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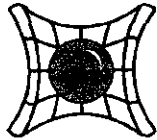
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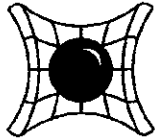
# **NATIONAL CFC PHASE OUT PLAN VENEZUELA**

UNIDO Project No.: MP/VEN/05/003  
Contract N°:16001234

**Provision of Local Services for the Project Management of  
the National CFC Phase-out Plan in Venezuela,  
Second Tranche**

**Final Report**

July 2008



**Fondo de  
Reversión Industrial**  
FONDOIN



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION

# **NATIONAL CFC PHASE OUT PLAN VENEZUELA**

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## Summary

### *Training Programme*

The most important activities developed in this period were the inclusion of new training centers for the training program and the signature of the agreement with *INCES* to start with the training courses. The agreement allows us to complete the original plan to satisfy the demand of courses in most regions of the country.

The agreement with *INCES* includes 23 additional centers that together with other new three centers subscribed allow us to go above the original set number of 43 training centers in good refrigeration practices to a total of 46 centers throughout the country.

The courses have been developing satisfactorily. The general results show that a total of 2.848 technicians have been trained and 2491 finally obtained the certification by approving the test for the credential on good refrigeration practices.

The new figure in relation to the courses to execute, establishes a different goal respect a number of technicians to be trained in the program. Considering the technicians trained and remaining courses planned, we enlarge the scope of program to train a total of 5500 technicians in the country.

### *Recovery and recycling Programme*

The system for recovery and recycling refrigerant has required strong efforts to implementing this programme. A first phase started with the objective to establish a reclaim center. FONDOIN together with *PRODUVEN* carried out several activities to complete the installation and start-up of the regeneration machine in August 2007.

The operative system was designed together with the support of the refrigerant distributors. This job gave as results a scheme of recuperation and regeneration addressed to the technicians with small volumes and other for big users.

Regarding for big users, since the start of plant operations and up to date, around to 3.000Kg of CFC have been incorporated to the program, either on the inventory or to be processed and returned to the owner. The scheme for small users has been developed to implement in the next months. A total of 10 recipient centres have been selected to recovery the refrigerant, which will be provide with the equipments required.

With relation to to the equipment supply program, it is being implemented successfully. Up to May 2008, 309 kits for refrigerant recovery have been allocated to service workshops.

### *Awareness Activities*

Fondoin continue working on its awareness program for the protection of the ozone layer by organizing several activities related to this topic. At the same time Fondoin has been implementing a permanent communication strategy with the media including a web page.

Fondoin has had a number of interviews about the issue of the ozone layer in the newspapers. This information has appeared in the several newspapers and magazines throughout the country, on articles published in different websites and in several radio programs.

Fondoin has been interviewed several times about the issue of the ozone layer by different media like newspapers, radio, magazines. This information has been broadcasted in the several newspapers and magazines throughout the country, and also articles published in different websites and commented in several radio programs.

Fondoin has been working in the participation and organization of events to sensitize the public about the subject and encourage the participation from every sector of society. The most important activities in this matter were the projects implemented with Children's Museum and skin cancer prevention campaign promoted in commemoration of international year of ozone. In the same way interesting videos and songs CD for children and adolescents regarding ozone layer protection have been made.

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# Final Report

## UNIDO Project No. MP/VEN/05/003 – Provision of Local Services for the Project Management of the National CFC Phase-out Plan in Venezuela, Second Tranche

### 1. General

- I. This Report is presented to UNIDO for the supervision of services related to the National CFC phase-out plan (NPP) in Venezuela, in accordance with the Phase II of the work programmed for year 2006/2007 in frame of the second tranche of the Project subject.
- II. This report is presented according to the contains of the Terms of Reference (TOR) dated August 2006 which describing the scope of the work.

### 2. Background

#### National Phase Out

The national CFC phase-out plan was approved at the 42<sup>nd</sup> Executive Committee meeting in April 2004 with the following phase-out target.

Table 1. CFC Phase-out target for Venezuela

Year	2003 Estimate	2004	2005	2006	2007	2008	2009	2010
Montreal Protocol Reduction Schedule	3,322	3,322	1,661	1,661	498	498	498	0
CFC Consumption as Article 7 data	1,410	3,322	1,661	1,661	498	0	0	0
Change in stockpiling	-623	1,239	-172	83	-665	-763	-363	0
Total CFC demand, all sectors	2,032	2,083	1,833	1,578	1,163	763	363	0
Total reduction by on-going activities, all sectors	36	100	200	0	0	0	0	0
Total reduction by new activities, all sectors	0	0	50	255	415	400	400	363
Total annual reduction, all sectors	36	100	250	255	415	400	400	363
Aerosol sector demand	16.0	16.0	16.0	16.0	0.0	0.0	0.0	0.0
Reduction by on-going activities	0	0	0.0	0.0	0.0	0	0	0
Reduction by new activities	0	0	0	0.0	16.0	0	0	0
Foam sector demand	286.3	186.6	19.1	19.1	0.0	0.0	0.0	0.0
reduction by on-going activities	36.4	99.7	167.5	0	0	0	0	0
reduction by new activities	0	0	0	0	19.1	0	0	0
Refrigeration sector demand	1,730	1,880	1,798	1,543	1,163	763	363	0.0
Reduction by on-going activities	0	0.0	32.3	0	0	0	0	0
Reduction by new activities	0	0.0	50.0	255.0	380.0	400.0	400.0	362.7

### 3. ACTIVITIES

#### A. Project management

The management of the project included activities related to the programming and coordination of the activities proposed in the project contract, as well as the management of the budget and human resources required. Additionally, the acquisition of computers for the improvement and updating of computer skills was considered; this point is represented by the installation of a server to accommodate the processing of data in a more efficient, reliable and secure way in response to increasing staff recruitment. We also bought 2 computers to replace equipment of lesser capacity.

The management of the training project for technicians required additional efforts to those covered by the change of target in the number of technicians to be trained. The change has been prompted by the number of agreements signed with schools.

This work needed the search and selection of new schools over the lack of response from the institution INCES at the beginning of this contract. This decision was taken after one year pending the incorporation of INCES to the program to meet existing needs in regions with no other alternative. Fortunately, at the end of 2007, INCES resumed the project after great efforts made by our office to reactivate the participation of this relevant institution for its specific weight within the project.

Additional to these tasks activities were conducted to monitor the production, import, export and consumption of CFCs in the country. Likewise, in order to keep a better control of the training project a computer program was developed to improve the quality of service. Both activities are described below.

#### *Monitoring the program, CFC consumption data*

During 2007 there was no production of refrigerant substances of the type CFC11 and CFC12 in the country as a consequence of the operation close down on December 31st, 2006 of PRODUVEN (Halogen Products of Venezuela). The existing refrigerant is the remainder of the accumulated stock of 2006. In 2007 a final inventory of 697.12 Tons which 1.4 tonnes of CFC11 and 695.71 of CFC12 for the internal supply and requirements of the countries according to Article 5.

Imports: Due to the ban there is no evidence of any type of CFC entrance in the country during 2007.

Exports: Some exports of CFC11 and 12 from the surplus produced in 2006 were dispatched to supply the demand of the Montreal Protocol signatory countries. These countries were: Colombia, Cuba, Ecuador and Dominican Republic. On Table No. 3 we can see the specific amounts for each substance sold and country supplied during 2007. It is important to note the existence of 127.74 tonnes of Carbon tetrachloride remaining from the inventory of 2006. The producer of CFC is considering its export this year as the substance could not be sold last year.

Table 2. CFC Exported

Total Exported: 114,42 Tons		
Destiny	CFC 11	CFC12
Ecuador	1,40	12,60
Colombia	1,12	36,53
República Dominicana	-	47,62
Cuba	4,48	10,67
<b>Total (Tons):</b>	<b>7,00</b>	<b>107,42</b>



The consumption of CFC in Venezuela is determined by the equation for countries in Article 5 established in the Montreal Protocol. In the next table we can observe these figures, which show we achieved the goal according to the Agreement.

Table 3. CFC Consumption

Group I	Imports	Production	Exports	Consumption
CFC-11	0	0	7,00	-7,00
CFC-12	0	0	107,42	-107,42
CFC-113	0	0	0	0
CFC-114	0	0	0	0
CFC-115	0	0	0	0
Total (Tons)	0	0	114,42	-114,42

Internal Consumption: CFC domestic sales were a total of 1,058.22 tonnes of which 38.60 tonnes are CFC11 and 1,019.62 tonnes are CFC12. This represented a decrease of 27.24% with respect to 2006. The sectors of service and refrigeration maintenance were the biggest recipients.

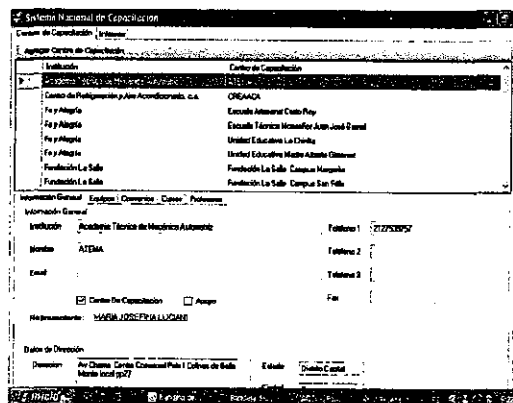
Table 4. Domestic CFC consumption by sector

Substance	Use by sector						TOTAL
	Aerosols	Foams	Refrigeration		Solvents	MDI	
			Manufacturing	Service and maintenance			
Annex A, Group I							
CFC-11	0,00	0,00	0,00	26,49		12,11	38,60
CFC-12	0,00	0,00	0,00	1002,17		17,45	1019,62
CFC-113	0,00				0,00		0,00
CFC-114			0,00	0,00			0,00
CFC-115			0,00	0,00			0,00
Subtotal	0,00	0,00	0,00	1028,66	0,00	29,56	1058,22

**Software to monitoring courses**

The number of participants for the courses grew as more institutions have been enlisted in the program. This in turn has generated a high volume of information including the information related with the centers, the program, service workshops and technicians participating as well as information related with the administration and certification of technicians.

With the aim of accelerating this task and avoid possible mistakes, we consider developing a computer programme for the control of the system. The firm ATN Technologies was hired to develop such application according terms of reference.



The development of the computer program to manage the information of the participants in the training program was completed satisfactorily. Its operation started on November 2007 and it

represents a substantial upgrade on the management of the courses reducing the time for the organization of courses start-up and improving their overall performance.

## **B. Awareness Programme**

Fondoin continue working on its awareness program for the protection of the ozone layer by organizing several activities related to this topic. At the same time Fondoin has been implementing a permanent communication strategy with the media including a web page.

Fondoin has been interviewed several times about the issue of the ozone layer by different media like newspapers, radio, magazines. This information has been broadcasted in the several newspapers and magazines throughout the country, and also articles published in different websites and commented in several radio programs.

Below is a description of the different activities organized during 2007. We also mention our participation in the media during the same period.

### **Information Activities**

The divulgation activities, awareness and training in relation with ozone layer protection and appropriate handling of ODS, during 2007 were as follows:

#### **1. Call to teachers to create awareness on the ozone layer**

FONDOIN invited all teachers in Venezuela to participate in a contest of educational creativity in order to promote environmental awareness among the students.

Thanks to an agreement between Fondoin and UNITEC (Universidad Tecnológica del Centro) an effort was made for the massive and information campaign about the damages we have caused to the ozone layer and the ways to stop its destruction.

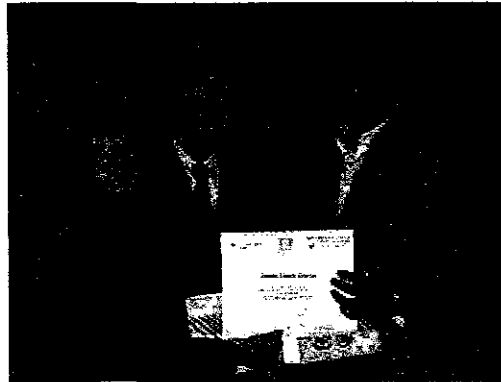
The contest spreaded nationally and its main objective was to encourage the initiatives of teachers to carry out new teaching and learning methodologies.

This activity was conceived to be promoted in educational institutions throughout the country specially addressed to teachers of kindergarten, primary, high school and further education.

