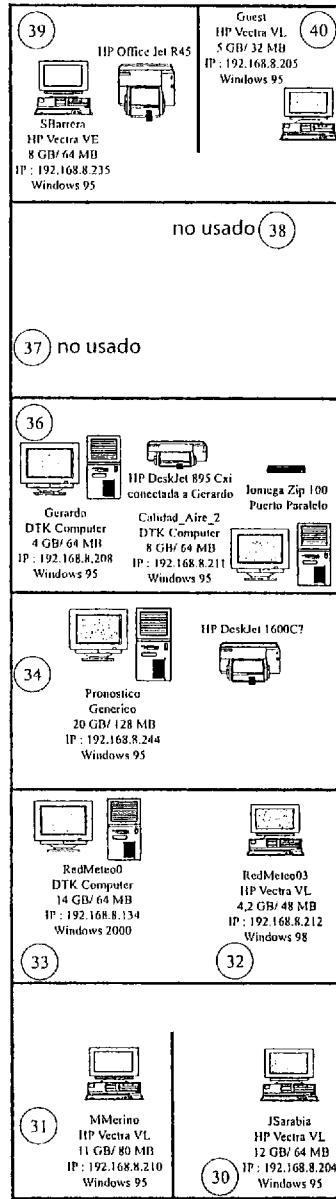
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|---------------|---|
| 9.00 - 9.15 | Bienvenida Centro EULA
Dr. Oscar Parra, Director Centro EULA
Dr. Ricardo Barra, Unidad de Sistemas Acuáticos, Centro EULA |
| 9.15 - 9.30 | Bienvenida de CONAMA Region Bio - Bio, Sr. Bolivar Ruiz, Director Regional |
| 9.30.- 9.45 | Presentacion CONAMA
Sra. Claudia Paratari, Quimico, CONAMA Nacional |
| 9.45 - 10.30 | Antecedentes sobre Contaminantes Organicos Persistentes (COPs).
Sr. Rodrigo Romero, Dr. en Quimica, CENMA |
| 10.30 - 10.45 | Cafe |
| 10.45 - 11.30 | Analisis del Convenio de Estocolmo y su Implementacion en Chile.
Sr. Alfredo Rihm, Ingeniero Civil M.E., CENMA |
| 11.30 - 12.15 | Ciclo de Vida de los COPs y Sistema de Apoyo a la Implementacion del Convenio
Sr. Jaime Escobar, Ingeniero Civil Industrial, CENMA |
| 12.15.- 13.00 | Aportes del EULA y el Proyecto GEF al tema de los COPs.
Dr. Ricardo Barra; Sr. Gonzalo Mendoza, Centro EULA, Universidad de Concepción |
| 13.00 - 13.30 | Ronda de consultas |
| 13.30 | Clausura |

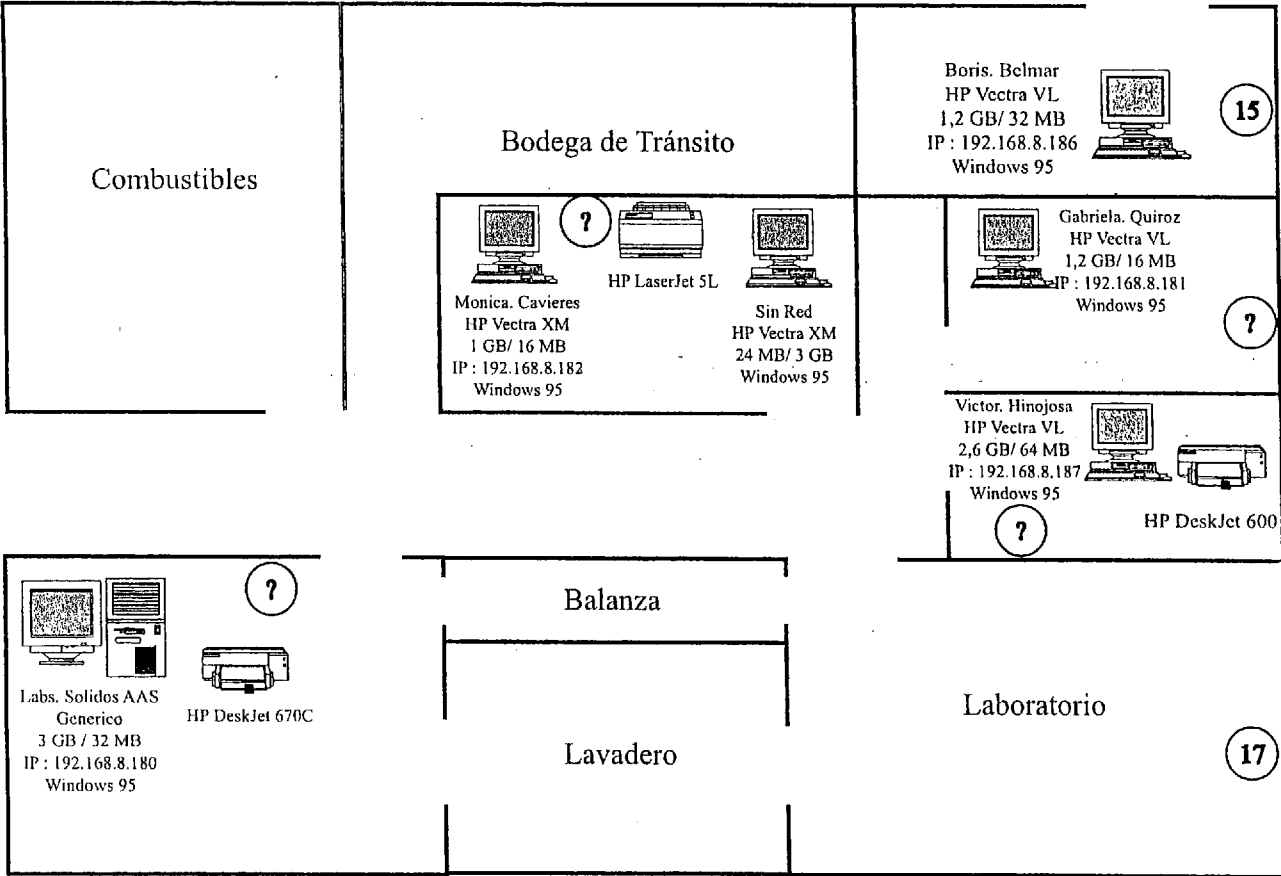
En particular, el problema de los COPs se relaciona con el incremento de sustancias tóxicas en el medio ambiente, particularmente aquellas que por sus características básicas presentan un mayor grado de persistencia, bioacumulación y transporte de larga distancia, obligando a la comunidad internacional a introducir mecanismos y mejoras en el manejo y control de estas sustancias y sus emisiones y/o liberaciones al medio ambiente.

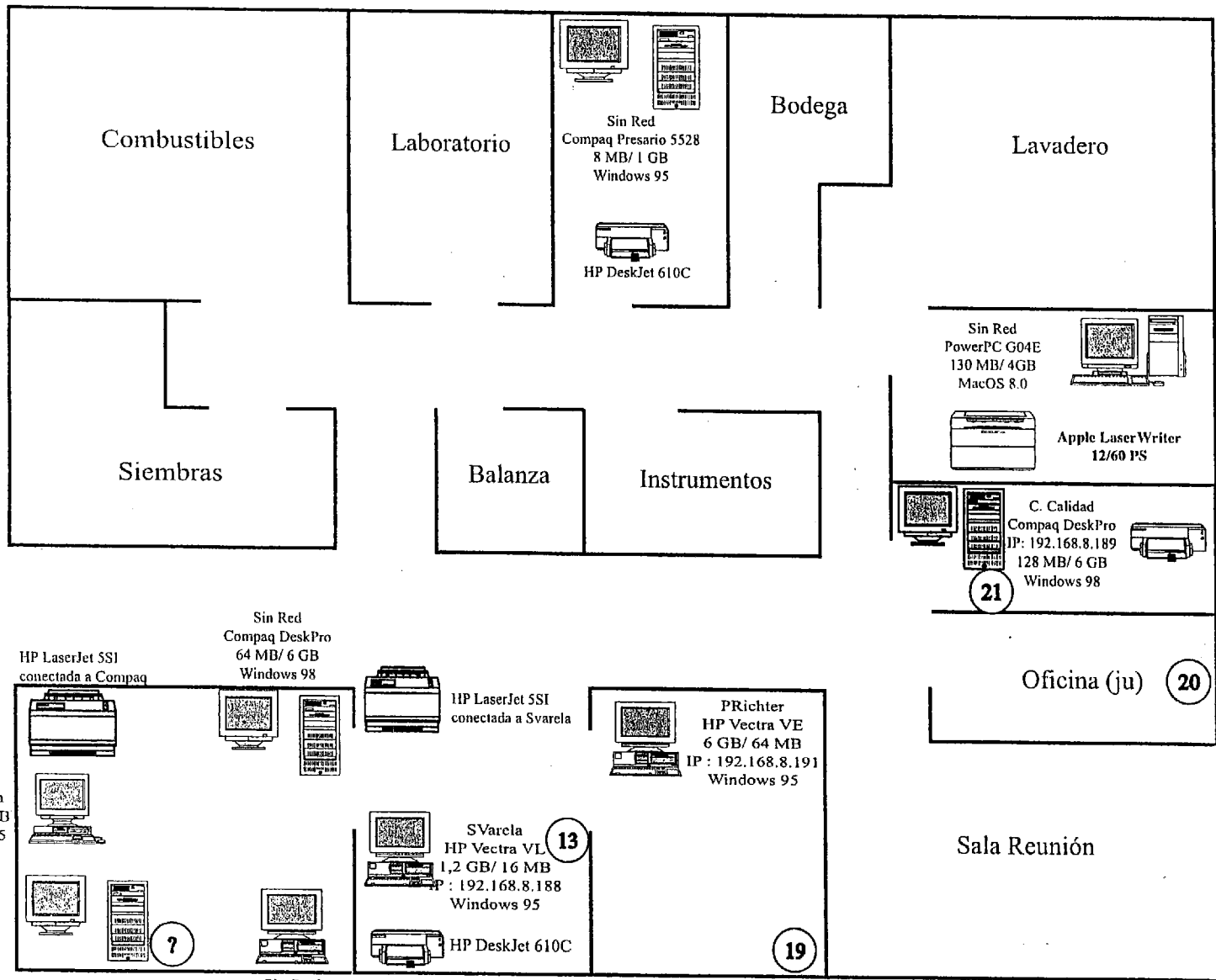
La situación antes expuesta da origen al Convenio sobre COPs, conocido también como el Convenio de Estocolmo, el cual contiene disposiciones que el país debe cumplir una vez suscrito a este Convenio, planteándose así la necesidad de efectuar un análisis de factibilidad para analizar y establecer un programa de implementación y el posterior seguimiento de los compromisos adquiridos.

En la actualidad en Chile tanto la capacidad técnica, como la experiencia, la investigación y el manejo de este tipo de contaminantes ambientales, es muy incipiente. Sin embargo dada la envergadura de los riesgos potenciales que este tema representa para el país, existe ya una cierta capacidad en desarrollo.

