



PACOPAR ESTARREJA 2009 MAGAZIN

**pacopar**

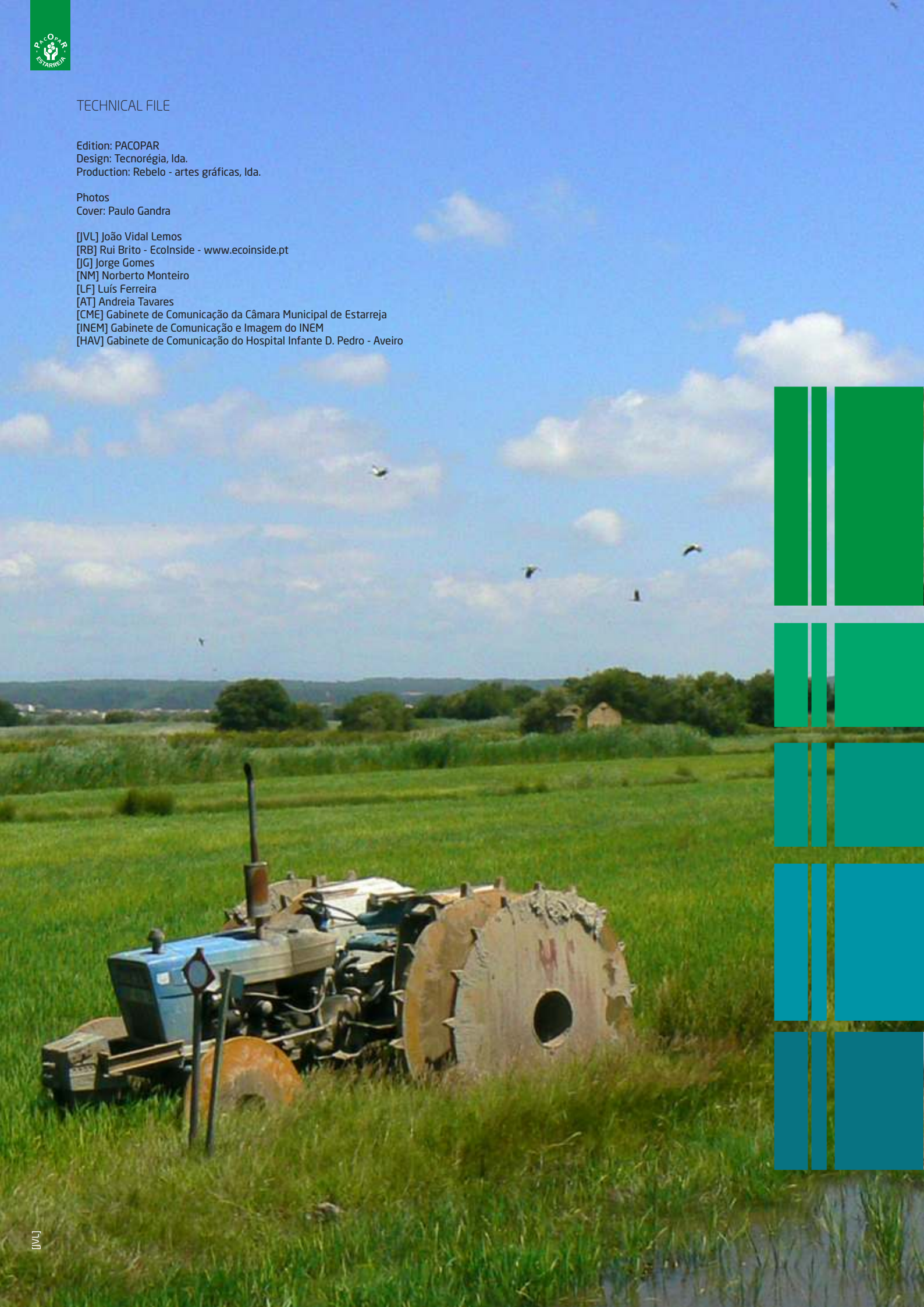
Multi Company Advisory Panel

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# Change in continuity...