A total of 10 projects presented by Venezuelan teachers were appointed as winners of the contest “*Creatividad Educativa sobre la Capa de Ozono*” on the 16<sup>th</sup> September, 2006, an activity promoted by the UNITEC and FONDOIN. The intention was to encourage existing teachers' initiatives and stimulate the design and implementation of new teaching and learning methodologies related to the preservation of the environment in Venezuelan schools.



The first place was obtained by the teacher Ana Vale with her Project “Programa de Capacitación tour de Ozono” from Lara State, the second place was obtained by Heberto Walter Valecillo with his Project “Diseño de actividades basadas en estrategias de enseñanza contextual dirigidas a estudiantes de noveno grado para incentivarlos en la preservación del ozono”, from Barinas State and the third place was obtained by Nadia Gomez with “Proyectos pedagógicos de aprendizaje una ventana de saber”. The appointed teachers were awarded with lap-tops, printers and USB memory, and the rest of appointed teachers received desk top computers.



## 2. All About The Ozone Layer in the Children’s Museum

The Children’s Museum with the support of Fondoin programmed all month of September 2006 a series of special activities to continue with the promotion of an environmental awareness and citizen responsibility campaign to help preserve the ozone layer.

With these activities visitors had the opportunity to approach one of the most recent exhibitions of the Museum: “¿Qué sabes de... La Capa de Ozono? (What do you know about the ozone layer?)”



This exhibition is based on a fun learning activity where one can learn about the ozone layer, its importance and the causes and consequences of its destruction.

With the coordinated effort between the two institutions it was possible to implement an interactive computer application for children containing the message about the protection of the ozone layer and some new material for the children. The final product was an instructional module which included the computer program with interactive activities for the children and a tri-dimensional earth model representing the hole in the ozone layer.

The exhibition was reinforced during the month of September 2006 with a guided tour by trained hosts to inform and make people aware about the ozone layer.

## 3. The Conference on the Improvement of the Refrigeration Sector achieved its Goal

Fondoin participated in the first Conference on the Improvement of the Quality of Service in the Refrigeration and Air Conditioning Sectors which took place in the University José Antonio Páez, Auditorium Campus San Diego, San Diego, Calle No. 3, Yuma II, Valencia, Carabobo State.

About 200 people attended the event mainly members of the Independent Workers Association for the Repair and Maintenance of Refrigeration Equipment (ASOTIR), some



service and refrigeration firms among them REFRIMASTER and the academic representatives from the university.

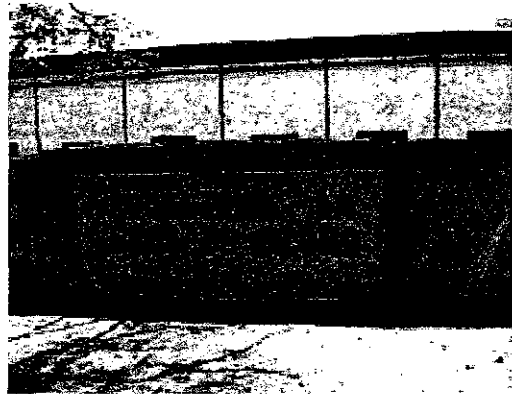
The specialist Carmelima Lombardi talked about the most important aspects of Decree 4335 on the standards for the regulation and control of the consumption, production, importation, exportation and use of ozone depleting substances.

#### 4. Educational Wall for the Ozone Layer

The Ministry of the Environment, Inparques, the organized community and Fondoin participated in a recreational and educational activity during the celebration of the World Ozone Layer Day.

The West Park (Parque del Oeste) in Caracas was the site chosen for artist Felipe Garcia who drew different drawings in a wall 36 mts. long 1.75 mts. tall.

With paints of all colors and the enthusiasm of the participants the event was started and conducted by the artistry of Felipe Garcia.



There were also present the Ecological Brigade from Catia and a group of senior citizens who gave way to their creativity. This together with other recreational activities for little children made the park a center for reflection on such a vital matter as the preservation of the ozone layer.

#### 5. Exhibition in the Museum of Science

On September 16<sup>th</sup>, 2006 the World Ozone Layer Day was celebrated and the Ministry of Culture through its the National Foundation for Museums presented an exhibition explaining the sophisticated process of the thinning of the ozone layer.

On behalf of Fondoin Carmelina Lombardi explained the achievements of the Training National Plan, talked about the damages the CFC produce and the bad practices in handling refrigerants.

#### 6. Program of Activities for World Ozone Layer Day 2006

- 14-09-06: Press conference in the Museum of Science. The program for the event consisted of videos, talks and exhibitions that extended to October 7<sup>th</sup> and included the presence of the museum authorities, Fondoin representatives, journalists and other guests.
- 16-09-6: Inauguration of the Ozone Route in the Children's Museum which includes the interactive module about the ozone layer, the module about physics on the ultraviolet rays and the information about the damages it causes to the health. The guests included the museum authorities, Fondoin representatives with their children, general public and the press. Both the exhibition and the route will remain as permanent shows in the museum.
- East Park: a concert was staged to celebrate the World Ozone Layer Day.

- 16-09-06: the award ceremony for the winning teachers of the contest on the ozone layer took place in Valencia. Among the guests were the president from Fondoin, school authorities, teachers, the general public and the press.
- 17-09-06: wall painting about the ozone layer in the West Park. Among the guests were authorities from the Ministry of the Environment, Fondoin, the general public and the press.
- 23-09-06: a talk about the protection of the ozone layer in the Museum of Science was given.
- 26-09-06 act of award of certificates to the 38 educational centers participating in the Training Program on Refrigeration Good Practices. The video on good practices sponsored by Fondoin was also shown during the event. The guests included the authorities from the educational centers.

### **7. Cooperation with Customs within the Program for Environmental Management of National Customs (Seniat).**

FONDOIN has been developing workshops on the early detection of the commercialization of ozone depleting substances within the "Program of Ecological Customs" of SENIAT.

This activity main objective is to highlight the importance of the ecological or green customs, their role in the fight of illegal commerce of merchandise subject to control due to environmental reasons.

Furthermore, it makes people aware of the responsibility that the officials and citizens have when protecting the environment and the right of all individuals of enjoying a clean environment.

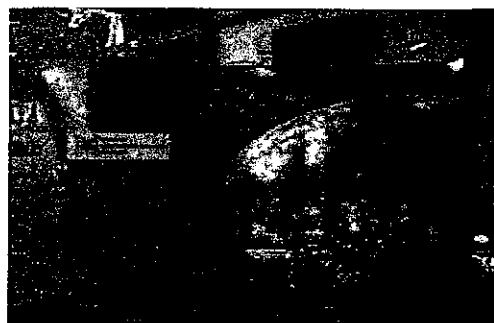
So far four workshops have been given in La Guaira, Valencia, Puerto Ordaz and Caracas with a total attendance of 120 people. We are waiting for the SENIAT to restart activities.

### **8. Frío Tecnología 2006 Event "The air on the earth"**

From 21st to 24th June, 2006 the Sixth International Exhibition and Conference of Air Conditioning, Ventilation and Refrigeration "Frío Tecnología" took place. The activity took place in Caracas in the International Exhibition Center (CIEC).

This event was organized by CONFLEX International Corporation, sponsored by the National Chamber of Ventilation, Air Conditioning and Refrigeration (VENACOR) and counted with the institutional sponsorship of MILCO, Caracas Chamber of Commerce and the Venezuelan Association of Exporters (AVEX).

Fondoin also participated with the support of the *Centro de Refrigeración de Aire Acondicionado (CREAACA)* to promote the courses on Good Refrigeration Practices.



### **9. Participation in the Congress Hygiene 2006**

From Wednesday 26th to 28th of April the Congress Hygiene 2006 took place in the Intercontinental Hotel, Carabobo State. The idea was to inform the general public about the environment protection and the ozone layer and the maintenance of refrigeration systems in order to improve the quality of life.

Carmelina Flores de Lombardi representing Fondoin talked about the aspects related with the techniques to obtain a better control of the ozone depleting substances.

#### **10. Children's Museum Exhibition and educational program**

The Children's Museum with Fondoin's support developed a series of special activities to continue with the promotion of an environmental awareness and citizen responsibility campaign to help preserve the ozone layer.

The first project was a special animated film with 3D technologies about the ozone layer. With these activities visitors have the opportunity to learn about this topic, its importance and the causes and consequences of its destruction, in a different way. The presentation was inaugurated on May 9th, 2007 into the planetarium's museum in reinforcement of the last ozone route activities. Due to the special technologies to show this animation it is only possible to watch it there.

The second project was the preparation of a didactic guide to teach ozone layer topics in schools with a workshop for teachers to train them in this activity. 2000 guides were reproduced and 200 grants were given to teachers throughout the country so that they received the course from September 2006, as part of the celebration of the World Day of the Ozone Layer.

Fondoin is sponsoring 2500 children to attend the ozone route at no cost. Since May 2007 up to date, 1600 children have been benefited with this activity. Additionally, 150 teachers have received the course; the documentary about the ozone layer has been seen by 20,000 people in the planetarium. There is a Friend-Guide, also sponsored by FONDOIN, to assist this audience. 200,000 people have visited the Museum this year and have seen at least part of the Ozone Route Exhibition. Annex I showed a report of activities by Children's Museum.

#### **11. Training Course to CREAACA**

Considering the work dynamic between FONDOIN and CREAACA, we gave a seminar to inform about the aspects related to our activity with the aim of strengthening our relations. In this opportunity we showed some aspects about the destruction of the ozone layer and global warming, their negative effects on the health and the increase of ultraviolet b rays on the environment, the current regulations for the protection of the ozone layer, the good practices for the reduction on the consumption and non intentional emissions of CFC, HCFC and HFC and lastly FONDOIN's programs. This one-day activity took place on February 2007 with the attendance of staff from FONDOIN and CREAACA.

#### **12. 1<sup>th</sup> Environmental Engineering and Technology Seminar**

We participated in the I Environmental Engineering and Technology Seminar organized by the Engineering Faculty of the Universidad Central de Venezuela on April 25th, 26th, and 27th of 2007 with an exhibition on the Montreal Protocol and other international environmental agreements. The event took place in a hotel at Higuero Beach, 130 km from Caracas. 60 people mostly engineering students attended the seminar.

### **13. Workshop at Paraguaná customs**

There was a workshop about controlled merchandises through environmental international agreements on the 13th and 14th of June 2007 at Paraguaná customs in Falcón State. The ODS which is controlled under the Montreal Protocol agreement and the import is prohibited in Venezuela, was included in the workshop. A total of 16 customs officers attended the workshop.

### **14. INDUEXPO Exhibition**

This exhibition took place from 11th to 14th of July 2007 and was addressed primarily to small and medium firms and industries. FONDOIN had a stand to show the programs for ODS elimination in Venezuela and the training program for Good Practices on Refrigeration addressed to refrigeration technicians who throughout the country.

### **15. Skin cancer prevention campaign**

As part of the celebration of the international year for the protection of the ozone layer we prepared an awareness campaign for skin cancer prevention. For this and with the collaboration of the Pharmacy Faculty of the Universidad Central de Venezuela, 18,000 30 FPS sun protection samples accompanied by 5000 information triptychs about the damage caused by ultraviolet rays were prepared. The distribution was done together with the Ministry of the Environment to families and young people in beaches and other educational and recreational centers in the country. This material was also distributed to families that visit the Children's Museum as well as the *Fe y Alegria* Schools, the *Corporación Venezolana de Guayana* and ecological groups that act on the coast.

### **16. Workshop on Methyl Bromide Phytosanitary Treatments**

This workshop took place on October 10th, 2007 in Maracaibo. It was addressed to wood packaging manufacturers and the main users of this packaging for export. This workshop was possible with the collaboration of UNIDO, some experts from the Universidad de Los Andes and FONDOIN. A total of 31 people attended the workshop among them businessmen and workers of the sector.

### **17. “El Escudo de la Tierra” (The Earth’s shield) video for children**

This video was done with the purpose of having some audiovisual material with a message about the ozone layer comprehensible for children and teenagers. It is a twelve-minute video with a representation of the possible consequences that one can suffer when exposed to the sun for too long without any protection. The video shows two children that act out the scenes. The production was finished on December 2007 with the intention of promoting it on television.

### **18. Children's CD with songs about the ozone layer**

The teacher Gisela Ponce proponed the initiative of producing a CD with children's songs about the ozone layer. FONDOIN supported this initiative by sponsoring the production of the CD with 10 songs and the reproduction of 700 CDs to be distributed in schools.