El objetivo de estos Talleres es dar amplia difusión a este Convenio y a los resultados del trabajo desarrollado por CENMA, anticipándose a la relevancia que comenzará a presentar este tema para el país.







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IBM Aptiva
4 GB/ 48 MB
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HP LaserJet 551
conectada a Compaq

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Compaq DeskPro
64 MB/ 6 GB
Windows 98

HP LaserJet 551
conectada a Svarela

PRichter
HP Vectra VE
6 GB/ 64 MB
IP : 192.168.8.191
Windows 95

SVarela
HP Vectra VL
1,2 GB/ 16 MB
IP : 192.168.8.188
Windows 95

HP DeskJet 610C

Publico01
Compaq DeskPro
IP: 192.168.8.222
64 MB/ 6 GB
Windows 98

Sin Red
HP Vectra VL
1,6 GB/ 8 MB
Windows 95

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PowerPC G04E
130 MB/ 4GB
MacOS 8.0

Apple Laser Writer
12/60 PS

C. Calidad
Compaq DeskPro
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128 MB/ 6 GB
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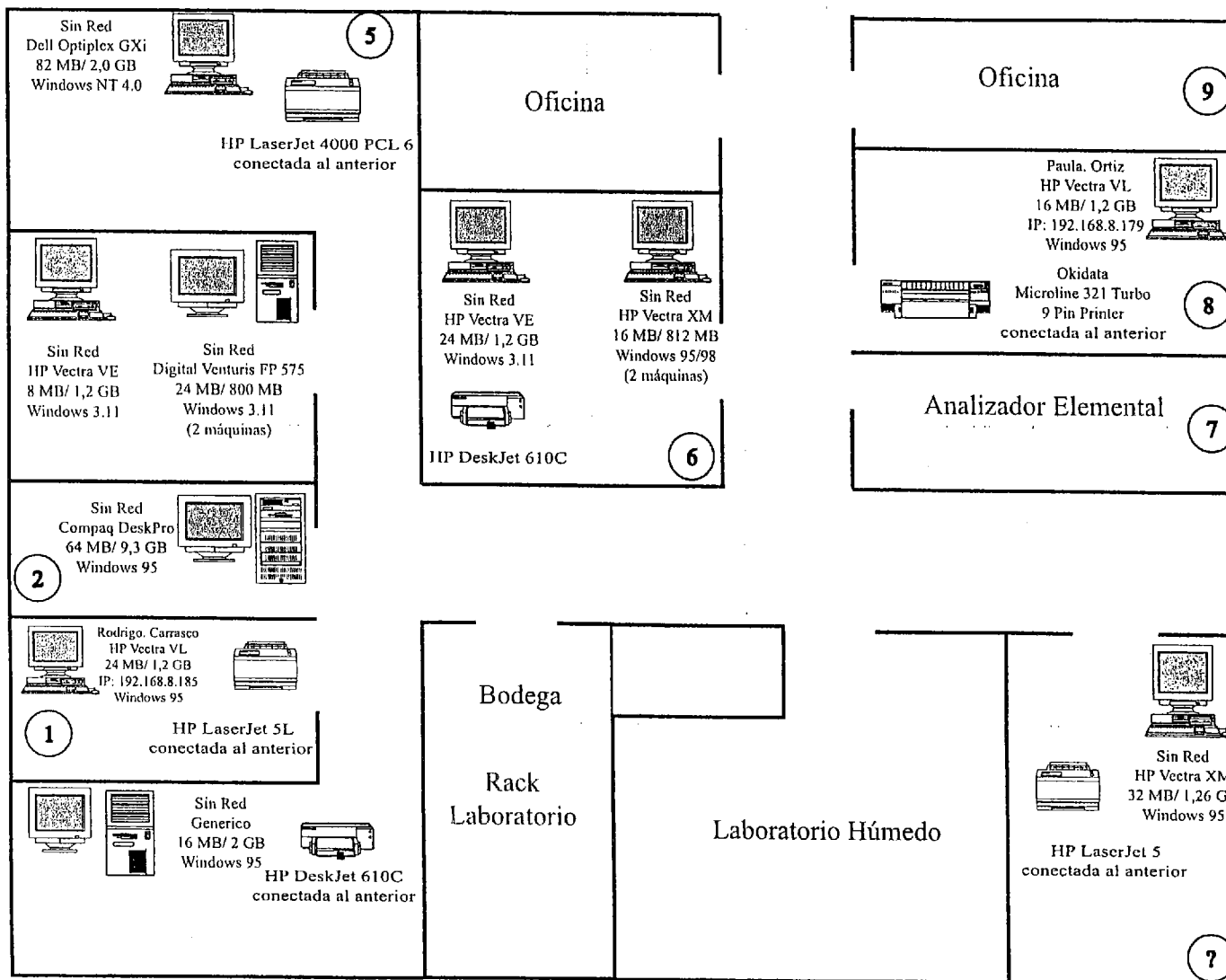
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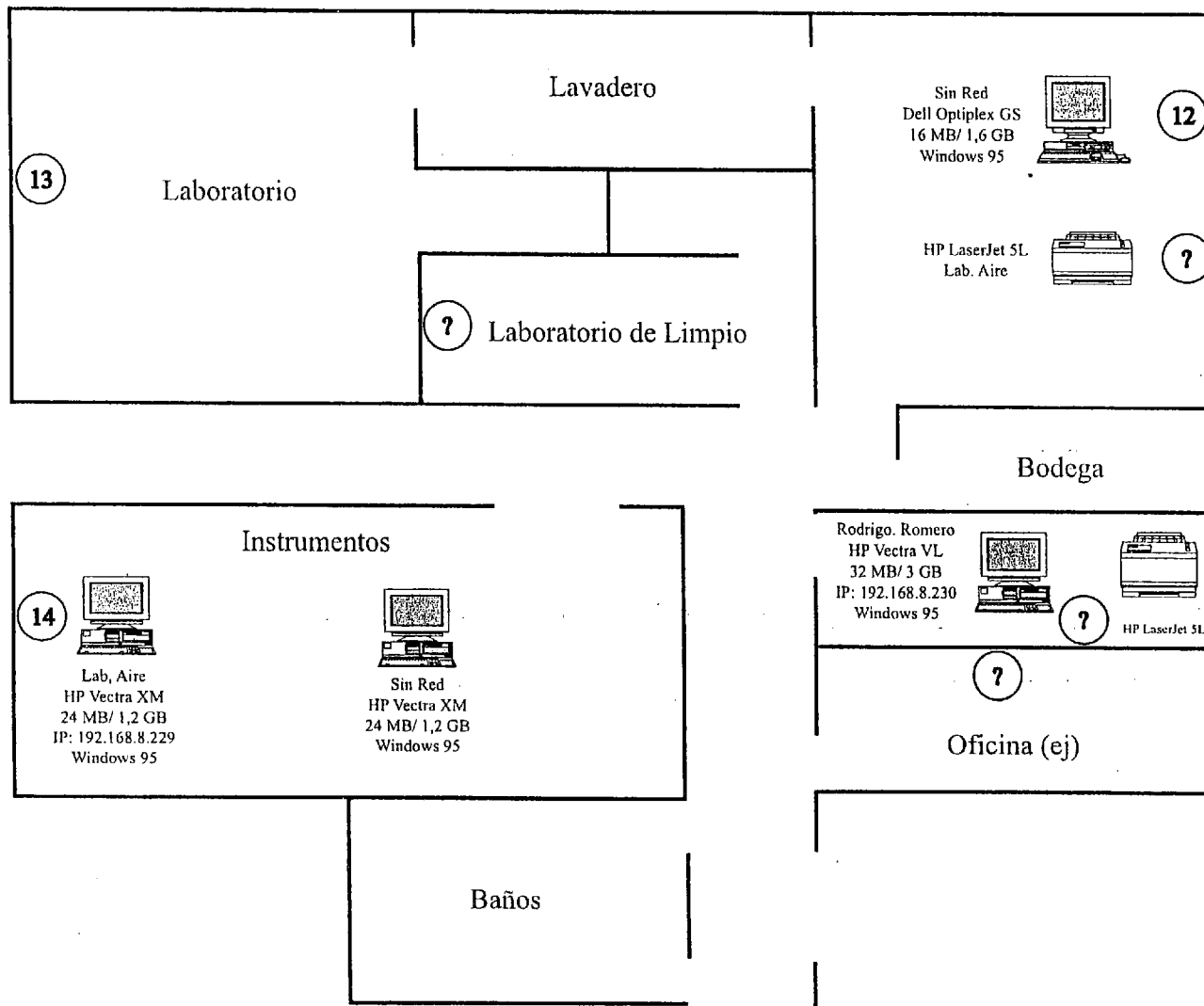
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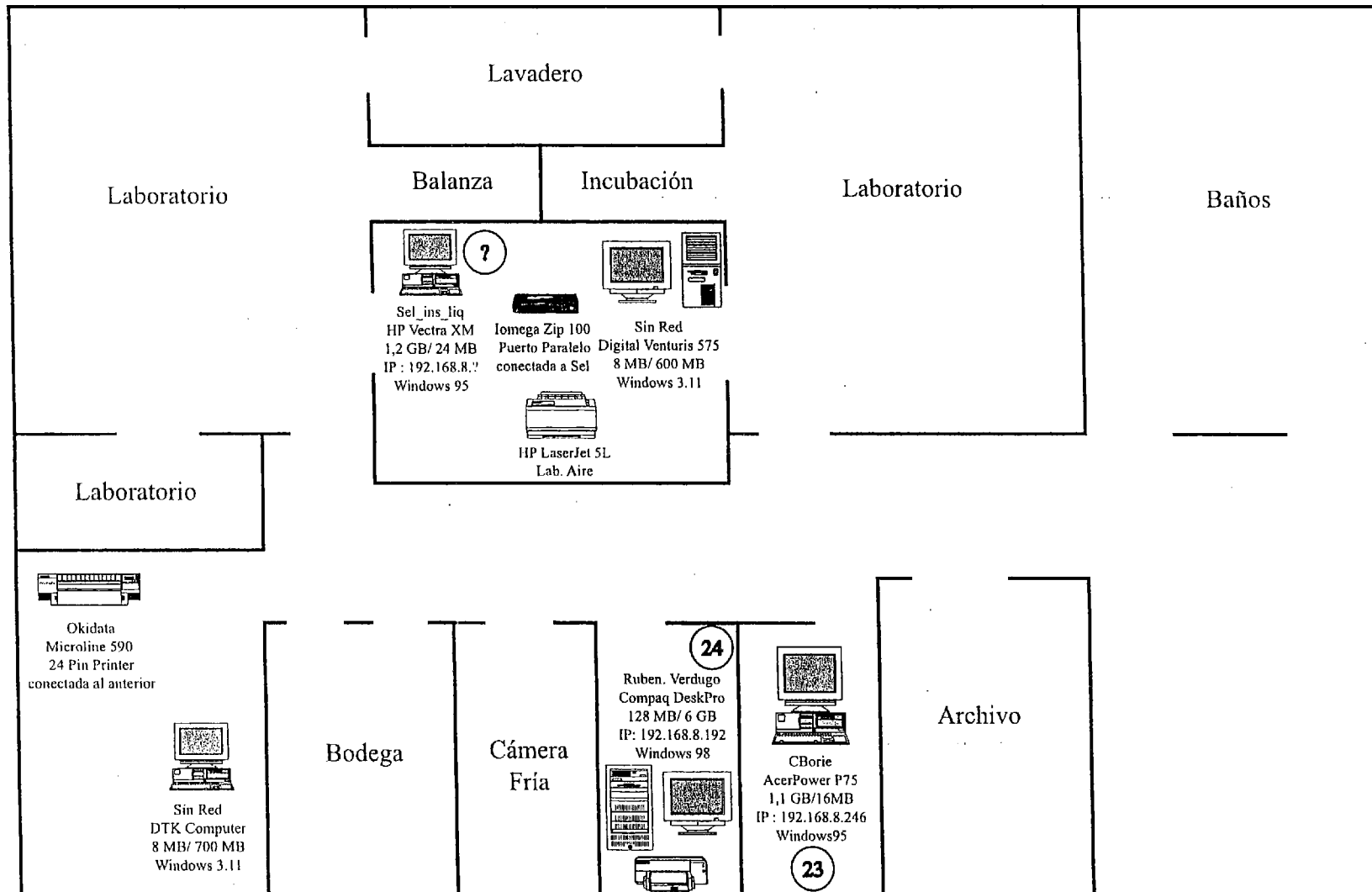
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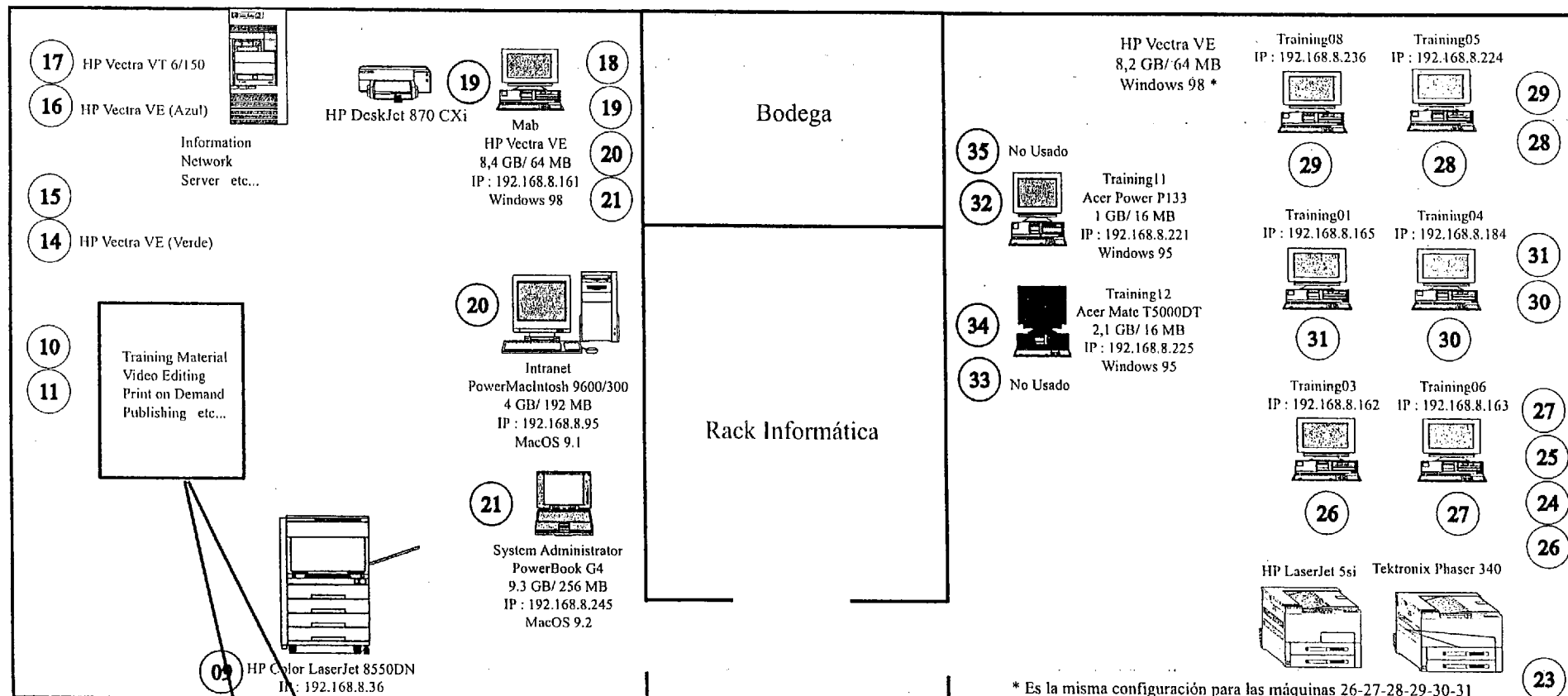
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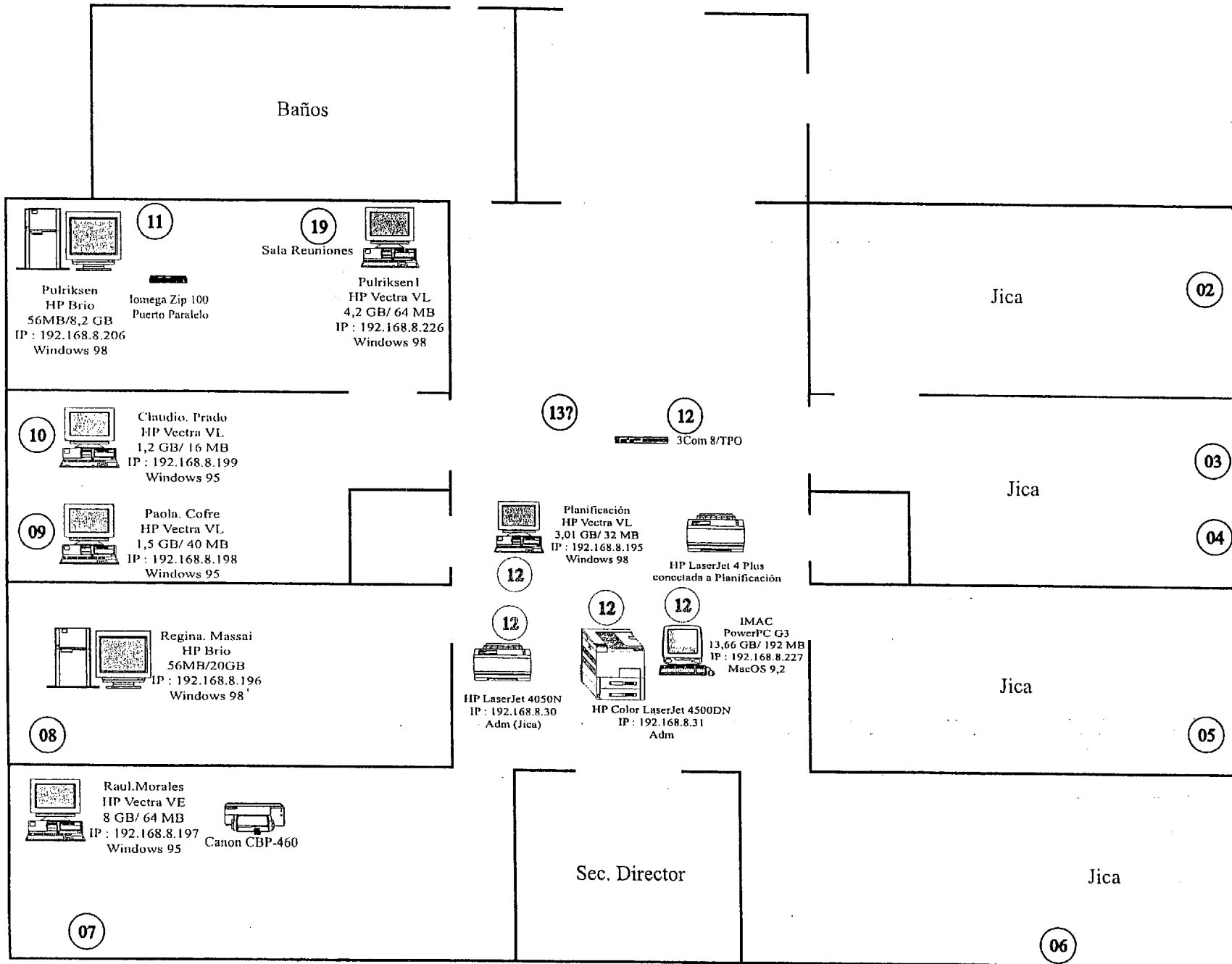