## Opening note by Luís Ferreira

*PACOPAR Secretary and Air Liquide Plant Manager in Estarreja*



The PACOPAR magazine has a new look this year. In 1997, the Estarreja chemical companies who signed their commitment towards Responsible Care began publishing their performance indicators in a magazine with the intention of “establishing yet another open dialogue with the community”. Working further on this intention, PACOPAR established a vaster ambit to the magazine meeting up with the plurality of the Panel, by integrating different views and interests.

We intend to reinforce our dialogue with the public, explore subjects of interest for the sustainable growth of the district and make our contribution by clarifying the citizens so that together, we may continue working in, with and for Estarreja. After all, it is the people in Estarreja who are the main reason for these pages to exist.

In this edition, we propose a reflection over the evolution of PACOPAR and Responsible Care. We explore the answers to health issues which the Estarreja Chemical complex (ECC) offers internally in articulation with external entities. We shall be publishing performance indicators in two articles, environment and safety, placing them within context for an easier understanding. We recall the inauguration of the ECC expansion project and talk about its importance to Estarreja and to the country. And because PACOPAR is from and for our community, we leave you with some suggestions for leisure in Estarreja

The magazine is a mirror of our change within continuity. After almost ten years, PACOPAR has redefined its strategy in order to give continuity to the excellent job done by our former predecessors. Last year, we elaborated a Strategic 2010-2012 Plan. This magazine reflects the Panel’s new phase. Its activity aims at strengthening the work groups and in the binomial Secretarial / coordination, a unique indispensable figure towards the good functioning of PACOPAR.

We intend to increase the dynamics within such areas as environment, communication, safety and risk prevention. We want the economic force of Estarreja to be consolidated with more health and safety in an evermore sustainable environment and scenery. Only this way will we be able to sustain the legacy which has been left us and meet the expectations of the people from Estarreja.



# Regina Bastos talks about PACOPAR and the Chemical Complex

**“It is a jump so that Estarreja may affirm itself”**

*Interview carried out by Luís Dias\**

**Let us talk about the ECC in order to have an idea of how it was in your youth. What idea did you have of it?**

**Regina Bastos (RB):** It was bad! Really bad! The idea we had of Estarreja was that there was a Chemical Complex (CC), which gave work to many families who left their rural activities to earn a fixed salary. However, besides this advantage, everything else was inconvenient: the risks and the emissions. For the rest of the country, the idea people had of Estarreja was that it was a polluted area, undesirable to live in. In fact, and in a certain way, the social and political life was influenced by this fact. At the time I began my local career in politics towards the late 80's, the greater discussions in the Town Hall were mostly around environmental and safety

issues posed by the Chemical Complex. We saw progress. There was a first phase which was meant to clarify the population in order that they may understand there was a risk, but it was controllable. That was the reason to begin with drills contemplating chemical incidents. Many conclusions resulted from these drills, which came to serve as a means of implementing a safety system involving authorities both on a district and national level. This was the first step to demystify and build a new image of Estarreja. This is, therefore, a story which had a bad beginning and right now is undergoing a very positive phase.

**At the time, it was practically when ISOPOR was built which resulted in the progress of the ECC we see today. We even had manifestations against building ISOPOR and others in favour of it.**

**RB:** Actually, I believe ISOPOR was the pioneer, not withstanding the merit of the other ECC industries, which began the communication and link with the community. As ISOPOR already had the resources, infra-structures and experience, it clarified the population to the point that people began believing more in the positive than the negative side. Besides, ISOPOR also made an upgrade on a salary level. This had a positive contagion both in terms of resources as well as actions taken by the other companies and people in terms of social responsibility.

Regina Bastos from Veiros with a career in politics is now going through her second mandate as deputy in the European Parliament. She has seen the change the Estarreja chemical industry has undergone. During this interview, the PSD deputy links her local vision with her experience in the European politics to introduce the Estarreja Chemical Complex (ECC) in the front line in terms of a socially responsible industry integrated within the Community. In order for this to happen, PACOPAR has definitely played a crucial role.