### 19. Song and Musical Video “Macho Ozono”

In a similar way we received a proposal for the production of a song accompanied by a reggaeton musical video about the ozone layer addressed to teenagers. The idea was oriented to call the teenagers attention through a mass media video musical. We hope we can spread the message with simple language and a modern rhythm and the collaboration of the media.

### 20. Second meeting of teachers who participated in the contest about the ozone layer in 2006

The meeting took place in FONDOIN with the purpose of knowing about the activities developed by these teachers in their schools in relation to these proposals and the evaluation of results. Additionally considering their vocation on the topic the teachers were summoned to carry out the training for trainers prepared by the Children’s Museum.

### 21. Informative talks

- A series of workshops was given in Caracas and Valencia to inform about the training program on Good Refrigeration Practices and the need for technicians to be trained together with the Ministry of the Environment, CREAACA and service firms. 150 people attended the workshop.
- The exhibition about the ozone layer in the event “*Ferrominera del Orinoco*” swearing in of Environment Child Volunteers took place on November 21<sup>st</sup>, 2007 in Puerto Ordaz. The 200 volunteers received triptychs and sun protection creams for skin cancer prevention.
- The film *Ozzy Ozono* was shown on November 21<sup>st</sup>, 2007 in Puerto Ordaz in the *CVG* Kindergarten. 98 children attended and the teachers sent the informative material and sun protector creams to their parents.

### 22. Video “Training and Equipments for Good Practices in Refrigeration”.

The motivation to produce a video to promote the good practice courses in refrigeration and supply equipment programme emerged over the delay in the equipment distribution and the need to have a video that increased technicians’ awareness for both the courses and the programme. The video highlights the benefits of both initiatives and invites the technicians and the general public to implement the actions that contribute to the preservation of the ozone layer.

The production was produced by the company Light Productions under the supervision of Mariateresa Balza and with the support of the technical Ozone Unit of FONDOIN. The material will be disclosed in the course of good practices in refrigeration to promote among technicians the procurement of equipment available in the programme. Additionally, this material will be used for disseminating this message in events related to the ozone layer protection where FONDOIN is present.



**23. Poster to promote Good Practices in Refrigeration courses**

To promote the GPR courses we considered the development of a poster which included the reduction in the number of technicians interested in participating in technical courses in certain localities. Likewise as we foresee an early start of the courses by the INCES, in many regions there is evidence of the absence of data allowing an effective call. In that sense considering the difficulty in obtaining information in these areas, it seems appropriate to use this medium to capture the necessary technicians.

The diffusion channels are the refrigerants dealers linked to one of the largest distributors in the country who kindly offered his support and through some professors from INCES who also want to collaborate spreading the message.

Approximately 500 copies will be printed for distribution of which 50 have been developed and delivered; it is worth noting that preparation is customized for each institution promoted.



**24. Promoting the music video " Ozono El Macho " and the album "Learning with ozone" to media:**

At the beginning of 2008 was sent to the media this audiovisual material with intent to disseminate information of the Ozone Layer in a different way to arouse interest in children and adolescents.

List of delivery:

Television Stations:	Radio Stations
TELEVEN	Radio Rumbos
VALE TV	Radio Capital
AVILA TV	Radio Caracas Radio
VENEZOLANA DE TV (VTV)	Radio Uno 1340 AM
TELESUR	Radio Red de Difusión Bíblica 1260 AM
TVES	Imagen 88.1 FM
	Caliente Estéreo
	Radio Nacional de Venezuela
	Fe y Alegría
	YVKE Mundial
	CNB 102.3 FM
	Cultural de Caracas 97.7

*Observation: The follow-up work for interviews and disclosure were arrested by the guidelines emanating from the Ministry of People's Power for Light Industries and Commerce, who believe the minister the only official spokesman.*

Stations which supported the disclosure of the material :

<p><b>Radio Rumbos (Programa Infantil: Tío Amauri)</b>                  Invited: Carmelina Lombardi                  Mariateresa Balza</p>
<p><b>Radio Caracas Radio ( Programa juvenil: Telaraña Deportiva)</b>                  Invited: Carmelina Lombardi                  Mariateresa Balza</p>
<p><b>Radio Nacional de Venezuela</b>                  Interview by phone                  Osmer Castillo                  Presidente de FONDOIN</p>
<p><b>YVKE Mundial</b>                  Live Interview                  Osmer Castillo                  Presidente de FONDOIN</p>
<p><b>Caliente Estéreo</b>                  Program for young se puso el CD de "Ozono el macho"</p>

**25. Campaña de sensibilización en los colegios**

A group of employees of FONDOIN have attended different private schools to give talks awareness for children using the material of "Childre's Museum" and the CD "Learning and Playing with Ozone." There is a small musical presentation for younger children. The experience in each institution has been the single most important being that the actors and protagonists of each story are: FONDOIN, teachers and children.

So far 6 people have visited schools, making 13 presentations to a total of 500 children. The activity will be implemented according to the demand and availability of the group.



**26. Frío Tecnología 2008 Event "The air on the earth"**

From 21st to 24th June, 2006 the Sixth International Exhibition and Conference of Air Conditioning, Ventilation and Refrigeration "Frío Tecnología" took place. The activity took place in Caracas in the International Exhibition Center (CIEC).

This event represents the largest exhibition of the country this matter. This is done every two years and brings together the main sector companies showing their products.

Fondoin participated with an exhibition stand with the support of the *Centro de Refrigeración de Aire Acondicionado (CREAACA)* to promote the courses on Good Refrigeration Practices and the equipment supplier program. Additionally was give a presentation "Environmental liability in the replacement of refrigerants" with an attendance of about 30 technicians.



The results of the fair were very successfully considering the number of technicians interested to participate at the courses and to get the equipments. More than 280 technicians were registered to take the course and 85 companies were interested for the equipments and tools kits.

## Activities on the media

Fondoin has implemented great efforts to achieve a lot of interviews about the issue of the ozone layer on the media. This information has appeared in the several newspapers and magazines throughout the country, on articles published in different websites and in several radio programs.

A summary of publications and interviews is showed in Annex I

## C. Development of ODS database system

The idea to develop a ODS database system was designed to support the initiative of customs office SENIAT in the sense of having an electronic platform for the registration and control of goods passing through customs all over the country. This was an independent development tool to our management; however, it was an opportunity to integrate some controls on the handling of individual substances depleting the ozone layer that would make information available in a more effective and speedy way.

The project began with several meetings with the SENIAT to raise the issue of the system requirements to assess its feasibility and related costs; however, we found that the Customs are not networked, but each one has installed the system to identify SIDUNEA goods entering or leaving the country and may issue a report with the data processed goods, which is why the proposal to have a software that enables real-time communication with other Customs and the Ministry of Environment can not be materialized until The SENIAT takes the decision to have the Customs networked.

Although the original project was not developed, the Customs and the Ministry of Environment agreed on a joint work plan, with some focal points in each institution, which has worked relatively well.

Finally resources for this project were reoriented to promotion and awareness activities.

## D. Training Programme

The implementation of training the Programme in Good Practices in Refrigeration it has been developed according to the plan established in the original project. Even though the results contained in this report are a continuation of the first tranche, the report will include the total achievement of the program from February 2006 to May 2008.

The most important activities developed during this period were the inclusion of new training centers for the training program, renewal of completed agreements, the reinforcement of equipment for practices and the signature of the agreement with *INCES* to start the courses, after two years of talks. The agreement allows us to complete the original plan to satisfy the demand of courses in most regions of the country.

Additionally, we organized two workshop days with the instructors of *INCES*, in order to update information, review the training program and define the course schedule to start the Good Practices Courses; the agreement to include Good Practice issues in the refrigeration regular program of *INCES* Centers. There are some new Instructors which will be trained in May to start the courses between June and July, allows us to complete the original plan to satisfy the demand of courses in most regions of the country.

The 23 *INCES* centers together with other new three centers subscribed, this allow us to reach a total of 46 centers throughout the country, above the original set number of 43 training centers in good refrigeration

practices; however some centers have completed the course agreement, so they will be out of the programme by July, and probably they will continue with the courses by themselves, but using the same Manual and the same procedures.

The strategy to incorporate new training centers was the result of the uncertainty of *INCES* adhesion to the program at the beginning of 2007. Due to this situation, the number of courses and the absence of some regions, we decided to seek an alternative in order to reduce the pressure on the demand for courses.

This was not an easy task since the majority of institutions dedicated to this subject had been identified in the original Project. Therefore, a goal was set to locate 6 training centers in the regions with the highest demand or where the program has not been implemented.

At the same time the acquisition of a set of equipment and tools for the practices equivalent to the rest of allocated equipment for the training centers was organized together with UNIDO. From the 6 sets of equipment for training centers received at the end of September, 2007 were installed three of them, the others three will be installed in the main centers *INCES* for the refrigeration regular courses.

In each of the cases and following the procedure to incorporate new training centers, the corresponding agreement was subscribed with each institution to guarantee the compliance of the program. For this purpose the centers were equipped with the tools for the laboratory and the respective teachers were trained. The following training centers were selected:

1. Center of Refrigeration and Air Conditioning, *CREAACA*: this is a firm that gives technical support and training on this area. Their adhesion addresses the need to give support to firms that request private courses and also to give the courses in the automotive sector, which is the weakest sector of the program. The contribution of this organization is the possibility to adapt the course to the needs of the user. The trainers who support *CREAACA* are mainly those who participate in the training for teachers.
2. *IUTI* Guacara: Training center located in Guacara near the city of Valencia. Their adhesion addresses the high demand of course in this region. The instructors were trained and the activities are planned to start in January 2008.
3. *ONG* Luis Prieto Figueroa: This organization is located in Cumaná, Sucre state. The initiative was possible through an association of refrigeration technicians of the region, which showed the interest in participating in the training program in order to be able to opt for the courses, the credentials and the program of equipment supply. The training of instructors was postponed to January 2008.

The following table shows the updated list of training centres with agreements with Fondoin

Table N° 5. Training Centres

	State	City	Education Centre	*
<i>INCE</i>				
1	Miranda	Caracas	Centro de Formación Industrial Electricidad y Electrónica	✓
2	Carabobo	Valencia	Centro de Formación Industrial La Isabelica- Valencia	✓
3		Puerto Cabello	Centro de Formación Puerto Cabello	✓
4	Aragua	Maracay	Centro Nacional de Mecánica Automotriz	✓
5		Maracay	Centro de Formación Polivalente Bermúdez- INCE Maracay	✓
6	Falcón	Coro	Unidad Móvil Coro	✓