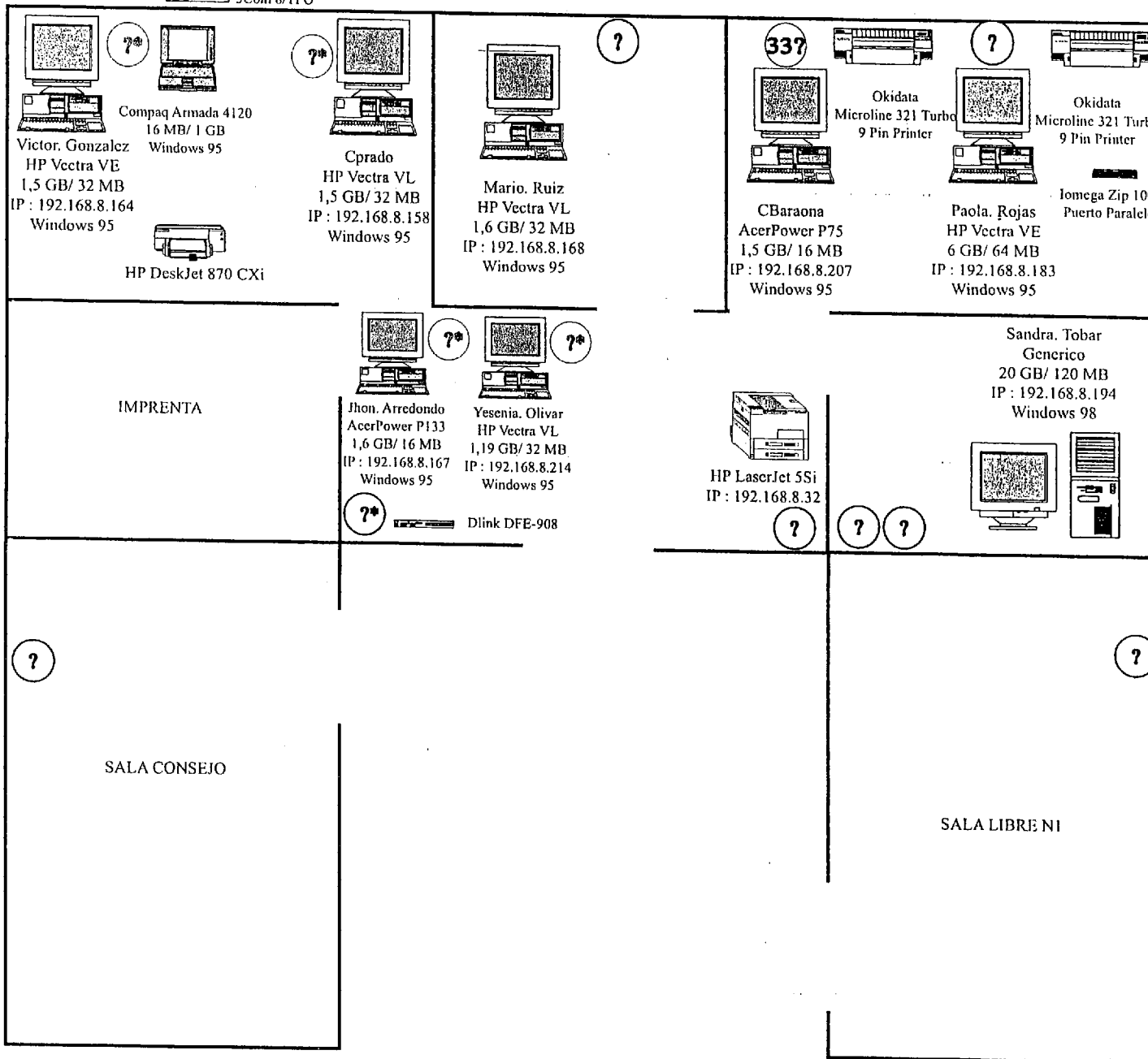


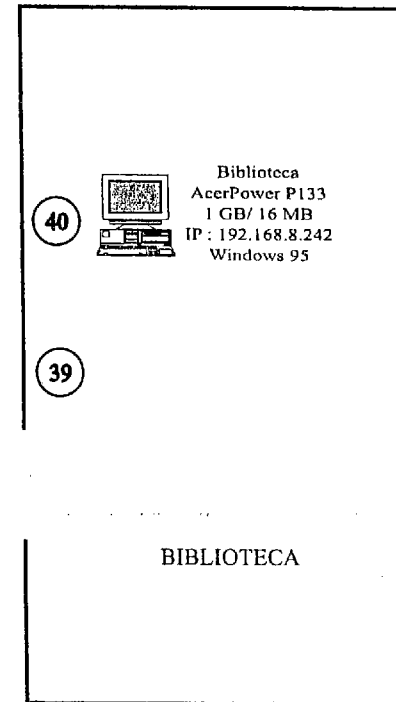
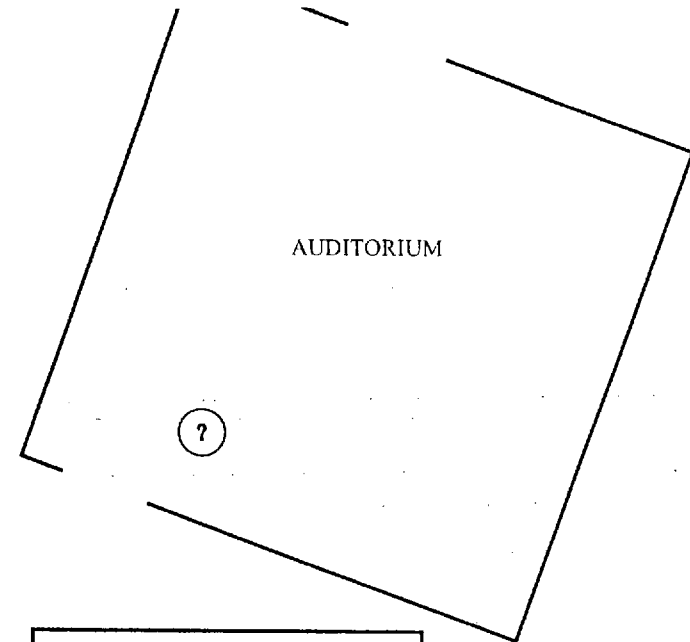
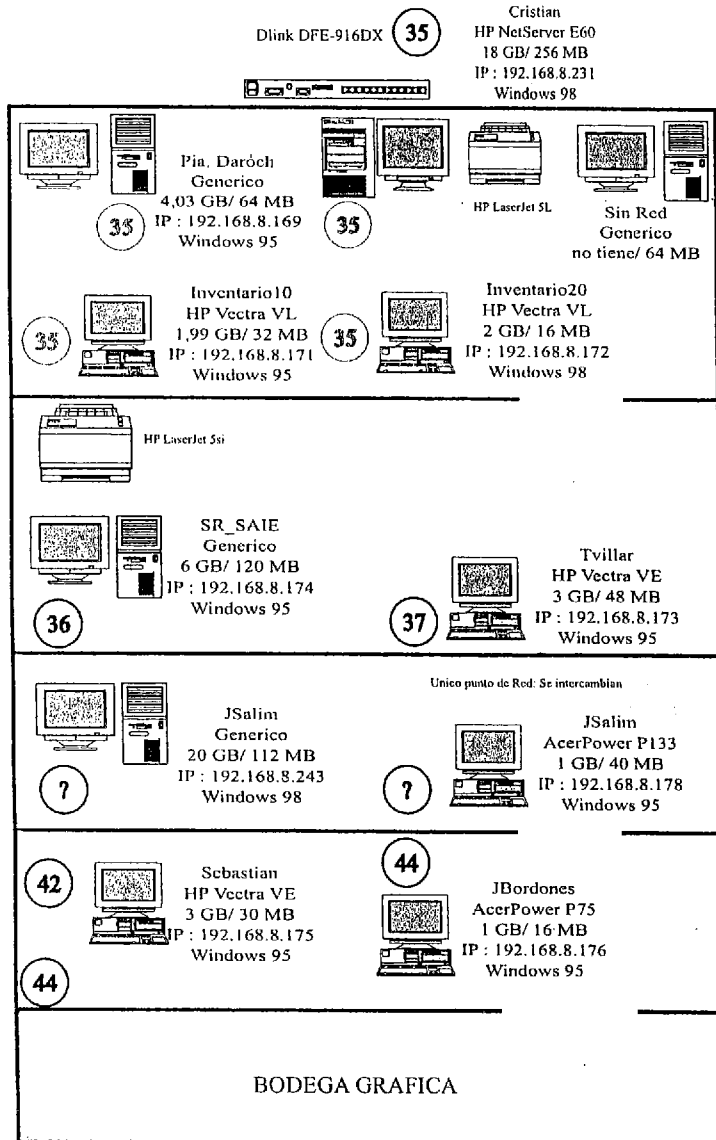


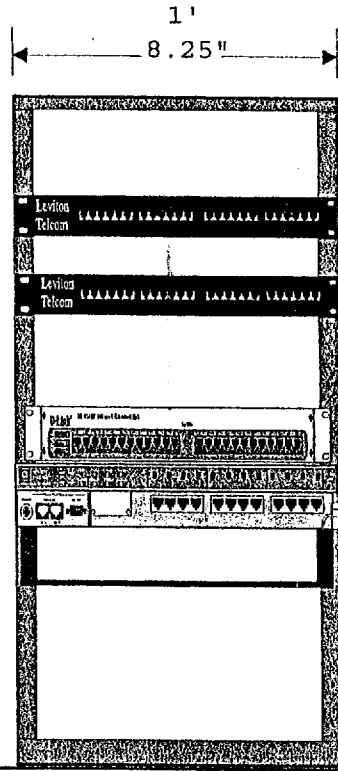


* Es la misma configuración para las máquinas 26-27-28-29-30-31





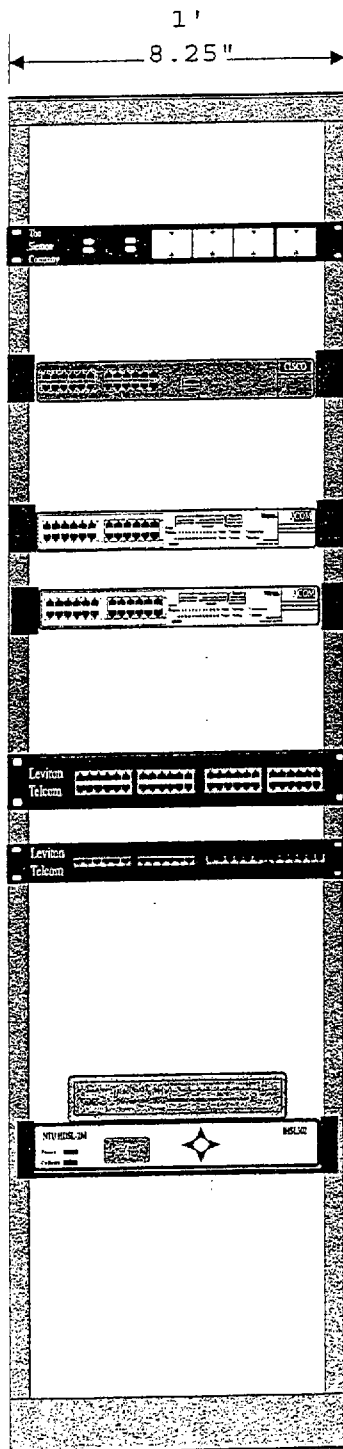




Pach Panel Leviton Telcom Info Tap Category 5 1-6x 7x-12x 13x-18x 19x-24x

Pach Panel Leviton Telcom Info Tap Category 5 1-6x 7x-12x 13x-18x 19x-24x

Advanced Stack HP J2600 Hub 12 12x - 1x



The Siemon Company 1-2 3-4 5-6 7-8 9-10 11-12 13-14 15-16
Fibra Optica

Cisco Catalyst 3500 Series XL 1-11x 13x-23x
2x-12x 14x-24x

01

48

Switch 3300XM 3Com (24 ports) 1-6x 7x-12x
13x-18x 19x-24x

49

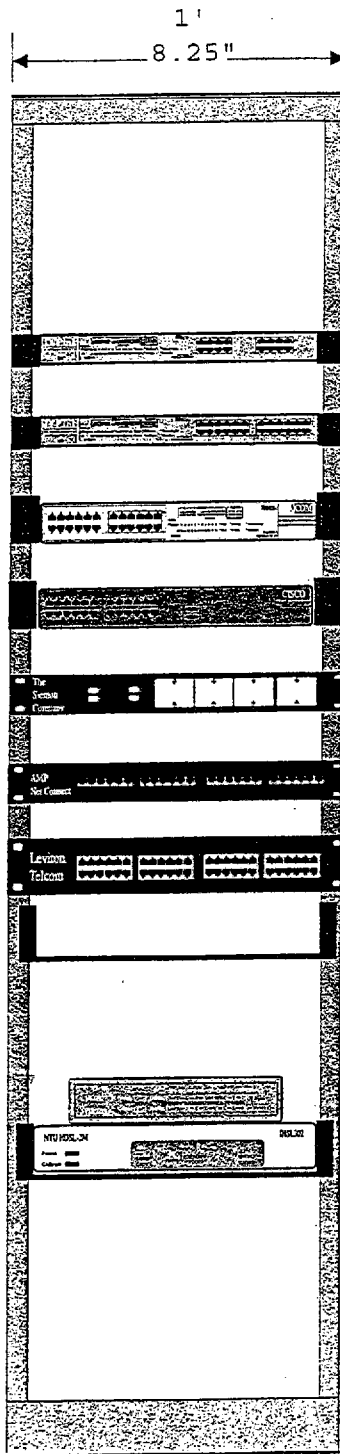
72

Switch 3300XM 3Com (24 ports) 1-6x 7x-12x
13x-18x 19x-24x

Pach Panel Leviton Telcom 1-6x 7x-12x 13x-18x 19x-24x
Info Tap Category 5

Pach Panel Leviton Telcom 1-6x 7x-12x 13x-18x 19x-24x
Info Tap Category 5 25-30x 31x-36x 37x-42x 43x-48x