**Last year, an investment was concluded which doubled the production capacity of the ECC. What is your opinion of such an investment at a time of economic crisis?**

**RB:** Yes, this is indeed a clear sign that this Complex belongs to the future. It is a milestone in order that Estarreja may assert itself as a strategic Chemical Complex both at a national, European, and even international level. This investment is another proof that the ECC works in an efficient and competent way which guarantees these companies have all the necessary components to assure their success, integrated within economic groups of great dimension both on a national and international level. There is a feeling of pride and care coming from the people in Estarreja who work in the ECC. This makes all the difference. And it is this attitude of care which has a great influence on local life. It is the same genesis which happens in PACOPAR and the reason why it was born.

**We do not exactly know where we can split the social from the economical level in the area, do we?**

**RB:** Exactly! I believe Estarreja would not be Estarreja and the people would not be truly Estarrejans on a whole if we did not have the ECC.

**This happened after the change of the existing paradigm. The employees were people who worked in the country with a lower educational level. Today we have less people but with higher capabilities.**

**RB:** Training sessions are permanent. There are now apprenticeships. People qualified in diverse areas with high technological and scientific competence are hired. There is an increasing stratification of what needs to be done in the chemical industry. In the 30's, people with little education were needed, which is a contrast with today, where we need people with high education who understand the evolution and implementation of new technologies.

**At a time of world crisis, we see an immediate take-off being made with this investment. This is a counter-cycle in relation to the national economy. Is there a reason for this?**

**RB:** There is a reason for this! Only companies with vision, capacity and human resources, who believe in the future, are able to do progress in counter-cycle. Normally, crisis is seen as opportunities and those who have vision do the utmost in order to anticipate investments which will bring profit in the future. This is what the Estarreja Chemical Complex did.

**Are these things talked about in the European Parliament (EP)?**

**RB:** They are talked about because we talk about them.

**But are they talked about as a counterpoint between other situations?**

**RB:** Exactly...

**... With richer countries, because Portugal is seen as very poor...**

**RB:** No, because in the context of the 27, Portugal is no longer seen as peripheral and small. We, the Portuguese deputies of the European Parliament, have the obligation to spread the good practises of the member states, namely in these areas, and we do it, because the industrial and environmental areas are interconnected and have been one the concerns of our present Europe. A reason for this is the question of sustainability and climatic changes have been placed on the European agenda. And the situation we have in Estarreja is the paradigm of sustainable growth.

**But the demands made in Europe are extremely tight. Do you think Estarreja still has a long way to go in that which concerns this legislation?**

**RB:** Legislation concerning the environment is global for Europe and involves the whole world as well. There has been the necessary care to keep it flexible and practical in order to give institutions and agents enough time to become closer and adapt themselves, without demanding a radical and costly mutation which will put their very survival at stake. There is a realistic and objective perception that Portugal has followed the demands from the Community, and that the Estarreja Chemical Complex in particular has had a pioneer attitude in terms of social responsibility, and adjusts itself...





"I believe Estarreja would not be Estarreja and the people would not be truly Estarrejans on a whole if we did not have the ECC."

### ... In fact, PACOPAR won a prize...

**RB:** Yes! I am very proud to have a publication from CEFIC (European Chemical Industry Council) with me dated 2005, in which the Estarreja Chemical Complex won a prize at European level. It classifies the European industry as fulfilling certain requirements, namely the principle of social responsibility. We were already on the right track five years ago and were the winners at European level among 27 applicants.

And I have had feedback from trustworthy sources that the ECC and the companies have taken care to keep up with the Community demands in order to have time for that adaptation and to anticipate the changes which also need to be made according to the latest legislation. With the 20/20 strategy launched by the European Community (EC) in terms of goals expected to be reached at several levels in the next 20 years, I would like to know what are the action plans our ECC will have to undergo in relation to that strategy. Therefore, I have launched the challenge from here ...

### Do you think PACOPAR already covers the necessary number of institutions or is it a dynamic process which should cover more entities?

**RB:** I would like to congratulate PACOPAR. I believe it began spontaneously in the 90's. It happened under its own initiative because it was tradition that each company per se would solve its own problems and make its own donations. Then they got together and decided to make an integrated action at community level. After that, bringing this spirit of donation to local agents is a dynamic process, as you say, and it is not something closed up. Things which are closed up normally have a tendency to crystallize, wither and die. That is why I believe this is a dynamic process. Bringing in the Town Hall is absolutely necessary as well as the Fire Brigade, associations, schools, police, live forces from the district...