	State	City	Education Centre	*
7	Lara	Barquisimeto	Instituto Nacional de Cooperación Educativa	✓
8	Portuguesa	Guanare	Centro Polivalente Guanare	✓
9		Ararure	INCE Regional, Araure	✓
10	Yaracuy	San Felipe	Centro de Formación Industrial	✓
11	Zulia	Maracaibo	Centro de Formación Industrial Maracaibo	✓
12		Cabimas	Centro de Formación Industrial CFI Cabimas	✓
13	Amazonas	Puerto Ayacucho	Centro de Formación Industrial Nieves Cuyare	✓
14	Bolívar	Ciudad Bolívar	Centro de Formación Industrial Ciudad Bolívar	✓
15	Apure	San Fernando de Apure	Centro de Formación Industrial San Fernando. Edo. Apure	✓
16	Nueva Esparta	Porlamar	Centro Polivalente Incemar Los Cocos	✓
17	Anzoátegui	Puerto La Cruz	Centro de Formación Profesional INCE-Puerto la Cruz.	✓
18	Sucre	Cumaná	Centro de Formación Industrial INCE-Cumaná	✓
19	Monagas	Maturín	Centro de Formación Industrial INCE-Monagas	✓
20	Trujillo	Valera	INCE Polivalente Industrial Valera	✓
21	Mérida	El Vigía	Centro de Formación Profesional INCE El Vigía	✓
22	Barinas	Barinas	Instituto Nacional de Cooperación Educativa	✓
23	Táchira	San Cristóbal	Centro de Formación Industrial San Cristóbal	✓
<b>Fe y Alegría</b>				
24	Distrito Capital	Caracas	San José Obrero	x
25	Miranda	Cúa	Escuela Técnica Monseñor Juan José Bernal	x
26	Zulia	Maracaibo	Escuela Artesanal Cristo Rey de Fe y Alegría	x
27	Zulia	Maracaibo	Unidad Educativa La Chinita	x
28	Sucre	Cumaná	Unidad Educativa Fe y Alegría Madre Alberta	x
<b>Other Institutions</b>				
29	Miranda	Caracas	Universidad Simón Bolívar	x
30	Distrito Capital	Caracas	Universidad Central De Venezuela	✓
31	Distrito Capital	Caracas	Instituto Universitario de Tecnología Industrial Caracas – IUTI	✓
32	Carabobo	Guacara	Instituto Universitario de Tecnología Industrial Valencia – IUTI	✓
33	Zulia	Maracaibo	Instituto Universitario de Tecnología Industrial Maracaibo – IUTI	✓
34	Táchira	San Cristóbal	Instituto Universitario de Tecnología Industrial San Cristóbal – IUTI	✓
35	Aragua	Maracay	Instituto Universitario de Tecnología Industrial Maracay-IUTI	✓
36	Carabobo	Guacara	Instituto Universitario de Tecnología Industrial Maracay-IUTI	✓
37	Carabobo	Valencia	Centro de Entrenamiento General Motors Venezolana C.A.	✓
38	Distrito Capital	Caracas	ATEMA	✓
39	Distrito Capital	Caracas	CANATAME	✓
40	Distrito Capital	Caracas	Universidad Metropolitana	✓
41	Distrito Capital	Caracas	UNEXPO	✓
42	Falcón	Punto Fijo	Instituto Universitario Tecnológico José Leonardo Chirino	✓
43	Bolívar	San Félix	Fundación La Salle – Campus San Félix	✓
44	Nueva Esparta	Las Piedras	Fundación La Salle – Campus Margarita	✓
45	Distrito Capital	Caracas	Centro de Refrigeración y Aire Acondicionado, CREAACA	✓

	State	City	Education Centre	*
46	Sucre	Cumaná	ONG Luis Prieto Figueroa	✓

Active Center ✓ Inactive Center x

The table 6 shows the training centers results with statistics per training center and statistics per technicians.

Table Nº 6. Training Centres Results for 31/05/2008

City	Courses		Technicians			
	Programmed	Executed	Summoned	Attendance	Absent	Certificated
<b>Training Center: IUTI</b>						
Valencia	21	21	432	358	74	335
San Cristóbal	20	18	290	289	9	259
Maracay	20	15	229	196	51	145
Maracaibo	20	14	266	207	59	156
Caracas	20	15	300	204	95	155
Guacara	10	3	42	42	5	34
<b>Subtotal</b>	<b>111</b>	<b>86</b>	<b>1559</b>	<b>1296</b>	<b>293</b>	<b>1084</b>
<b>Training Center: Fe y Alegría</b>						
Cúa	8	8	174	119	55	106
La Chinita	6	5	70	53	17	53
Cristo rey	6	5	68	48	20	47
Cumaná	7	7	89	89	0	86
<b>Subtotal</b>	<b>27</b>	<b>25</b>	<b>401</b>	<b>309</b>	<b>92</b>	<b>292</b>
<b>Training Center: INCE</b>						
CEMA Maracay	5	1	20	19	1	16
Puerto Ayacucho	5	3	46	35	11	25
<b>Subtotal</b>	<b>10</b>	<b>4</b>	<b>66</b>	<b>54</b>	<b>12</b>	<b>41</b>
<b>Training Center: Universidad Simón Bolívar</b>						
Caracas	10	10	176	123	53	91
<b>Subtotal</b>	<b>10</b>	<b>10</b>	<b>176</b>	<b>123</b>	<b>53</b>	<b>91</b>
<b>Training Center Fundación la Salle</b>						
Margarita	21	16	272	265	8	264
San Felix	13	13	250	249	1	235
<b>Subtotal</b>	<b>34</b>	<b>29</b>	<b>522</b>	<b>514</b>	<b>9</b>	<b>499</b>
<b>Training Center José Leonardo Chirinos</b>						
Punto Fijo	20	13	152	152		147
<b>Subtotal</b>	<b>20</b>	<b>13</b>	<b>152</b>	<b>152</b>	<b>0</b>	<b>147</b>
<b>Training Center Camatame</b>						
Caracas	10	0				
<b>Subtotal</b>	<b>10</b>	<b>0</b>				
<b>Training Center Atema</b>						
Caracas	10	1	19	9	10	8
<b>Subtotal</b>	<b>10</b>	<b>1</b>	<b>19</b>	<b>9</b>	<b>10</b>	<b>8</b>
<b>Training Center Universidad Central de Venezuela</b>						
Caracas	10	5	83	67	16	58

<i>Subtotal</i>	10	5	83	67	16	58
<b>Training Center Universidad Nacional Experimental Politécnica</b>						
Caracas	10	7	135	103	33	80
<i>Subtotal</i>	10	7	135	103	33	80
<b>Training Center Universidad Metropolitana</b>						
Caracas	10	2	45	34	11	29
<i>Subtotal</i>	10	2	45	34	11	29
<b>Training Center Centro de Entrenamiento General Motors</b>						
Valencia	10	1				
<i>Subtotal</i>	10	1				
<b>Training Center Centro de Entrenamiento ONG Maestro Prieto Figueroa</b>						
Cumaná	10	3	47	40	7	36
<i>Subtotal</i>	10	3	47	40	7	36
<b>Training Center Centro de Refrigeración y Aire Acondicionado, C.A. CREAACA</b>						
	10	12	158	147	11	126
<i>Subtotal</i>	10	12	158	147	11	126
<b>Totals</b>	Courses		Technicians			
	Programmed	Executed	Summoned	Attendance	Absent	Certificated
	447	198	3363	2848	547	2491

### The Courses Advances

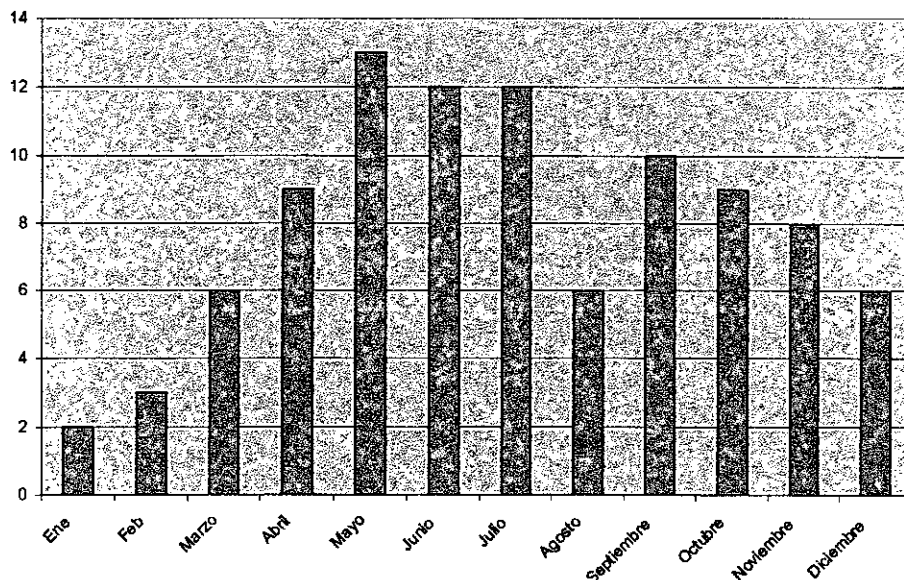
The courses have been developing satisfactorily so far. The general results of the training program until April 2008 are shown in Table No. 7. The training division summoned a total of 3,363 technicians to attend the courses of which 2,848 attended the course. In total 2,848 technicians have been trained and 2,491 finally obtained the certification by approving the test for the credential on good refrigeration practices.

Table Nº 7. Results of National Training Plan on Good Refrigeration Practices for 31/05/2008

Training Centres		Courses Program	
Available	46 (100%)	Programmed courses	447 (100%)
Operative centres	46 (100%)	Executed courses	198 (44%)
Inactive centres	6 (13%)	To be executed	249 (56%)

Technicians' Attendance	
Summoned	3,363 (100%)
Trained	2,848 (84%)
Certified	2,491 (87%)
Desertion	547 (16%)

Graph N°1. GPR Courses Schedule for 2008



### The goal of Training Courses

The subscription and renewal of new agreements have modified the original scenario of the training program. The increase and renewal of agreements have generated a bigger number of courses and technicians to be trained.

The scheme includes 46 centers and if we consider the progress of every institution according to their agreement we obtain a total of 447 programmed courses. This value represents 40% more courses and 100 additional courses.

Considering the average current attendance we can estimate the number of technicians to be trained is 5.500.

This value sets up a new goal for the program, which was originally designed for a total of 3.000 technicians, and which faces the new compromise with the participation of all training centers.

### INCES Agreement

After long negotiations, finally *INCES* signed the agreement for implementation of the courses in the remaining centers 23 on November 14<sup>th</sup>. A change in the board of directors with new guidelines speeded up the process successfully.

Despite of the signed agreement between FONDOIN and INCES, the courses have not started yet; however there were one day workshop to update information, review individual INCES center schedules and the starting day of the courses for each center.

The centers of Maracay, Bolívar and Cabimas will start in the first term of June; the others will start by the end of June or in July; and the centers of Porlamar, El Vía and Coro will start by August. The frequency of courses in almost all centers is monthly; so centers which have to give 10 courses will finish



in the first term of 2009, and the centers which have to give 5 courses could finish by December 2008 or January 2009.

### Renewal of agreements

In order to continue the activities with the training centers and considering the number of courses remaining to teach first quarter, we decided to extend the agreements with those centers with good results in absence of INCES option.

In the first semester of the year 2007 those agreements that finished with the planned courses were renewed. The agreements with some centers, as IUTI, have been extended, but others, as Fe y Alegría and USB which completed their courses, are not willing to continue or they are including the Good Practices in their ordinary programmes.

#### 1. Agreements renewed:

Training center	City	Nº of Courses
IUTI Caracas	Caracas	10
IUTI Valencia	Valencia	10
IUTI Maracay	Maracay	10
IUTI San Cristóbal	San Cristóbal	10
IUTI Maracaibo	Maracaibo	10
Fundación La Salle	Margarita	10
Instituto Universitario José Leonardo Chirino	Punto Fijo	10
<i>Total</i>		70

#### 2. Agreements not renewed:

The *Universidad Simón Bolívar* (Caracas): they expressed their interest in continuing with the course on their own, but no final decision has been taken.

*Escuela Técnica Monseñor Juan José Bernal, Fe y Alegría* (technical school) (Cúa, Miranda): this institution removed the subject of refrigeration from their pensum.

*Unidad Educativa Fe y Alegría Madre Alberta*: they notified they cannot renew the agreement due to prior training compromises with the oil company PDVSA, which do not allow for other activities.

*Escuela Artesanal Cristo Rey and Unidad Educativa La Chinita, Fe y Alegría* are not willing to continue the courses.

### Monitoring activities

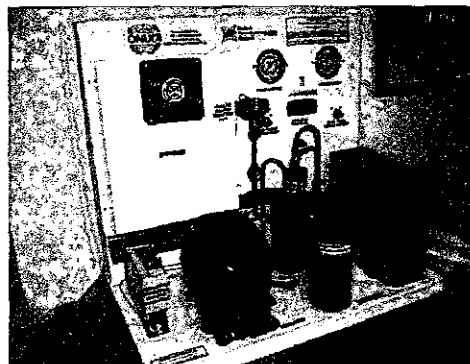
The training program has been developed without many troubles other than the delays for the start-up of the training centers. The monitoring of the centers and the courses has been done through mails and phone calls; however, we decided to do some personal assessment in the centers and the courses.

In order to do this we hired Prof. Edgar Oropeza who has a long experience in the program. He has to evaluate the conditions of the centers, the availability and operability of donated equipment, and the comments and suggestions of the teachers in charge of the training.

The inspection resulted in some recommendations to improve the deficiencies identified in the courses as well as in the centers. The corrective actions are being implemented to keep the aim of the courses. Annex II includes the results of this activity.

### Equipment delivery

The project of equipping the training centers did not include equipment for the test suggested in the course of good practices. The majority of centers do their tests with old refrigerators they have in their laboratories. That is why the supply of equipment did not seem necessary at that moment. The experience showed the contrary as some difficulties were detected when doing the tests.