Cisco System
Cisco 1000 Series
NTU HDSL-2M



DLink DFE-916X (16 ports) 9x-12x 13x-16
1x-4x 5x-9x

DLink DE-1824 (24 ports) 1-6x 13x-18x
7x-12x 19x-24x

Switch 3300XM 3Com (24 ports) 1-6x 7x-12x
13x-18x 19x-24x

Cisco Catalyst 3500 Series XL 1-11x 13x-23x
2x-12x 14x-24x

The Siemon Company 1-2 3-4 5-6 7-8 9-10 11-12 13-14 15-16
Fibra Optica

Pach Panel Amp Net Connect 1-6x 7x-12x 13x-18x 19x-24x
Category 5e System

Pach Panel Leviton Telecom 1-6x 7x-12x 13x-18x 19x-24x
Info Tap Category 5 25-30x 31x-36x 37x-42x 43x-48x

Cisco System
Cisco 1600 Series
NTU HDSL-2M

Documentación del WebSite del Centro Nacional del Medio Ambiente (CENMA)

01 de Noviembre de 2001

Descripción por Directorio

*index.htm= <http://www.cenma.cl/>

Directorios	Detalle	Archivos/Carpetas Componentes	Path en la Página
/archivos	Contiene archivos referentes a presentaciones	1 archivo html 1 carpeta (presen)	*index.htm->archivos
/archivos/presen		4 carpetas(inacap, ruben01, sakurai, solid)	
/inacap/presen/inacap	Presentación de Y. Eguchi	72 imaganes 68 archivos html	Index.htm->archivos->presentacion5
inacap/presen/ruben01	Presentación de R. Verdugo	14 imaganes 10 archivos html	Index.htm->archivos->presentacion1
inacap/presen/sakurai/labwasteManage	Presentación de K. Sakurai	59 imaganes 55 archivos html	Index.htm->archivos->Presentacion4
inacap/presen/sakurai/pl	Presentación de K. Sakurai	55 imaganes 44 archivos html	Index.htm->archivos->Presentacion3
inacap/presen/solid	Presentación de A. Rihm	25 imaganes 21 archivos html	Index.htm->archivos->Presentacion2
A-SORRY.GIF	Gif de aviso		
/calidad-aire	Monitoreo de Contaminantes atmosféricos	4 imaganes 2 archivos html (cal-aire*.htm?)	Index.htm->Calidad de Aire
/capacitacion	Informacion general sobre cursos de capacitacion	30 archivos htm 5 imagenes	Index.htm->capacitacion
/cops1	Contaminantes Orgánicos Presentes	1 html 8 imaganes 3 pdf 5 doc	Sin referencia, esta carpeta quizás de más
/estaciones	Detalle de las Estaciones de Monitoreo Metereológico	2 imagenes 24 archivos html 1 carpeta (vti_nf, contiene 24 archivos de texto)	Sin link directo
/fondos	Carpetas con fondos	5 imagenes (3jpg y 2 gif)	

Home.htm	Archivo parte del frame del index.htm		
Tabla.htm	Archivo parte del frame del index.htm		
/imagenes	Imágenes componentes del sitio	59 imágenes	
/intranet	Componentes de la Intranet del Cenma	14 html (prueba.html?) 3 imágenes 1 archivo de sonido	http://www.cenma.cl/intranet/index.htm
/lab	Perteneciente al laboratorio Investigación	2 archivos htm 4 imágenes 1 pdf 3 carpetas (invest/PAH ? vacía)	Index.htm->laboratorios
/memoria	Historia del Cenma y de la Cooperación Japonesa. Proyectos y Áreas	16 archivos htm 30 imágenes 3 carpetas (2000 ? vacía)	Index.htm->memoria
/news	Noticias sobre seminarios u otros eventos	2 htmls	Index.htm
/personales	Páginas personales de distintos usuarios	15 carpetas 34 archivos html 44 imágenes	Sin link (directo)
/plantas	Fotos de plantas de tratamiento de agua y de gas	3 archivos html	Sin link (directo)
/pops	Archivos sobre contaminantes orgánicos persistentes	1 html 6 imágenes 3 pdf 3 doc	Index.htm->cops2001
/pronos	Pronósticos de episodios de contaminación atmosférica en Stgo.	10 archivos 9 imágenes 2 carpetas	Index.htm->pronosticos
/resumen		1 carpeta 20 archivos htm 3 imágenes	Sin link (directo)

7-8-1 国外指導実績

No.	コース名	実施時期	参加者（指導対象）	参加者数	資金源	講師
1	"Advance Evaluation of the Installation of a Monitoring Net of Air Quality in Quito"	June 04-08 2001	Metropolitan District of Quito		OPS (Health Pan-American Organization)	CENMA (Pablo Ulriksen)
2	"Workshop II of Clean Air for Lima and Callao. Latin American Meeting III about Air Quality and Health"	July 10-12 2001			CENMA	Dr. Raúl Morales, Regina Massai and Pablo Ulriksen
3	"Water and Contamination Balance of La Paz River Basin - Strategic for Environmental Sampling"	September 17-22 2001	University of San Andrés (Bolivia)		IAEA Project (International Atomic Energy Agency) Vienna-Austria Bol. -8-007-01	CENMA's Laboratory Staff (Mr. Cristian Borie)
4	"Water and Contamination Balance of La Paz River Basin - Analysis of Pesticides Wastes by Gas Chromatography"	January 28 - February 08, 2002	Bolivian Institute of Nuclear Technology (IBTEN)		IAEA Project (International Atomic Energy Agency) Vienna-Austria Bol. -8-007-01	CENMA's Laboratory Staff (Ms. Katia Calderón)
5	"Water and Contamination Balance of La Paz River Basin - Analysis of Phenols by HPLC"	January 07 - 18, 2002	Bolivian Institute of Nuclear Technology (IBTEN)		IAEA Project (International Atomic Energy Agency) Vienna-Austria Bol. -8-007-01	CENMA's Laboratory Staff (Ms. Verónica Muñoz)

7-8-2 研修コース用の作成教材リスト

(1) 環境評価ガイド

No.	内容	講師	研修コース名	実施時期
1	Introduction: Standard of Environmental Character	Pablo Daud, Industrial Civil, Eng. Ch. U.	Seminary Environmental Evaluation Guide (SAG)	November 30 – 01 December, 2001
2	Soil :	Rodolfo Freres González, Agriculture and Cattle Service (SAG)		
3	Fauna:	Cristian Estades, Agriculture Eng. , Ms. Sc., Prof. and Inv., Full Time Dept. Eng. Soils of Agron. Fac. Cs. U.Ch.		
4	Water: Hydric Resources	Carlos Espinoza, Civil Eng. Ph. D. Ch. U.		
5	Water: Water Quality and Industrial Liquid Wastes	Ana María Sancha. Chemist, Lic. Chemical. Ch. U. Invest. and Prof. Associated Ch. U. Adviser , CENMA.		
6	Flora:	Jaime Hernández, Eng. Forest, Lic. Cs. Forest. U.Ch. Prof. Cs. Forest, Ch. U.		
7	Air:	Pablo Ulriksen, Civil Eng. Ch. U., Prog. Chief Meteor. and Air Quality of CENMA. Gerardo Alvarado, Civil Eng. Ch. U. Prog. Meteor. and Air Quality of CENMA. Juan Carlos Bordonas, Eng. Emission Invent. Project. José Salim, Eng. Emission Invent. Project.		

(2) 環境影響評価

No.	内容	講師	研修コース名	実施時期
1	Introduction The Environment and its Elements: System Visions. Sheets of OHP	Vladimir Hermosilla, Veterinary Fac. Prof. Ch. U. Carmen Luz de la Masa, Eng. Forest. Ch. U. Prof. Assoc. Fac. Cs. Forest., Ch. U.	SEIA Common Plan Contract N° 13-22-004/01 (CONAMA, COREMA, HEALTH SERVICES)	Used in all the SEIA Training Courses
2	Air Component Weather and Meteorology	Pablo Ulriksen, Civil Eng. Ch. U. Chief of Lab. of. Modeling and Atmospheric Contamination Analysis, CENMA		
3	Air Quality. Gases and Particles	Pablo Ulriksen, Eng. Civil Ch. U., Chief of Lab. of. Modeling and Atmospheric Contamination Analysis, CENMA Gerardo Alvarado, Civil Eng. Ch. U.		
4	Air Component.: Atmospheric Emissions Sheets of OHP	Roberto Corvalán, Mechanic Civil Eng. Ch. U. Prof. Dept. of Mechanical Eng. Fac. of Physics and Mathematics Sc.. Ch. U. Chief of Emission Invent. Project, CENMA.		
5	Air Component.: Global Analysis of Emission Impact	José Salim. Mechanic Civil Eng. Ch. U. Incharge of Stationary Sources Area. Emission Invent. Area CENMA.		

6	Air Component.: Methods of Vehicular Emission Measurements	Roberto Corvalán, Mechanic Civil Eng. Ch. U. Prof. Dept. of Mechanical Eng. Fac. of Physics and Mathematics Sc. Ch. U. Chief of Emission Invent. Project, CENMA.		
7	Air Component.: Emissions	Juan Carlos Bordonos, Mechanical Eng. Ch. U. Emission Invent. Project, CENMA.		