In view of the situation we requested UNIDO the acquisition of some refrigeration didactic units in order to simulate the processes of recuperation and handling of refrigerants. The purchase order included the acquisition of 15 simulators from the local firm Intermi, which was selected as supplier.

The equipments were delivered in June 2007. In each center the teachers were trained to operate the simulator for their appropriate use. Additionally, we have taken this opportunity to refresh and reinforce the knowledge on refrigerant recuperation practices. This training was implemented last quarter of 2007.

The distribution of simulators was oriented to the active centers, the rest of the centers conformed by the INCES are waiting for a new lot of them, which were ordered for manufacturing after the agreement's sign. A lot of 23 simulators were bought to be provided in July 2008.

Additionally, some digital vacuum gauges for complementing the supply were added as the conventional vacuum gauges available did not allow measure correctly.

Table Nº 8. Refrigeration Didactic Unit Delivered for Training Centers

Nº	Training Center	City
1	Universidad Central de Venezuela UCV	Caracas
2	Universidad Metropolitana UNIMET	Caracas
3	Instituto Universitario de Tecnología Industrial IUTI Caracas	Caracas
4	Universidad Nacional Experimental Politécnica Luis Caballero Mejía UNEXPO	Caracas
5	Instituto Universitario de Tecnología Industrial IUTI Maracay	Maracay
6	Instituto Universitario de Tecnología Industrial IUTI Valencia	Valencia
7	Instituto Universitario de Tecnología Industrial IUTI Guacara	Guacara
8	Instituto Universitario de Tecnología Industrial IUTI Maracaibo	Maracaibo
9	Escuela Artesanal Cristo Rey de Fe y Alegría	Maracaibo
10	Unidad Educativa La Chinita de Fe y Alegría	Maracaibo

Nº	Training Center	City
11	Instituto Universitario Tecnológico Jose Leonardo Chirino	Punto Fijo
12	CREAACA	Caracas
13	Fundación La Salle Campus Margarita	Porlamar
14	Fundación La Salle Campus San Félix	San Félix
15	FONDOIN	Caracas

### Complementary Seminars

As part of a strengthening initiative Fondoin had during the second half of 2006 a cooperation agreement with the firm Corp Best, a distributor of refrigeration equipment and tools, to implement a series of seminars through their training department in several cities of the country.

The seminars are planned with the participation of a group of firms from the refrigeration sector to offer technicians up-date knowledge on the subject. Through these meetings technicians find support for their work with a new communication channel with their suppliers. In the majority of cases the information and knowledge is available but technicians find it difficult to access and understand.

The seminars are conducted, among others, by the national consultant Jorge Puebla and their objective is to up date and strengthen the knowledge about the technical aspects on good refrigeration practices. Up to now 18 seminars have been dictated in Puerto La Cruz, Anaco, Maracaibo, Carora, Barquisimeto, San Cristóbal, San Antonio, el Vigía, Valencia, Maracay, Porlamar, and Caracas. An audience of 2.270 people related to the refrigeration sector was present among them businessmen, professionals, technicians, dealers, students and general public interested in getting more information about refrigeration.

### Certification

The certification of the technicians is an accreditation awarded by FONDOIN in compliance with the 4335 decree for the management and control of substances depleting the ozone layer. In that sense any user undertaking the use of such substances is required to train their staff on their proper handling.

The accreditation is oriented to the refrigeration sector by means of a course of good practices in refrigeration, through which technicians acquired the skills needed to manage responsibly the refrigerant gases. At the end of the course participants that are approved will be accredited with this instrument.

The certification process has been successfully implemented with the participation of all training centres. Until the month of April 2008 2.303 technicians were certified.

This process has been developed with the participation of the company CREAACA, which is responsible for processing the credential after receiving the course material with relevant evaluations. The technician can consult the FONDOIN website to verify the results before issuing the card. The whole process takes about 45 days.

## E. Coordination Program for the Recovery and Regeneration of Refrigerants

### Establish a reclaiming centre in PRODUVEN.

Taking into account the scheme designed during the execution of the first tranche, which includes the re installation and commissioning of the refrigerant reclaiming plant acquired in 1997, as well as the participation of PRODUVEN as responsible for operating the plant; the activities carried out under the Second Tranche, resulted in important achievements. The activities and achievements are as follows:

#### 1. Definition and signing of operation agreement between FONDOIN and PRODUVEN.

The agreement has validity for two (2) years beginning June 25, 2007, with automatic extension of two (2) years.

#### 2. Transportation of equipment and accessories.

The transportation of cargo not packed in boxes is in general very complicated; therefore it was done in two phases: the first during September and the second on December 2006.

The transfer was carried out from the city of Paracotos, INGARSICA warehouse towards PRODUVEN facilities located in Moron, near the town of Puerto Cabello.

#### 3. Installation and commissioning of the refrigerant reclaiming plant.

In order to evaluate the equipment, to provide technical support during the installation process, as well as to train the staff in the functions of operation, the company "Protocol Resource Management" from Canada, who designed and installed the plant in 1998, was contacted.

Despite not having carried out the recruitment, Mr. James Flowers (General Manager), through communications with Mr. Pedro Sallent (FONDOIN), showed interest in giving support within its capabilities.

Within the given support we can mention, the delivery of the instruction manuals of the equipments in both English and Spanish version, also the exchange of technical information via email.

Thanks to the experience and expertise of staff, as well as the support of management PRODUVEN, in August 2007, the reclaiming plan was started up.

#### 4. Identification of the product contained in the cylinders and tanks delivered to PRODUVEN as part of the agreement subscribed for the operation of the plant.

PRODUVEN made the verification of the substances contained in each one of the cylinders and tanks. The activity carried out during the months of September and October this year ended with the following results:

Product	Quantity (Kg)
R-11	206
R-12	3
R-22	112
R-134	8
	329
Others	455,8

The line other includes all those substances composed of two or more refrigerants not balanced, which cannot be separated by the regeneration machine. These substances must be stored until they can be destroyed.

Due to the fact that some cylinders have little substance, we are going to transfer the product in one or more cylinders taking into account the type of refrigerant and under the necessary measures to prevent any mishap.

The resulting quantities after the regeneration will be part of the initial inventory of the recuperation and regeneration scheme.

#### **5. Pilot Tests with the reclaiming machine.**

PRODUVEN staff has been doing a series of tests using the refrigerant mentioned above, as well as the substances that have been recovered and sent to plant.

These tests are very important for the project because it will allow operators to learn about the advantages and limitations of equipment, in addition to calculate operating costs and performance associated with the process.

#### **6. Design of the format for reporting the data.**

A form was prepared to have control from the stockpile quantities according to types of refrigerant, process (regenerated and contaminated), quantities purchased and amounts received for service, likewise losses during the process.

#### **Establishment of Refrigerants Recovery Network.**

Taking into account the work done in 2006 by *Biosfera + Segura Consultores (B+S)*, which recommends taking advantage of infrastructure and transport logistics that are distributors of refrigerant gases virgin to apply simultaneously to the system of recovery.

To that end, considering the participation of PRODUVEN as operator of the plant is estimated to constitute the recovery with its network of distributors: Refrimaster, Indugas and Comercial San Antonio, in addition to any other company to show real interested in participating in the project. The activities are detailed below:

##### **1. Meeting with representatives of distributors.**

In order to inform them of the efforts for the installation of the plant, hear their point of view and expectations to participate as collection centers, in mid-November 2006, held a meeting which was attended by representatives of distributors and PRODUVEN. Mrs. Jorge Puebla also participated as a collaborator external from FONDOIN.

Although all showed interest in participating and assisting in the creation of the network, there were not many advances in this first meeting.

However, due to the current market situation, resulting from early closure by PRODUVEN of CFC-11 and CFC-12 production, besides the efforts made by FONDOIN, distributors have changed their point of view. This situation has allowed some progress in recent talks conducted with them.

## 2. Definition of the scheme operation and listing of equipment for collection centres.

Jointly with Mr. Carlos CUBEDDU and Mr. Jose Blanco, Director and Sales General Manager of PRODUVEN respectively, was designed a scheme operation (see Annex IV) to cover the demand from end-users that manage large amounts of CFCs, such as service companies that cater to owners of large buildings, supermarkets and industries.

The scheme was made up of 10 collection centres, which will be distributed throughout the country and operate taking into consideration the following aspects:

- a) The scheme is expected to give support to workshops with medium consumption of refrigerant. (25kg month or more)
- b) The refrigerant after revised is moved to a cylinder of greater capacity. The cylinder is returned to its owner after cleaning (deep cleaning)
- c) The refrigerant is stored by the type of refrigerant (see diagram) and by the level of acidity (acidic, not acid)
- d) It incorporates an allocation of equipment and tools for the collection centres which can rents a site for those companies who do not have one.
- e) The plant has a capacity to regenerating refrigerants with high level of acidity (compressor burned).

FONDOIN continues working on the design of an incentive plan to promote the recovery of refrigerant in this sector. We have carried out several meetings with Mr. Jorge Puebla and Mr. Edgar Oropeza, who support us in these issues. Unfortunately, little progress has been achieved. There are many details, when speaking about recovery from small amounts of refrigerants, for example: the existing scepticism related to the unprofitable process for small quantities, the need to have technicians with a minimum level of knowledge, as well as managers of companies and owners of teams committed to the environment, apart from the difficult and delicate handling that represents refrigerant considering the wide range of substances that are marketed within the country.

In Annex III (a) you can see the list of equipment and tools selected for the effective and safe operation of the recipient centres.

## 3. Recovery of Refrigerants.

As a consequence of the activities carried out by FONDOIN and the work together with the distributors of virgin gases, an approximate of 2,500 kg of CFC-12 from the replacement of one chiller was recuperated. The transportation logistics implemented with the empty and full cylinders was a good experience to evaluate the operation of the recovery network considering that the mission was carried out by PRODUVEN and one of the distributors.

The refrigerant was recovered satisfactorily and is waiting for the analyses and further regeneration phase.

Furthermore during March, 2007 an approximate 800 kg of HCFC-22 from an air conditioning substitution program in Maracaibo was recovered. The program was promoted by C.A. Energía C.A. Energía Eléctrica de Venezuela (ENELVEN), the firm in charge of supplying the power to the Zulia state. The Logistics related to the transportation of empty and full cylinders was coordinated and executed by one of the distributors. As in the previous case this activity represented a good opportunity to evaluate the operation of the recovery network.

Additionally, about 1,000 kg of CFC-11, contaminated with oil and moisture, were incorporated to the program for its regeneration. The refrigerant is the product of several recoveries made by a service company, who conscious of the problem of harmful effect on the environment, properly stored it.

#### Distribution of recovery/recycling equipments to workshops.

During the implementation of the first tranche, a total of eight (8) different kits were defined according to the application area, the volumes of CFCs that handle and the connection of this program with the Programme Management Refrigerant implemented by the UNDP. The equipment and tools were provided by the company STAGI (Spain), who for having submitted the best offer technical and economic, got good pro in the international bid carried out by the United Nations Industrial Development Organization (UNIDO).

Following a recommendation by the project manager, Mr. Serpa, a check of physical condition, quantity and functioning of some of the equipment was made. It was able to verify that all of them arrived in perfect physical conditions, as well as the amount received corresponded with the purchase order. However, some equipments failed during the tests, specifically, UV lamps that are part of the ultraviolet detector leak. Two electronic scales also presented failures. A summary of the equipment and its failures can be seen in the table below:

Equipment Description	Qty	Failure	Observations
1.- UV Leak Detector Brand CLPLGTH n° 701 INJ LOP	110		
- First lot	35	Does not turn on due to defective battery	uses 4 batteries : XELEN Ni-MH AA 1800 mAh. 4,8 volts.
- Second lot	75		
2.- TST - Electronic Scale STAG. Model TSY 08005	2	Does not turn on due to defective battery	uses (1) battery GREENCELL 1604G 6F22. 9 volts.

Due to the efforts made from Mr. Serpa and support from Mr. Julio Esteban, export manager of STAGI, the equipment and parts that had failures were replaced totally.

In order to execute this program, an agreement was signed with the Centre for Refrigeration and Air Conditioning, ca (CREAACA). The agreement provides location, contact and evaluation of potential beneficiaries, delivery of equipment and monitoring.

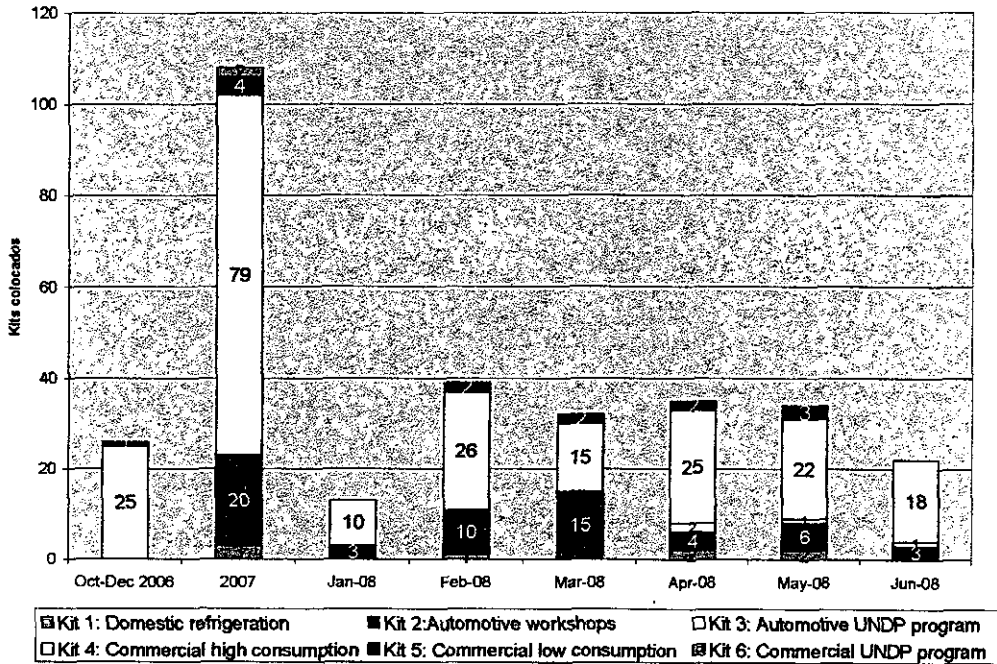
The main activities carried out during the performance of the contract are as follows:

- Definition of the requirements for participation in the programme.
- Operation plan of the programme shared by FONDOIN y CREAACA.
- Establishment of the strategy to contact those workshops whose technicians had already participated in the courses.
- Design and elaboration of a triptych where the benefits of the program are explained, define to whom is addressed, and the necessary requirements to participate and procedures. This material is delivered to each participant of the courses jointly with the Manual of Good Practices in Refrigeration.
- Opening of the website [www.creaaca.com](http://www.creaaca.com) of the "Centro de Refrigeración y Aire Acondicionado" was created. In this website it is possible to see all the information related to the programme for the supply of equipment including the detailed images of each kit. Additionally any interested person or workshop in participating in the programme can start enlisting his company via internet through a link available on this website.

- Contact by telephone and mail, with workshops and enterprises with technical certificates. The activity was based on contact with workshops that despite having sent their technicians to the course, showed not interest in the equipments.
- Visit to the automotive sector workshops located in Caracas and nearby cities.
- Promotional visits to cities throughout the country: Puerto Ordaz, Barcelona, Cúmana, Maracaibo and Valencia already visited.

As shown in Graph N° 2, in the beginning of the programme, the number of affiliations was very slow, however, thanks to several actions implemented; the figures improved satisfactorily. Between January and May 2008 an average monthly from 35 kits has been gotten.

Graph N° 2. Equipment allocated since the beginning of the program to October 2007



In Table N° 9, a summary from the progress of the program is shown. One can see how the kit 2 and 4 are the ones who have had greater acceptance among workshops contacted. Also, one can see as the kit can be seen as 3 and 6, designed, at first, for improving the capabilities of workshops affiliated with the UNDP program. The kit 1 and 5, designed for workshops with low consumption, has not had good acceptance.

Table N° 9. Physical progress on the supply of equipment to June-2008

Kit N°	Initial equipment	Allocated to May-2008	Progress
1	50	8	16%
2	120	61	51%
3	30	4	13%
4	350	220	63%
5	50	14	28%
6	50	2	4%
<b>Total</b>	<b>650</b>	<b>309</b>	<b>48%</b>



Considering the developments that have taken the programme, it was decided to buy equipment and tools needed to equalize the kit which has had fewer placements with those of greater acceptance among technicians. In Annex III (b) you can appreciate the technical characteristics and quantities required. UNIDO will be in charge of the purchasing such equipment.

**F. Technical support for manufacturing sectors.**

This activity provides for the preparation of seminars on topics related to proper refrigeration gas use of substitutes for CFCs. The aim is to inform technicians on the replacement options and characteristics of these substances for the proper use according to each application.

The activity was postponed to take place in the second half of 2008; however, the reason for this is not mentioned in this report.

**Activities on the media**

**a. Articles Published in the press:**

**Preservation**

El Nacional. Lunes 07 de agosto de 2006. Pág. B10

**The Caracas Children's Museum inaugurated the exhibition: ¿Qué sabes...de la Capa de Ozono?**

Diario el Nuevo País. Martes 08 de agosto de 2006. Pág. 12

**Children's Museum exhibition about the ozone layer**

Primera Hora. Miércoles 09 de agosto de 2006. Pág.5

**¿Qué sabes de la capa de ozono? "What do you know about the ozone layer?"**

Diario VEA. Jueves 10 de agosto de 2006. Pág. 17

**Environment exhibition**

Tal Cual. Jueves, 19 de agosto de 2006. Pág. 20

**The ozone layer is getting a little better**

Últimas Noticias. Sábado, 16 de septiembre de 2006. Sección Calidad de vida.  
Pág. 4-8

**Venezuela advances in the protection of the ozone layer**

El Universal. Domingo, 17 de septiembre de 2006. Sección: Calidad de vida. Pág. 4-8

**Venezuela observes its obligations**

Tal Cual. Martes, 19 de septiembre de 2006. Sección: En Cuenta. Pág. 11

**Educational Creativity on the ozone layer**

Diario de Caracas. Jueves, 21 de septiembre de 2006. Sección Mercatips. Pág.14

**The world will be warmer this year**

El Universal. Sección Ambiente. Pág. 3-5  
Fecha: 05-01-07

**Venezuela achieves an environmental goal**

El Universal. Sección Ecología. Pág. 3-7  
Fecha: 2-02-07

- *"Venezuela se anota un logro ambiental"* ("Venezuela achieves an environmental goal") (El Universal)
- *"Triunfa la lucha por la Capa de Ozono"* ("The Struggle for the Ozone Layer Succeeds")(El Nacional)
- *"Manejo de CFC en Venezuela"* (Handling of CFC in Venezuela).

- (Magazine AC/R Latinoamericana)
- “*Capa de Ozono se sigue reduciendo advierten expertos*” (“The Ozone Layer Keeps Thinning”) (Ultimas Noticias)
- “*El Domingo es el día mundial de las playas*” (Diario El Nuevo País)
- “*Los Tanques celebrará Día Mundial de las Playas*” (Diario VEA)
- “*Cinco mil voluntarios asearán las costas*” (Diario Ultimas Noticias)
- “*Realizarán jornada de limpieza en playas del estado Vargas*” (Diario La Voz)
- “*Venezolanos celebran Día Mundial de las Playas*” (Diario 2001)
- “*Mensaje Ecologista*” (Diario El Universal)
- “*Jornada por el día de las playas persigue concienciar a la gente*” (Diario El Universal)
- “*Día Mundial de las Playas*” (Diario VEA)

**b. Articles published in magazines:**

**Magazine “Venezuela, Travel Magazine”**

Fecha: viernes, 25 de agosto de 2006

**Magazine: Expansión**

Cámara de Comercio Venezolano – Francesa  
Diciembre 2006

**c. Articles published on the web:**

**Children's Museum explores the ozone layer**

[www.eluniversal.com](http://www.eluniversal.com). Martes, 08 de agosto de 2006. Sección: Educación

**The Children's Museum and Fondoin organized an exhibition about the ozone layer**

[www.aporrea.org.ve](http://www.aporrea.org.ve). Martes, 08 de agosto de 2006. Sección: Educación

**Within the celebration of the preservation of the ozone layer day: Venezuela observes a 100% the Montreal Protocol**

[www.quintodia.com](http://www.quintodia.com). Viernes 15 de septiembre de 2006. Sección: País

**FONDOIN promotes refrigeration practices to preserve the ozone layer**

[www.abn.info.ve](http://www.abn.info.ve) Domingo, 17 de septiembre de 2006. Sección: Ciencia

**Venezuela could comply with the Montreal Protocol before 2010**

Agencia Bolivariana de Noticias. Fecha: 18-01-07

Additionally Fondoin has a web page: [www.fondoin.org](http://www.fondoin.org) which is up dated every week with all the activities done in the different departments.

**d. Fondoin Web page publications:**

- “*Fondo de Reconversión Industrial impulsa campaña ambiental en playas*” (ABN)

- “*Jornada de Playas*” (Web page of Ministry of Environment)

This year the following articles related on the national training program have been published on the web:

- 08-04-07      Nuevas opciones para los técnicos de refrigeración  
*New options for refrigeration technicians*
  - 26-03-07      Ingeniería y Tecnología Ambiental  
*Engineering and environmental technology*
  - 28-02-07      Cronograma del Plan Nacional de Capacitación de Buenas Prácticas  
*Chronogram of the National Good Practices Training Program*
  - 23-02-07      Refuerzan conocimientos en Refrigeración  
*Knowledge on refrigeration is strengthened*
  - 23-02-07      Comité Interinstitucional de la Gestión Ambiental de la Aduana Venezolana define nuevas acciones  
*Interinstitutional Committee on Venezuelan Customs Management defines new actions*
  - 4-02-07        Febrero arrancó con el Plan Nacional de Capacitación  
*February National Training Plan kick-off*
  - 09-02-07      Taller de Inducción para el equipo de FONDOIN  
*Induction workshop for the team in Fondoin*
  - 09-02-07      Plan Nacional de Capacitación cosecha éxitos  
*National Training Plan achieves success*
  - 15-01-07      Plan Nacional de Capacitación retoma actividades  
*National Training Plan restart activities*
- “*Venezuela podría cumplir acuerdos del Protocolo de Montreal antes del 2010*” (“Venezuela could Comply with the Montreal Protocol before 2007”)(*Agencia Bolivariana de Noticias*)
  - “*Tendencias Mundiales en refrigeración y climatización*” (“World Tendencies on Refrigeration and Climatization”) (*Boletín exportando*)
  - “*El planetario estrena proyección sobre la capa de ozono*” (*CANTV.NET*)
  - (“*The Planetarium Premieres Film about the Ozone Layer*”)

**e. Other articles:**

- “*Declaración de Montreal*” (*Internet*)
- “*20 Aniversario del Protocolo de Montreal en Canadá*”
- “*Protejamos la Capa de Ozono*” (*publicity*)
- “*La Capa de Ozono*” (*Google*)
- “*Piden Protección para capa de ozono*” (*El Nacional*) (*journal*)

**f. Radio and television interviews:**

**Emisora Onda: Circuito Unión Radio 107.9 FM**

Radio program: Graciela en Onda

Date: Wednesday 16 August 2006

**Emisora CNB 102. 3 FM**

Radio program: Portafolio de negocios

Date: Monday 21 August 2006

**Emisora Éxitos 99.9 FM**

Radio program: Radio Global

Date: Wednesday 23 August 2006

**Telesur**

Television program: noon edition

Date: Wednesday 13 September 2006

- Interview on the *Agencia Bolivariana de Noticias* both for the web page and televisión. It was done through National Independent Producers.
- Interview *Unión Radio* with broadcaster Pedro Penzini
- Interview on *Radio Naciones Unidas*
- Interview on 92.9 FM program “*El Monstruo de la mañana*”
- First *FONDOINFORMA 2007*
- Publication of a magazine report about the National Training Plan, Magazine *AC/R Latinoamericana* untitled: “*Manejo de CFC en Venezuela*” (Handling of CFC in Venezuela).
- Interview on *YVKE Mundial* radio station
- Publication informative notes on *El Nacional* and *El Universal* newspapers.
- Publication on the web page “*Exportando*”

**g. Radio publicity:**

In 2006 and during two months on the day edition Fondoin broadcasted messages to inform about the damages on the ozone layer and the services of its organization.