(3)

No.	内容	講師	研修コース名	実施時期
1	Water Component: Hydric Resource Sheets of OHP	Carlos Espinoza Contreras, Civil Eng. Ch. U. PhD in Environment Eng., Asist. Prof. Ch. U.		
2	Water Component: Water Quality	Ana María Sancha. Chemist, Lic. Chemical. Ch. U. Invest. and Prof. Associated Ch. U. Adviser , CENMA.		
3	Water Component: Quality monitoring of Natural and Waste Waters.	Ana María Sancha. Chemist, Lic. Chemical. Ch. U. Invest. and Prof. Associated Ch. U. Adviser , CENMA.		
4	Water Component: Liquid Waste	Ana María Sancha. Chemist, Lic. Chemical. Ch. U. Invest. y Prof. Associated Ch. U. C Adviser , CENMA.		
5	Soil Component: Soils Quality	Wilfredo Vera Elizondo, Eng. and Soils Dept. Agriculture Sc. Fac. Ch. U.		
6	Waste Components: Urban Solid wastes	José Arellano, Solid Waste Specialist. Asist. Prof. Civil Eng. Dept. Ch. U., Project Chief of Solid Wastes, CENMA.		
7	Waste Components: Hazardous and Industrial Wastes	Alfredo Rihm, Civil Eng. Ch. U., Magister Eng. U. Tokyo, Especialist Consultor Solid Wastes.		
8	Biota Component: Fauna (Terrestrial and Aquatic)	Cristián Estades, Civil Eng. Lic. Forestry Cs., Ch. U., Asist Prof., Forestry Resources Management Dept., Ch. U.		
9	Biota Component: Flora (Terrestrial and Aquatic) Sheets of OHP	Gustavo Girón, Eng. Forestal, Lic. Cs. Forestales, Ch. U., Prof. Cs. Forestales.		
10	Noise Component: Environmental Noise	Eugenio Collados, Civil Eng. Ch. U., Prof. of Physic and Environmental Acond. Dept., Architecture School, USACH.		
11	Evaluation and Risks Management: Natural Risks	José Frutos, Geologist, Ch. U. Dr. in Cis. París U.		

12	Evaluation and Risk Management: Environmental Risk Management for People	Dante Cáceres Lillo, Veterinary, Austral Ch. U., Asist.Prof. Public Health School , Medicine Fac. Ch. U.		
13	Cultural National Patrimony: Cultural Patrimony as Environmental Component	Mario Vásquez, Archaeologist.		
14	Sheets of OHP: Sampling Class and Laboratory Analysis.	Pablo Richter		

(4)

No.	内容	講師	研修コース名	実施時期
1	Textbook of Training	Dr. Sheiji Watanabe. Short-Term Expert on Training Planning	Wastes Analysis of Chlorinated Organic Compounds on Surface Waters Using GC/MS	August 24-September 04 2001
2	Equipment Gas Chromatograph with Mass Detector			
3	Laboratory Glass Material			
4	Reactives			
5	Samples took in Farellones			

S1-1 微生物・環境毒性に関わる分析項目リスト (PARAMETERS OF ANALYSIS)

Evaluation of CENMA laboratories activities (November 2001)

Laboratory	Anal. Param.	Place to analyses	Testing N°	Reference	Sampling		Pretreat for analisis	Anal.Method/ Instrument	Validation	Person in charge
					Water	Waste water				
LIQUID WASTES & WATER QUALITY (Microbiology & Ecotoxicology)	MICROBIOLOGY:									
	Coliforms (total)	Laboratory	ILMAM-002v°1	NCh1620/1-2. Of84	#	#	#	Múltiple Tubes/ EC media	#	Cristian Riquelme
	Coliforms (fecal)	Laboratory	ILMAM-001v°1	NCh2313/22. Of95	#	#	#	Múltiples tubes/ EC media	#	Cristian Riquelme
	Toxicity, bioassay	Laboratory						Bioassay		Cristian Riquelme
	Toxicity (microtox)	Laboratory		Microtox method	#	#	#	Microtox	#	Cristian Riquelme
	Quality Program (QA/QC)	Laboratory		Guide ISO 17025	#	#				ALL

{ } 1: Standard method for the examination of water and wastewater, 19 th edition, () 2: EPA Sampling and Analysis Method 2nd edition

#: Good. Means that the issue has received good level of research and training by japanese and chilean side

&: Not enough. Means that the issue needs more research and training in order to reach an optimum condition.

X: Means that the activity has no started yet.

S1-2 微生物関連の分析実績

(Numbers of Analyzed Samples(Liquids-2, Microbiology) in 2000-2001)

客先番号/プロジェクト番号	受取日	申請番号	サンプル数				分析数合計
Client N°/ Project N°	Reception	Solicitud N°	Sample	Microscopi a	Coliforms (fecal)	Coliforms (total)	
49\1	13.06.01	400	3	3			3
1\1	02.06.00	176	1		1		1
1\1	06.06.00	179	1		1		1
1\1	13.06.00	186	1		1		1
1\1	14.06.00	187	1		1		1
1\1	16.06.00	189	1		1		1
1\1	16.06.00	190	1		1		1
1\1	11.07.00	218	1		1		1
1\1	12.07.00	219	1		1		1
1\1	12.07.00	220	1		1		1
1\1	13.07.00	223	1		1		1
1\1	13.07.00	224	1		1		1
1\1	14.07.00	228	1		1		1
1\1	14.07.00	229	1		1		1
1\1	14.07.00	230	1		1		1
1\1	09.08.00	263	2		2		2
1\1	10.08.00	264	2		2		2
1\1	11.08.00	267	2		2		2
1\1	14.08.00	269	2		2		2
1\1	30.08.00	284	1		1		1
1\1	31.08.00	285	1		1		1
1\1	01.09.00	287	1		1		1
1\1	05.09.00	290	1		1		1
1\1	07.09.00	292	2		2		2
1\1	08.09.00	293	2		2		2
1\1	09.09.00	294	2		2		2
1\1	11.09.00	295	2		2		2
1\1	13.09.00	298	2		2		2
1\1	14.09.00	301	1		1		1
1\1	20.09.00	304	2		2		2
1\1	22.09.00	308	1		1		1
1\1	25.09.00	309	1		1		1
1\7	27.12.00	337	2		2		2
1\7	03.01.01	340	2		2		2
1\7	04.01.01	341	2		2		2
1\7	05.01.01	343	1		1		1
1\7	08.01.01	344	1		1		1
11\1	02.08.01	422	3		3	3	6
11\1	03.08.01	423	3		3	3	6
11\1	09.08.01	434	3		3		3
4/1 POAL (I)	2001				95		95
4/1 POAL (II)	2001				95		95
TOTAL			61	3	248	6	257

8. アンケート調査結果

(1) カウンターパートからの回答 集計結果

1 「有効性」

1. 「プロジェクト目標 (センターが環境情報を提供できるようになるとともに、環境に関わる研修、研究、開発ができる)」の達成度を評価すると、以下のどの記述が最も当てはまりますか？
 (1999 年の場合のプロジェクト目標:センターが環境に関する情報提供及び人材育成が実施できるようになる。)

達成された	今回調査	CENMA	██████████										25									
		CONAMA											0									
	1999 年終了時評価			██████████										0								
一部達成された	今回調査	CENMA	██										75									
		CONAMA	██████████████████████████████████████										80									
	1999 年終了時評価			██										100								
ほとんど達成されていない	今回調査	CENMA											0									
		CONAMA	██████████										20									
	1999 年終了時評価													0								
											(%)	0	10	20	30	40	50	60	70	80	90	100

		達成された	一部達成された	ほとんど達成されていない	無回答	有効回答数
今回調査	CENMA 回答	3	9	0	0	12
	CONAMA 回答	0	4	1	1	5
1999 年終了時評価		0	7	0	-	7

2. 以下のそれぞれの項目は、プロジェクト目標の達成にどのくらい貢献しましたか。適切な表現を一つ選択してください。

- (1) 首都圏の深刻な大気汚染を軽減するための大気汚染シミュレーション及び予測手法が開発される。
 (1999 年: 高濃度大気汚染軽減のためのシミュレーション及び予測手法の開発)

貢献した	今回調査	CENMA	██										100									
		CONAMA	██████████████████████████████████████										100									
	1999 年終了時評価			██████████████████████████████████████										50								
部分的に程度貢献した	今回調査	CENMA											0									
		CONAMA											0									
	1999 年終了時評価			██████████████████████████████████████										50								
ほとんど貢献していない	今回調査	CENMA											0									
		CONAMA											0									
	1999 年終了時評価													0								
											(%)	0	10	20	30	40	50	60	70	80	90	100

		貢献した	ある程度貢献した	ほとんど貢献していない	無回答	有効回答数
今回調査	CENMA 回答	10	0	0	2	10
	CONAMA 回答	2	0	0	4	2
1999 年終了時評価		2	2	0	-	4

(2) 水質評価のための分析法が開発される。

(1999年：水質評価及び処理技術の開発)

貢献した	今回調査	CENMA											25	
		CONAMA											100	
	1999年終了時評価											80		
部分的に貢献した	今回調査	CENMA											75	
		CONAMA											0	
	1999年終了時評価											20		
ほとんど貢献していない	今回調査	CENMA											0	
		CONAMA											0	
	1999年終了時評価											0		
			(%)	0	10	20	30	40	50	60	70	80	90	100

		貢献した	ある程度貢献した	ほとんど貢献していない	無回答	有効回答数
今回調査	CENMA 回答	1	3	0	8	4
	CONAMA 回答	1	0	0	5	1
1999年終了時評価		4	1	0	—	5

(3) 産業廃棄物特性把握のための分析法が開発される。

(1999年：固形産業廃棄物の分析手法の開発及び現在の処理方法の評価)

貢献した	今回調査	CENMA											33	
		CONAMA											100	
	1999年終了時評価											50		
部分的に貢献した	今回調査	CENMA											67	
		CONAMA											0	
	1999年終了時評価											50		
ほとんど貢献していない	今回調査	CENMA											0	
		CONAMA											0	
	1999年終了時評価											0		
			(%)	0	10	20	30	40	50	60	70	80	90	100

		貢献した	ある程度貢献した	ほとんど貢献していない	無回答	有効回答数
今回調査	CENMA 回答	1	2	0	9	3
	CONAMA 回答	1	0	0	5	1
1999年終了時評価		2	2	0	—	4

(4) 大気質分析法とモニタリング手法が開発される。

(1999年：大気汚染のモニタリング及び分析手法の開発)

貢献した	今回調査	CENMA											80	
		CONAMA											50	
	1999年終了時評価											0		
部分的に貢献した	今回調査	CENMA											20	
		CONAMA											50	
	1999年終了時評価											100		
ほとんど貢献していない	今回調査	CENMA											0	
		CONAMA											0	
	1999年終了時評価											0		
			(%)	0	10	20	30	40	50	60	70	80	90	100

		貢献した	ある程度 貢献した	ほとんど貢献し ていない	無回答	有効回 答数
今回調査	CENMA 回答	8	2	0	2	10
	CONAMA 回答	1	1	0	4	2
1999 年終了時評価		0	2	0	—	2

(5) 首都圏レベル及び全国レベルでの環境情報システム確立に貢献する。

(1999 年：全国レベルの環境情報システムの確立)

貢献した	今回調査	CENMA											13
		CONAMA											0
1999 年終了時評価												0	
部分的に貢献 した	今回調査	CENMA											62
		CONAMA											50
1999 年終了時評価												60	
ほとんど貢献 していない	今回調査	CENMA											25
		CONAMA											50
1999 年終了時評価												40	
(%)													
0 10 20 30 40 50 60 70 80 90 100													

		貢献した	ある程度 貢献した	ほとんど貢献し ていない	無回答	有効回 答数
今回調査	CENMA 回答	1	5	2	4	8
	CONAMA 回答	0	2	2	2	4
1999 年終了時評価		0	3	2	—	5