In 2007 we took advantage of the Easter holiday period to deliver awareness messages to the public in general on the use of sun blocking protection. Fondoin bought a commercial in four radio stations during the Easter period (Radio Station Maxima 98.5 FM) with coverage in Caracas, its surroundings and the northern coastal region of the country.

**h. Triptychs about the ozone layer****Triptych No 1: Title: The Ozone Layer**

## Contents:

- *La Capa de Ozono* (The Ozone Layer)
- *¿Cómo protegerse de la radiación ultravioleta?*(How to Protect yourself from ultraviolet radiation?)
- *Consecuencias de la destrucción de la Capa de Ozono (efectos en el cambio climático y efectos por radiación ultravioleta)* (Consequences of the destruction of the ozone layer, effects on climatic changes and effects due to ultraviolet radiation)
- *Contribuya a la conservación de la Capa de Ozono* (How to contribute to preserve the ozone layer)
- *¿Qué sustancias agotan la Capa de Ozono?*(Substances that deplete the ozone layer)

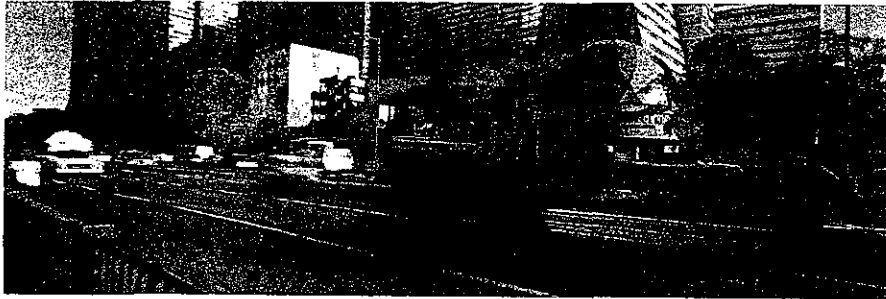
- *Leyes y regulaciones para proteger la Capa de Ozono* (Laws and Regulation to Protect the ozone layer)
- Fondo de Reconversión Industrial (FONDOIN)

**Triptych No 2:** Title: Ozone Layer International Year, Protect yourself from the sun

Contents:

- *El Sol y la Capa de Ozono* (The Sun and the Ozone Layer)
- *La radiación ultravioleta* (Ultraviolet radiation)
- *¿Cómo podemos protegernos del sol?* (How to Protect from the Sun)
- *Cuidados especiales para los bebés y niños de preescolar* (Special Care for Babies and Toddlers)
- *Cuidados de la tercera edad* (Care for the Elderly)
- *Tipos de Protectores solares* (Types of Sun Protection)
- *Cómo utilizar el protector solar* (How to Use Sun Protection)
- *Mensaje a los niños que saben leer* (Message to Children on Reading Age)

INFORME  
ACTIVIDADES 2007- 2008  
MUSEO DE LOS NIÑOS DE CARACAS  
SOBRE LA CAPA DE OZONO



Caracas, 11 de marzo de 2008

En el año 2007 y el primer trimestre del 2008 se han realizado en el Museo de los Niños de Caracas una serie de actividades referentes al tema de la Capa de Ozono, gracias al apoyo del Fondo de Reconversión Industrial (Fondoin); donde un gran número de niños, niñas, jóvenes y adultos han conocido acerca de este problema ambiental.

A continuación se describen cada una de las actividades:

- Rutas de la Capa de Ozono, al comienzo del año 2007 se tenían como meta que 500 niños realizarán la Ruta, la cual ya fue cumplida; a mediados de ese año se sumaron 1112 niños a la meta, labor que estamos cumpliendo con casi el 50% del total de los cupos asignados.

Itinerario de la Ruta: ¿Qué sabes de... La Capa de Ozono?

	Tiempo (minutos)	Exhibición	Objetivo
		Módulo	Bienvenida.
1.	15	Planeta Tierra	Conocer las características del Planeta Tierra.
2.	15	Biomás de la Tierra	Conocer las características del Planeta Tierra.
3.	10	Planeta Viviente	Conocer las características, función e importancia de la Capa de Ozono.
4.	15	La Capa de Ozono	Conocer las características, función e importancia de la Capa de Ozono.
5.	20	Sombras de colores	Conocer qué son los rayos ultravioleta. Conocer las consecuencias de la destrucción de la Capa de Ozono. Conocer diferentes formas de protegerse de los rayos ultravioleta.
6.	5	La Célula	Conocer las características de las células. Conocer las consecuencias que sobre la salud produce la destrucción de la Capa de Ozono.
7.	15	Microscopios	Conocer las características de las células y los tejidos. Conocer las consecuencias que sobre la salud produce la destrucción de la Capa de Ozono.
8.	15	Reciclaje (construir sombreros y lentes de sol)	Conocer diferentes formas de proteger el ambiente y de protegernos de los rayos ultravioleta B.
9.	10	Hagamos papel	Conocer diferentes formas de proteger el ambiente.
10.	15	Mundo marino	Conocer las consecuencias ambientales de la destrucción de la Capa de Ozono.
11.	15	Estación Meteorológica	Conocer las consecuencias ambientales de la destrucción de la Capa de Ozono.



12.	10	Mundo de la semilla	Conocer las consecuencias ambientales de la destrucción de la Capa de Ozono.
13.	5	Satélites Artificiales	Conocer los satélites que han permitido estudiar la Capa de Ozono.
14.	15	Planetario:	Conocer las características, función e importancia de la Capa de Ozono
Total	3 Horas		

### Registro de visitas

Centro Educativo	Fecha de Asistencia	nº de Niños
Colegio José Martí	10/03/2008	29
	07/03/2008	31
	07/03/2008	23
	18/02/2008	31
U.E. Artes y Oficios Intendencia	21/11/2007	29
	21/11/2007	26
	20/11/2007	21
	19/11/2007	12
	13/11/2007	37
	12/11/2007	25
	09/11/2007	21
	08/11/2007	42
	06/11/2007	35
	05/11/2007	29
	19/10/2007	34
Colegio San Agustín el Paraíso	26/02/2008	33
	19/02/2008	33
	12/02/2008	30
U. E. Concentrada 200	26/10/2007	15
Escuela 24 de Julio	19/10/2007	17
	05/07/2007	29
Instituto Humanitas	05/10/2007	29
U.E. Víctor Manuel Turnero Morales	28/09/2007	29
U.E. Páez	06/07/2007	25
Plan Vacacional UCAB	31/07/2007	30
U.E. Alejandro Fuenmayor Mayor	29/06/2007	30
	22/06/2007	24
	23/06/2007	24
Unidad Educativa San Isidro	29/06/2007	30
Escuela Básica Nacional Catia	25/05/2007	18
	25/05/2007	30
Escuela Mariño	18/05/2007	25
Colegio Cardenal Quintero	11/05/2007	13
	04/05/2007	30
Escuela Bolivariana Amalia Pellin	04/05/2007	29
Total		948

- Talleres para Docentes: se cumplió la meta de capacitar a 150 docentes quienes recibieron estrategias metodológicas de cómo abordar el tema de la Capa de Ozono en el salón de clases.

#### Cantidad de Talleres para Docentes

Fecha del Taller	Turno	Nº de Participantes
28/06/2007	A.M.	9
28/06/2007	P.M.	9
12/07/2007	A.M.	13
12/07/2007	P.M.	10
23/07/2007	A.M.	13
23/07/2007	P.M.	14
26/07/2007	P.M.	15
18/10/2007	P.M.	8
25/10/2007	A.M.	6
25/10/2007	P.M.	6
16/01/2008	P.M.	15
30/01/2008	P.M.	20
13/02/2008	P.M.	12
	Total	150

Algunos comentarios:

*"Me pareció muy completo y muy importante para nosotros como docentes saber de lo que pasa en nuestro planeta Tierra"*

*"El taller es dinámico y de buena calidad"*

*"Me pareció muy acertada la información que se tuvo a bien tomar en cuenta para dicho taller"*

*"Es un taller muy completo, se tocaron puntos estratégicos para que de alguna manera u otra se tome conciencia de lo que hacemos los productos que compramos"*

*"Los felicito por su excelente labor en general el contenido me encantó y me brindó varias herramientas para aplicarlas con mis alumnos, muchas gracias"*

*"Lo considero sumamente productivo e interesante ya que me permitió conocer la importancia de cuidar la Capa de Ozono y sus beneficios para todos los seres vivos en la tierra"*

*"Excelentes los facilitadores, el material, las explicaciones, la ruta de ozono para los niños. Felicito al Museo, a FONDOIN por su preocupación y esfuerzo por salvar la vida en el planeta."*

- Proyección del Planetario La Capa de Ozono: espectáculo audiovisual con imágenes 3D, duración 25 minutos, en el que los visitantes pueden conocer información de la vital capa en dos funciones al día 11:30 a.m. y 4:30 p.m. de lunes a domingo.

- Amigo -Guía permanente en la exhibición ¿Qué sabes de... La Capa de Ozono?, donde la gran mayoría del público que nos visita recibe la información relacionada a el tema.
- Guía para docentes ¿Qué sabes de... La Capa de Ozono?; material didáctico, dirigido especialmente a los maestros, que permite facilitar información teórica de la Capa de Ozono, causas y consecuencias de su destrucción, y medias de cómo proteger el cuerpo de los rayos del Sol. El cual se entregó a cada uno de los docentes que realizaron el taller.
- Tríptico de ¿Qué sabes de... La Capa de Ozono?, material didáctico dirigido a los niños, niñas y público en general reimpresso y entregado a los niños y representantes que efectuaron al ruta.
- Volante "Protégete", material didáctico dirigido a los niños, niñas y público en general entregado a los niños y representantes que efectuaron al ruta.
- Año Temático 2007 Año Internacional de la Protección de la Capa de Ozono, actividad central del Museo en la que se colocaron en las exhibiciones de la ruta, identificadores, para que el público particular reconociera la imagen y se estableciera el vínculo entre el contenido, permitiendo hacer una comprensión más integral de los contenidos del referido tema ambiental.

#### Fotos de la actividad



Entrada al Planetario (Ruta de Ozono).



Actividad de la Caja Mágica (Taller de Ozono)

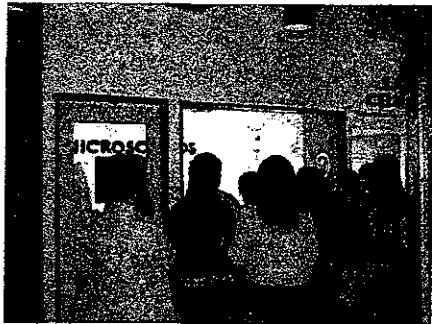


Ozono)

Actividad Detectives de Ozono (Taller de



Exhibición La Capa de Ozono



Exhibiciones La Célula y Microscopios



Exhibición Reciclaje

## **ANNEX II**

### ***Training Activities***

## **Resultados de la evaluación de los Centros de Capacitación Operativos en el 2007**

La evaluación se hizo mediante un cuestionario elaborado por FONDOIN, entregado por el Técnico Edgar Oropeza a los instructores de cada Centro, durante la visita para explicar el uso de los bancos de entrenamiento para refrigeración doméstica, donados por FONDOIN.

Los Centros evaluados fueron los siguientes:

Instituto Universitario Tecnológico José Leonardo Chirinos en Punto Fijo.

Universidad Metropolitana en Caracas.

UNEXPO Luís Caballero Mejías en Caracas

Universidad Central de Venezuela en Caracas

Unidad Educativa Fe y Alegría La Chinita en Maracaibo

Fundación La Salle en Margarita

Fundación La Salle en Guayana

IUTI en Maracaibo

IUTI en Valencia

IUTI en Caracas

IUTI en Maracay

IUTI en Guacara.

Resultados generales de los cuestionarios:

1.- Salón y mobiliario: Todos los centros cuentan con el mobiliario de clase, pero los dos Centros de la Fundación La Salle dicen carecer de los equipos como computadora, videobeam, DVD o televisor, esta carencia sorprende pues gran parte del material de apoyo del curso está en forma electrónica, por lo tanto no podrían utilizarlo.

2.- Equipamiento para el curso de Buenas Prácticas:

Del equipo entregado por FONDOIN, presentaron problemas 3 recuperadoras, 1 bomba de vacío, un detector de LUV, 1 pinza amperimétrica y 2 cambia gusanillos, uno de ellos no fue entregado con el equipo. Los otros centros reportaron el equipamiento completo y en buenas condiciones.

Respecto al equipamiento adicional propio, llama la atención que FLASA Margarita y la UCV dicen carecer de todos los equipos; los centros restantes, sólo 4 tienen cilindro de nitrógeno y 8 equipo para soldar, lo cual hace suponer que en todos estos centros no se dicta el curso completo con la parte de limpieza y soldadura.

3.- Instructor: La evaluación de los instructores fue buena, pero cabe destacar que no fue en clase sino durante la demostración del banco de prueba.

4.- Experiencia con los equipos donados: Hay 3 que presentaron problemas con las recuperadoras y cuatro señalan baja calidad en las mangueras de los manómetros. De resto todos están satisfechos con el funcionamiento de los equipos.

5.- Sobre los cursos: Algunos señalan la necesidad de actualizar el material de apoyo e incluso ofrecer más cursos para instructores; también señalan que algunos técnicos presentan un nivel muy bajo y que necesitarían más cursos; la mayoría se queja del retraso en el envío de las credenciales.

**ANNEX III****(a) List of equipment and tools for the recipient centres**

<b>Item</b>	<b>Name and required parameters</b>	<b>Qty</b>
<b>1</b>	<b>Refrigerant recovery machine</b>	<b>26</b>
	Ca. 1/2 HP reciprocating compressor. A oil free compressor. Portable.	
	For multiple refrigerants. R-12, R-22, R-502, R-404A and R-134a.	
	High-pressure automatic control with light indicator on control panel. Including a filling limiting device that stops recovering when 80% of the refrigerant tank volume is reached (OFP switch)	
	Operational texts in Spanish, mandatory.	
	Spare parts for one year.	
	Manual in Spanish flow and wiring diagrams included	
	Gauges (high and low) built in the equipment	
	Heavy duty, fan cooled condenser	
	An additional set of 6 filters per unit should to be quoted. Model: TLD 032 connection 1/4" SAEF.	
	Power supply 115V, 60 Hz 1 phase	
<b>2</b>	<b>Refrigerant Identifiers (optional*)</b>	<b>12</b>
	<b>Option a) Model TA 400 or equivalent</b>	
	CFC,HCFC, HFC and blends. e.g. R12, R22,R134a, R413a, R407C,R410A	
	Accuracy 98%	
	Power supply 110 VAC/60Hz	
	Screen resolution 0,1%; refrigerant rate detecting capacity from 0% to 100%	
	<b>Obtion b) Model Ultima ID or equivalent</b>	
	R12, R134a, R22, HC	
	Accuracy 98%	
	Screen resolution 0,1%; refrigerant rate detecting capacity from 0% to 100%	
	Power supply 110 VAC/60Hz	
<b>3</b>	<b>Service Manifold for R-12, R-22 and R-502</b>	<b>15</b>
	2 valves c/w ball valve hoses, pressure gauges	
	Measure units PSI/KPa and Centigrade	
	Five hoses of 1.5 meter (1 blue, 1 yellow and 3 red) with shut off valve connections 1/4" SAE Flex 45° x 1/4" SAE Flex 45° straight swivel.	
<b>4</b>	<b>Service Manifold for R-134a</b>	<b>36</b>
	2 valves c/w ball valve hoses, pressure gauges	
	Measure units PSI/KPa and Centigrade	
	Five hoses of 1.5 meter (1 blue, 1 yellow and 3 red) with shut off valve connections 1/4" SAE Flex 45° x 1/4" SAE Flex 45° straight swivel.	

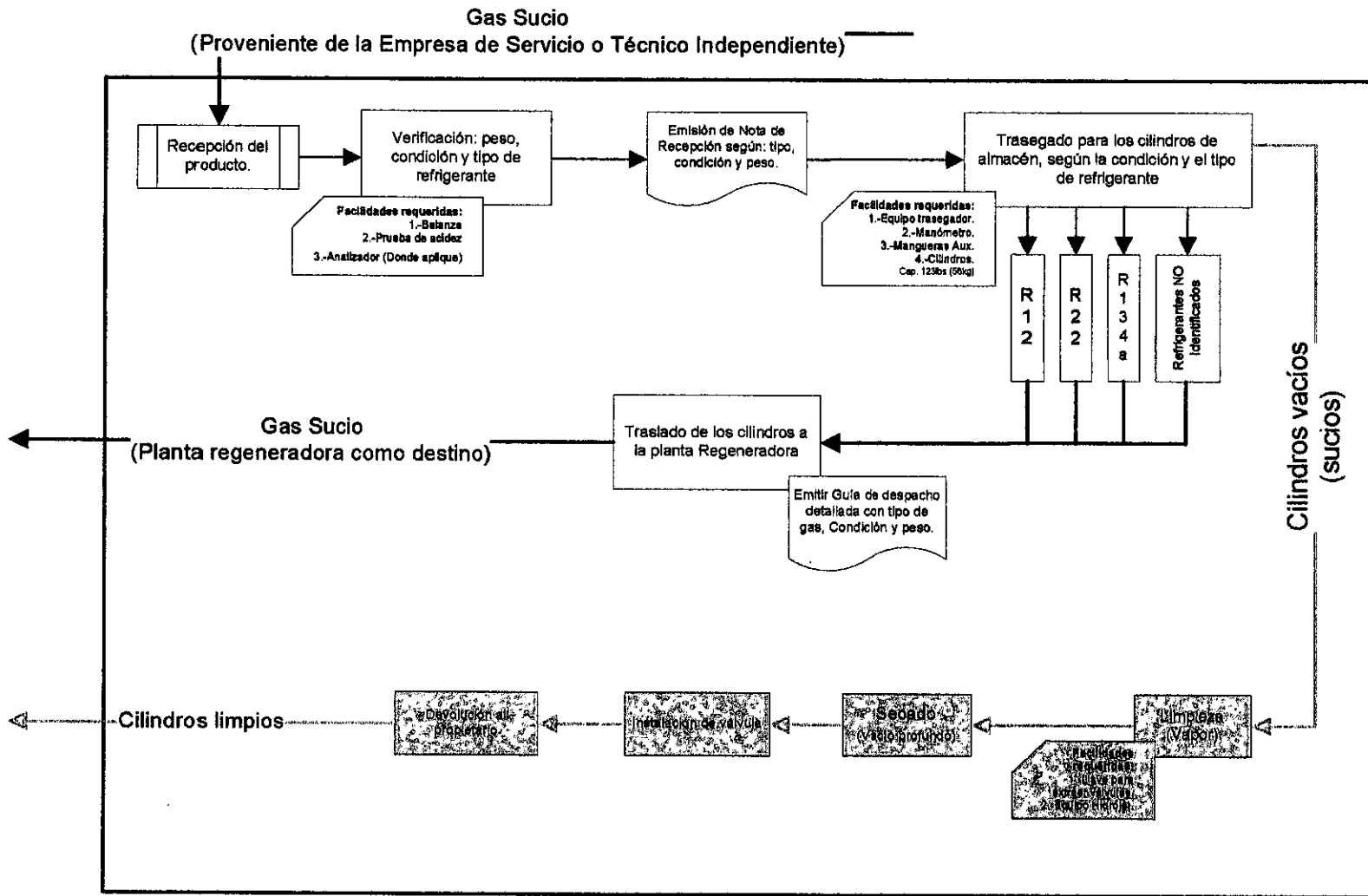
Item	Name and required parameters	Qty
5	<b>Service Manifold for R-12, R-22, R-502 and vacuum port.</b>	24
	4 valves c/w ball valve hoses, pressure gauges	
	Measure units PSI/KPa and Centigrade	
	A hose for vacuum, connections 3/8" SAE and 3/8" diameter 9 mm	
	Five hoses of 1.5 meter (1 blue, 1 yellow and 3 red) with shut off valve connections 1/4" SAE Flex 45° x 1/4" SAE Flex 45° straight swivel.	
6	<b>Electronic scale (balance)</b>	37
	Capacity 100 kg, display mode kg or lb.	
	Mechanical overload protection	
	Resolution 2 g; Accuracy 0,1 %	
	Auto zero and tare function;	
	Digital display and keypad for programming;	
	Auto-hold functions senses when refrigerant flow stops and puts unit into hold mode	
	9v alkaline battery	
7	<b>Cylinder with capacity of 55.8 kg for recovery</b>	168
	55.8 kg (123 lbs) capacity refillable cylinders for recovered CFC-12, HCFC-22 or HFC-134a, including Y valve and dual port, in complains with DOT 4BW 350, connection 1/4" flare and Over-Fill Protection (OFP) switch. Yellow on the top, grey on the botton.	
8	<b>Cylinder with capacity of 45 kg for recovery</b>	9
	45.4 kg (100 lbs) capacity refillable cylinders for recovered CFC-12 or HFC-134a, including Y valve and dual port, in complains with DOT 4BW 350, connection 1/4" flare and Over-Fill Protection (OFP) switch. Yellow on the top, grey on the botton.	
9	<b>Cylinder with capacity of 45 kg for recovery</b>	96
	22 kg (48 lbs) capacity refillable cylinders for recovered CFC-12, HCFC-22 or HFC-134a, including Y valve and dual port, in complains with DOT 4BW 350, connection 1/4" flare and Over-Fill Protection (OFP) switch. Yellow on the top, grey on the botton.	
10	<b>Acid and humidity test kit Checkmate (or equivalent)</b>	24
	24 Spare set for acid per kit (total 288 units)	
	24 Spare set for humidity per kit (total 288 units)	
11	<b>Liquid sight glass 1/4" flare.</b>	192
13	<b>Tube piercing pliers 1/4"</b>	2
12	<b>Flare access T 1/4</b>	72

**(b) Additional equipment to workshops**

Item	Name and required parameters	Qty
<b>1</b>	<b>Refrigerant recovery machine</b>	<b>60</b>
	Reciprocating compressor, minimum capacity 1/3 HP.	
	a) For multiple refrigerants. R-12, R-22, R-502, R-404A and R-134a. Recovery rate: minimum vapour 0.14 lbs/min; minimum liquid 4 lbs/min.	
	b) Operation temperature 0 - 49 C, 100 mesh filter.	
	Weight: max. 15 kg	
	c) High-pressure automatic control with light indicator on control panel. Including a filling limiting device that stops recovering when 80% of the refrigerant tank volume is reached (OFP switch)	
	d) Working time measurement, optional	
	e) Operational texts in Spanish	
	f) Spare parts for one year. An additional set of filters should to be included	
	g) ARI certification 740-95 or equivalent.	
	h) Manual in Spanish flow and wiring diagrams included	
	h) Gauge(s) built in the equipment	
	l) Heavy duty, fan cooled condenser	
	j) Power supply 115V, 60 Hz 1 phase	
<b>2</b>	<b>Refrigerant recycling Machina</b>	<b>25</b>
	Reciprocating compressor. Minimum capacity 1/3 HP	
	Recovery rate for R-12: Minimum Vapour 0.25 lbs/min; Minimum Liquid 2 lbs/min.	
	Oil separator to remove contaminants from refrigerant	
	Filter to dehydrate and remove acids and contaminates from the refrigerant.	
	Discharge and suction valves	
	<i>Items marked from a) to j) above should also be taken for the refrigerant recycling machine.</i>	
<b>3</b>	<b>Service Manifold</b>	<b>50</b>
	2 valves c/w ball valve hoses, pressure gauges	
	Measure units PSI/KPa and Centigrade	
	Suitable for R-12, R-22 and R-502	
	Five hoses of 1.5 meter (1 blue, 1 yellow and 3 red) with shut off valve connections 1/4" SAE Flex 45° x 1/4" SAE Flex 45° straight swivel.	
<b>4</b>	<b>Cylinder with capacity of 11.9 kg for recovery</b>	<b>85</b>
	11.9 kg (26.2lbs) capacity refillable cylinders for recovered CFC-12 or HFC-134a in complains with DOT 4BA 350/400, including dual port liquid-vapour "Y" valve, connection 1/4" flare and Over-Fill Protection (OFP) switch. Yellow on the top, grey on the bot	
<b>5</b>	<b>Valve core tool</b>	<b>25</b>



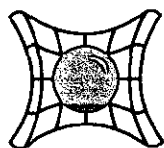
**ANNEX IV**  
*Operation Scheme of Recovery Center*



Actividades a cargo del Centro de Acopio



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION



Fondo de  
Reconversión Industrial  
**FONDOIN**

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