(6) 人的資源開発。

(1999 年：人材育成の促進)

貢献した	今回調査	CENMA											100
		CONAMA											50
1999 年終了時評価												17	
部分的に貢献し た	今回調査	CENMA											0
		CONAMA											50
1999 年終了時評価												83	
ほとんど貢献し ていない	今回調査	CENMA											0
		CONAMA											0
1999 年終了時評価												0	
(%)													
0 10 20 30 40 50 60 70 80 90 100													

		貢献した	ある程度 貢献した	ほとんど貢献し ていない	無回答	有効回 答数
今回調査	CENMA 回答	11	0	0	1	11
	CONAMA 回答	1	1	0	4	2
1999 年終了時評価		1	5	0	—	6

(7) プロジェクトの活動を推進するうえで必要とされる施設や機材が整備される。

(1999年：機材の有効活用)

貢献した	今回調査	CENMA											100
		CONAMA											100
	1999年終了時評価											43	
部分的に貢献した	今回調査	CENMA											0
		CONAMA											0
	1999年終了時評価											43	
ほとんど貢献していない	今回調査	CENMA											0
		CONAMA											0
	1999年終了時評価											14	

(%) 0 10 20 30 40 50 60 70 80 90 100

		貢献した	ある程度 貢献した	ほとんど貢献し ていない	無回答	有効回答 数
今回調査	CENMA 回答	11	0	0	1	11
	CONAMA 回答	4	0	0	2	4
1999年終了時評価		3	3	1	—	7

II 「効率性」

1. 日本が投入した以下のそれぞれの項目について、質（内容）、量（数量・期間）、タイミングは、効率的でしたか？適切な表現を一つ選択してください。

1-1 JICA 専門家の派遣

(1) 量

適切	今回調査	CENMA											42
		CONAMA											25
	1999年終了時評価											0	
一部適切	今回調査	CENMA											50
		CONAMA											75
	1999年終了時評価											100	
不適切	今回調査	CENMA											8
		CONAMA											0
	1999年終了時評価											0	

(%) 0 10 20 30 40 50 60 70 80 90 100

(2) タイミング

適切	今回調査	CENMA											67
		CONAMA											25
	1999年終了時評価											67	
一部適切	今回調査	CENMA											25
		CONAMA											75
	1999年終了時評価											33	
不適切	今回調査	CENMA											8
		CONAMA											0
	1999年終了時評価											0	

(%) 0 10 20 30 40 50 60 70 80 90 100

			適切	一部適切	不適切	無回答	有効回答数
量	今回調査	CENMA 回答	5	6	1	0	12
		CONAMA 回答	1	3	0	2	4
	1999年評価		0	6	0	—	6
タイミング	今回調査	CENMA 回答	8	3	1	0	12
		CONAMA 回答	1	3	0	2	4
	1999年評価		4	2	0	—	6

1-2 機材調達

(1) 質

適切	今回調査	CENMA											75		
		CONAMA											100		
	1999年終了時評価													83	
一部適切	今回調査	CENMA											25		
		CONAMA											0		
	1999年終了時評価													17	
不適切	今回調査	CENMA											0		
		CONAMA											0		
	1999年終了時評価													0	
			(%)	0	10	20	30	40	50	60	70	80	90	100	

(2) 量

適切	今回調査	CENMA											83		
		CONAMA											100		
	1999年終了時評価													33	
一部適切	今回調査	CENMA											17		
		CONAMA											0		
	1999年終了時評価													67	
不適切	今回調査	CENMA											0		
		CONAMA											0		
	1999年終了時評価													0	
			(%)	0	10	20	30	40	50	60	70	80	90	100	

(3) タイミング

適切	今回調査	CENMA											83		
		CONAMA											0		
	1999年終了時評価													67	
一部適切	今回調査	CENMA											17		
		CONAMA											100		
	1999年終了時評価													33	
不適切	今回調査	CENMA											0		
		CONAMA											0		
	1999年終了時評価													0	
			(%)	0	10	20	30	40	50	60	70	80	90	100	

			適切	一部適切	不適切	無回答	有効回答数
質	今回調査	CENMA 回答	9	3	0	0	12
		CONAMA 回答	3	0	0	3	3
	1999年評価		5	1	0	—	6
量	今回調査	CENMA 回答	10	2	0	0	12
		CONAMA 回答	3	0	0	3	3
	1999年評価		2	4	0	—	6
タイミング	今回調査	CENMA 回答	10	2	0	0	12
		CONAMA 回答	0	3	0	3	3
	1999年評価		4	2	0	—	6

1-3 日本でのカウンターパート研修

(1) 質

適切	今回調査	CENMA											71		
		CONAMA											67		
	1999年終了時評価											86			
一部適切	今回調査	CENMA											19		
		CONAMA											33		
	1999年終了時評価											14			
不適切	今回調査	CENMA											0		
		CONAMA											0		
	1999年終了時評価											0			
			(%)	0	10	20	30	40	50	60	70	80	90	100	

(2) 量

適切	今回調査	CENMA											43		
		CONAMA											67		
	1999年終了時評価											33			
一部適切	今回調査	CENMA											57		
		CONAMA											33		
	1999年終了時評価											50			
不適切	今回調査	CENMA											0		
		CONAMA											0		
	1999年終了時評価											17			
			(%)	0	10	20	30	40	50	60	70	80	90	100	

(3) タイミング

適切	今回調査	CENMA											57		
		CONAMA											100		
	1999年終了時評価											83			
一部適切	今回調査	CENMA											43		
		CONAMA											0		
	1999年終了時評価											17			
不適切	今回調査	CENMA											0		
		CONAMA											0		
	1999年終了時評価											0			
			(%)	0	10	20	30	40	50	60	70	80	90	100	

			適切	一部適切	不適切	無回答	有効回答数
質	今回調査	CENMA 回答	5	2	0	5	7
		CONAMA 回答	2	1	0	3	3
	1999年評価		6	1	0	—	7
量	今回調査	CENMA 回答	3	4	0	5	7
		CONAMA 回答	2	1	0	3	3
	1999年評価		2	3	1	—	6
タイミ ング	今回調査	CENMA 回答	4	3	0	5	7
		CONAMA 回答	3	0	0	3	3
	1999年評価		5	1	0	—	6

2. チリ側が投入した以下のそれぞれの項目について、質（内容）、量（数量・期間）、タイミングは、

効率的でしたか？適切な表現を一つ選択してください。

2-1 カウンターパートの配置

(1) 質

適切	今回調査	CENMA		45
		CONAMA		33
		1999年終了時評価		83
一部適切	今回調査	CENMA		46
		CONAMA		67
		1999年終了時評価		17
不適切	今回調査	CENMA		9
		CONAMA		0
		1999年終了時評価		0
			(%) 0 10 20 30 40 50 60 70 80 90 100	

(2) 量

適切	今回調査	CENMA		9
		CONAMA		67
		1999年終了時評価		57
一部適切	今回調査	CENMA		73
		CONAMA		33
		1999年終了時評価		0
不適切	今回調査	CENMA		18
		CONAMA		0
		1999年終了時評価		43
			(%) 0 10 20 30 40 50 60 70 80 90 100	

(3) タイミング

適切	今回調査	CENMA		18
		CONAMA		0
		1999年終了時評価		17
一部適切	今回調査	CENMA		64
		CONAMA		100
		1999年終了時評価		66
不適切	今回調査	CENMA		18
		CONAMA		0
		1999年終了時評価		17
			(%) 0 10 20 30 40 50 60 70 80 90 100	

			適切	一部適切	不適切	無回答	有効回答数
質	今回調査	CENMA 回答	5	5	1	1	11
		CONAMA 回答	1	2	0	3	3
	1999年評価		5	1	0	—	6
量	今回調査	CENMA 回答	1	8	2	1	11
		CONAMA 回答	2	1	0	3	3
	1999年評価		4	0	3	—	7
タイミ ング	今回調査	CENMA 回答	2	7	2	1	11
		CONAMA 回答	0	3	0	3	3
	1999年評価		1	4	1	—	6

2-2 チリ側運営費（ローカルコスト）の支出

(1) 質

適切	今回調査	CENMA											38
		CONAMA											33
	1999年終了時評価												17
一部適切	今回調査	CENMA											62
		CONAMA											67
	1999年終了時評価												83
不適切	今回調査	CENMA											0
		CONAMA											0
	1999年終了時評価												0

(%) 0 10 20 30 40 50 60 70 80 90 100

(2) 量

適切	今回調査	CENMA											13
		CONAMA											0
	1999年終了時評価												20
一部適切	今回調査	CENMA											87
		CONAMA											100
	1999年終了時評価												40
不適切	今回調査	CENMA											0
		CONAMA											0
	1999年終了時評価												40

(%) 0 10 20 30 40 50 60 70 80 90 100

(3) タイミング

適切	今回調査	CENMA											0
		CONAMA											0
	1999年終了時評価												17
一部適切	今回調査	CENMA											38
		CONAMA											100
	1999年終了時評価												83
不適切	今回調査	CENMA											62
		CONAMA											0
	1999年終了時評価												0

(%) 0 10 20 30 40 50 60 70 80 90 100

		適切	一部適切	不適切	有効回答数	
質	今回調査	CENMA 回答	0	3	5	8
		CONAMA 回答	1	2	0	3
	1999年評価	1	2	0	3	
量	今回調査	CENMA 回答	0	1	7	8
		CONAMA 回答	0	3	0	3
	1999年評価	1	2	2	5	
タイミ ング	今回調査	CENMA 回答	0	3	5	8
		CONAMA 回答	0	3	0	3
	1999年評価	1	2	0	3	

2-3 チリ側の機材調達

(1) 質

適切	今回調査	CENMA											43	
		CONAMA											0	
		1999年終了時評価											33	
一部適切	今回調査	CENMA											57	
		CONAMA											100	
		1999年終了時評価											67	
不適切	今回調査	CENMA											0	
		CONAMA											0	
		1999年終了時評価											0	
			(%)	0	10	20	30	40	50	60	70	80	90	100

(2) 量

適切	今回調査	CENMA											28	
		CONAMA											0	
		1999年終了時評価											67	
一部適切	今回調査	CENMA											43	
		CONAMA											67	
		1999年終了時評価											33	
不適切	今回調査	CENMA											29	
		CONAMA											33	
		1999年終了時評価											0	
			(%)	0	10	20	30	40	50	60	70	80	90	100

(3) タイミング

適切	今回調査	CENMA											0	
		CONAMA											0	
		1999年終了時評価											33	
一部適切	今回調査	CENMA											57	
		CONAMA											67	
		1999年終了時評価											67	
不適切	今回調査	CENMA											43	
		CONAMA											33	
		1999年終了時評価											0	
			(%)	0	10	20	30	40	50	60	70	80	90	100

			適切	一部適切	不適切	無回答	有効回答数
質	今回調査	CENMA 回答	3	4	0	5	7
		CONAMA 回答	0	3	0	3	3
	1999年評価	1	2	0	—	3	
量	今回調査	CENMA 回答	2	3	2	5	7
		CONAMA 回答	0	2	1	3	3
	1999年評価	2	1	0	—	3	
タイミング	今回調査	CENMA 回答	0	4	3	5	7
		CONAMA 回答	0	2	1	3	3
	1999年評価	1	2	0	—	3	

III 「インパクト」

3-1 本プロジェクトは、上位目標（チリ国において適切な環境保護政策が策定・実施される）に対して、どの程度貢献しましたか？

（1999年：上位目標：チリ国において適切な環境行政が実施される）

貢献度	調査時期	機関	貢献度 (%)										有効回答数
			0	10	20	30	40	50	60	70	80	90	
大いに貢献した	今回調査	CENMA	■										9
		CONAMA	□										0
1999年終了時評価			▨										17
ある程度貢献した	今回調査	CENMA	■										64
		CONAMA	▨										80
1999年終了時評価			□										0
ほとんど貢献していない	今回調査	CENMA	■										27
		CONAMA	▨										20
1999年終了時評価			▨										83

		大いに貢献した	ある程度貢献した	ほとんど貢献していない	無回答	有効回答数
今回調査	CENMA 回答	1	7	3	1	11
	CONAMA 回答	0	4	1	1	5
1999年評価		1	0	5	—	6

3-2 本プロジェクトに起因する予期しなかったインパクトや弊害はありましたか？（例：プロジェクトによって、他の環境関連機関との摩擦が起こった、あるいはその他予期しなかった良い効果等）

(1) 予期しなかった良い効果

効果	調査時期	機関	効果 (%)										有効回答数
			0	10	20	30	40	50	60	70	80	90	
ある	今回調査	CENMA	■										91
		CONAMA	▨										100
無い	今回調査	CENMA	□										9
		CONAMA	□										0

(2) 予期しなかった弊害

弊害	調査時期	機関	弊害 (%)										有効回答数
			0	10	20	30	40	50	60	70	80	90	
ある	今回調査	CENMA	■										100
		CONAMA	□										0
無い	今回調査	CENMA	□										0
		CONAMA	▨										100

		ある	無い	無回答	有効回答数	
予期しなかった良い効果	今回調査	CENMA 回答	10	1	1	11
		CONAMA 回答	1	0	5	1
予期しなかった弊害	今回調査	CENMA 回答	11	0	1	11
		CONAMA 回答	0	1	5	1

IV. 「妥当性」

4-1 設定された「上位目標」及び「プロジェクト目標」は、チリ国政府の現在の環境政策に合致していますか？

(1) 「上位目標」

良く合致している	今回調査	CENMA		18
		CONAMA		60
ほぼ合致している	今回調査	CENMA		45
		CONAMA		20
合致していない	今回調査	CENMA		37
		CONAMA		20
(%)				
				0 10 20 30 40 50 60 70 80 90 100

(2) 「プロジェクト目標」

良く合致している	今回調査	CENMA		18
		CONAMA		80
ほぼ合致している	今回調査	CENMA		55
		CONAMA		20
合致していない	今回調査	CENMA		27
		CONAMA		0
(%)				
				0 10 20 30 40 50 60 70 80 90 100

		良く合致している	ほぼ合致している	合致していない	有効回答数	
上位目標	今回調査	CENMA 回答	2	5	4	11
		CONAMA 回答	3	1	1	5
プロジェクト目標	今回調査	CENMA 回答	2	6	3	11
		CONAMA 回答	4	1	0	5

4-2 設定された「上位目標」及び「プロジェクト目標」は、プロジェクトの受益者である CENMA のニーズに合致していますか？

(1) 「上位目標」

良く合致している	今回調査	CENMA		55
		CONAMA		67
ほぼ合致している	今回調査	CENMA		45
		CONAMA		33
合致していない	今回調査	CENMA		0
		CONAMA		0
(%)				
				0 10 20 30 40 50 60 70 80 90 100

(2) 「プロジェクト目標」

良く合致している	今回調査	CENMA		55
		CONAMA		67
ほぼ合致している	今回調査	CENMA		45
		CONAMA		33
合致していない	今回調査	CENMA		0
		CONAMA		0
(%)				
				0 10 20 30 40 50 60 70 80 90 100

		良く合致している	ほぼ合致している	合致していない	有効回答数	
上位目標	今回調査	CENMA 回答	6	5	0	11
		CONAMA 回答	2	1	0	3
プロジェクト目標	今回調査	CENMA 回答	6	5	0	11
		CONAMA 回答	2	1	0	3

V「自立発展性」

5-1 制度的自立発展性

5-1-1 チリ国政府の政策において、CENMA の位置づけは、(制度的、財政的に) 確固としたものですか？

確固としている	今回調査	CENMA											9		
		CONAMA											0		
1999年評価													17		
一部確固としている	今回調査	CENMA											27		
		CONAMA											80		
1999年評価													66		
確固としていない	今回調査	CENMA											64		
		CONAMA											20		
1999年評価													17		
			(%)	0	10	20	30	40	50	60	70	80	90	100	

		確固としている	一部確固としている	確固としていない	無回答	有効回答数
今回調査	CENMA 回答	1	3	7	1	11
	CONAMA 回答	0	4	1	1	5
1999年評価		1	4	1	—	6

5-1-2 あなたは、支援本プロジェクト終了後も、CONAMA の部分的な支援のもとで、CENMA が現在の活動を継続することが可能だと思いますか？

はい	今回調査	CENMA											18		
		CONAMA											100		
いいえ	今回調査	CENMA											55		
		CONAMA											0		
その他	今回調査	CENMA											27		
		CONAMA											0		
			(%)	0	10	20	30	40	50	60	70	80	90	100	

		はい	いいえ	その他	無回答	有効回答数
今回調査	CENMA 回答	2	6	3	1	11
	CONAMA 回答	5	0	0	1	5



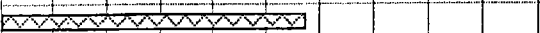
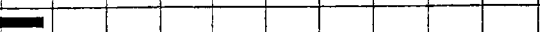
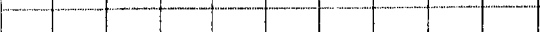
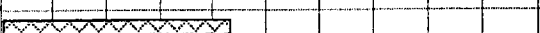
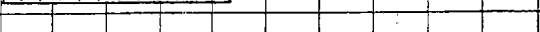

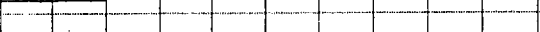
5-1-3 研究開発及び研修コース等の「活動を継続するためには、CENMA の組織的体制は、適切であると思いますか？

適切	今回調査	CENMA											8		
		CONAMA											25		
部分的に適切	今回調査	CENMA											92		
		CONAMA											75		
不適切	今回調査	CENMA											0		
		CONAMA											0		
			(%)	0	10	20	30	40	50	60	70	80	90	100	

		適切	部分的に適切	不適切	無回答	有効回答数
今回調査	CENMA 回答	1	11	0	0	12
	CONAMA 回答	1	3	0	2	4

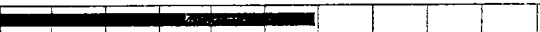
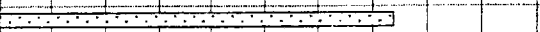
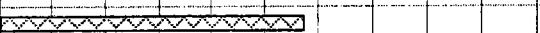
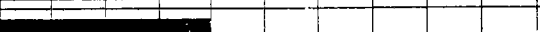
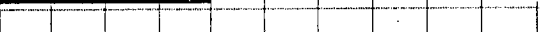
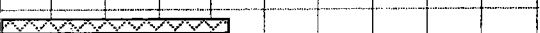
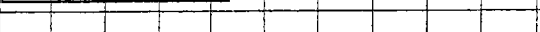


5-2 技術的自立発展性

5-2-1 CENMA は、研究開発、研修コース提供業務を継続するに十分な技術的能力を持っていると思いますか？

思う	今回調査	CENMA											92		
		CONAMA											80		
	1999年評価												57		
思わない	今回調査	CENMA											8		
		CONAMA											0		
	1999年評価												43		
その他	今回調査	CENMA											0		
		CONAMA											20		
	1999年評価												0		
			(%)	0	10	20	30	40	50	60	70	80	90	100	

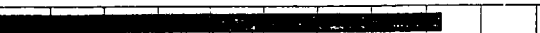
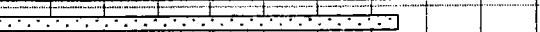

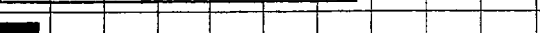
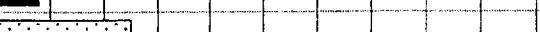
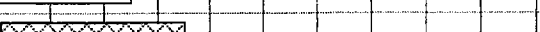
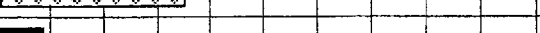

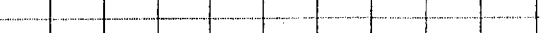
		思う	思わない	その他	無回答	有効回答数
今回調査	CENMA 回答	11	1	0	0	12
	CONAMA 回答	4	0	1	1	5
1999年評価		4	3	0	—	7

5-2-2 CENMA には、研修コースに必要な研修教材が充分整っていると思いますか？

思う	今回調査	CENMA											60		
		CONAMA											75		
	1999年評価												57		
思わない	今回調査	CENMA											40		
		CONAMA											0		
	1999年評価												43		
その他	今回調査	CENMA											0		
		CONAMA											25		
	1999年評価												0		
			(%)	0	10	20	30	40	50	60	70	80	90	100	

		思う	思わない	その他	無回答	有効回答数
今回調査	CENMA 回答	6	4	0	2	10
	CONAMA 回答	3	0	1	2	4
1999年評価		3	3	0	—	6

5-2-3 チリ国において将来発生する環境問題に対処するに必要な技術的基礎は、CENMA にあると思いますか？

ある	今回調査	CENMA											82		
		CONAMA											75		
	1999年評価												67		
無い	今回調査	CENMA											9		
		CONAMA											25		
	1999年評価												33		
その他	今回調査	CENMA											9		
		CONAMA											0		
	1999年評価												0		
			(%)	0	10	20	30	40	50	60	70	80	90	100	

		ある	無い	その他	無回答	有効回答数
今回調査	CENMA 回答	9	1	1	1	11
	CONAMA 回答	3	1	0	2	4
1999 年評価		4	2	0	—	6

5-2-4 本プロジェクト終了後の機材の更新も含め、技術的自立発展性に不安はありますか？

(1999 年：プロジェクトが終了し、日本人専門家が帰国後、技術的持続性に不安はありますか？)

ある	今回調査	CENMA											90		
		CONAMA											100		
	1999 年評価											71			
無い	今回調査	CENMA											0		
		CONAMA											0		
	1999 年評価											29			
その他	今回調査	CENMA											10		
		CONAMA											0		
	1999 年評価											0			
			(%)	0	10	20	30	40	50	60	70	80	90	100	

		ある	ない	その他	無回答	有効回答数
今回調査	CENMA 回答	9	0	1	2	10
	CONAMA 回答	2	0	0	4	2
1999 年評価		5	2	0	—	7