### ... Including an environmental association...

**RB:** Yes! Of course! The environmental associations were the first to ask the Complex to be opened to the community when the idea was seen as a little uncomfortable. All this hand in hand needs to exist or this community project will not manage to survive. Nothing which has this type of philosophy can be closed up.

### To finalize, would you like to leave a message or suggestion?

**RB:** I'd like to leave this suggestion, at a time of crisis: Pay attention to our youth who want to have their first job and who are fighting in the job market to manage it. I'd like to leave this thought with our PACOPAR because Estarreja, like other places, is also suffering this problem which to me is an unjust scourge of the new generation.



"ECC and the companies have taken care to keep up with the Community demands".

In your daily life, you surely use products and infra-structures without which you cannot live. Did you know that in the production of most of these essential items are chemical products coming from the Estarreja Chemical Complex (ECC)?

The development of chemistry has been one of the drivers towards the material evolution of modern society, without which it is impossible to keep up our present living standards. Were it not for the chemical industry, people would not have a great part of their present material comfort, which they have become fully dependent on in their daily life. It is only natural that all industrial activity has its risks associated to the handling of products, which is necessary to mitigate in order to continue answering to the needs of our present society.

Consequently, the ECC industries have implemented strict safety rules and apply procedures and high technology to protect our health and the environment through this strict risk control. Besides their procedures and internal equipment, they invest on a close interaction with public entities linked to health and civil protection. The functionality of this articulated work demands synergies and a constant update of means and procedures. In the following pages, you will learn about how the industries and PACOPAR are working in order to continuously improve the protection of our health.





# The Estarreja Chemical Complex and Health Services strengthen cooperation

## High Technology and Work Procedures

In order to reach maximum control over their production processes, the ECC industries have advanced process safety and risk control systems. AQP - Aliada Química de Portugal - has implemented "work procedures" which, according to Alvarim Padilha, the company General Manager, must be followed by all employees. The unit has "the technology needed for the processes and products being handled by using programs which assure the operability and safety of the unit and its equipment."

Air Liquide also has an operational process safety and risk management system. Any person who goes inside the plant "needs PPE (Personal Protective Equipment), which is mandatory", says Luis Ferreira, Air Liquide Production Manager. This safety equipment includes a "gas detector" and "fire-protection clothing".

CIRES production process uses "enclosed" technology which does not allow for "any exposure" to vinyl chloride, explains Rui Baptista, responsible for EH&S. Whenever intervention is performed on any equipment, previous monitoring is effected in order to guarantee the needed safety conditions to perform such work.

The company has a Safety and Environmental Certification and has implemented the latest technology. In addition, CIRES applies "the most innovative work procedures and good practises in this industry."

CUF improves its risk control technology continuously; an example of this is the DCS (Digital Centralized System) and the control of emergency shutdowns (CED). The company "has preventive maintenance plans" and perform "incident analysis" in order to "improve their process safety performance", explains Maria José Alves, responsible for EH&S.

Dow Portugal, applies strict work procedures and invests on high technology for the production of its products. Renata Santos, responsible for EH&S gives as example the recent construction of the containment building which encloses the phosgene unit "in order that any risk of emission to the environment is practically zero".

## The importance of training

The ECC workers are subject to continuous training on health and safety. Safety Day, which occurs on Tuesdays at CUF, "is used for training and practice of emergency situations, among others", explains M.J.Alves. In 2009, "14 drills were held involving 453 people" from the company. At CIRES, "work procedures and good practises" coexist with "permanent training to employees" along with "follow-up and analysis of high risk activities", explains Rui Baptista.

All Dow and contract workers "have specific training regarding any risk associated with the products", with "information available in safety data sheets and identification of the contents of each pipeline, equipment and containers in order that risks may be clear and their communication guaranteed", explains Renata Santos.

At Air Liquide, the health and safety of employees are a priority. This is the reason why several training and informative sessions are carried out on risks deriving from their work and how to prevent them. Campaigns are also held focusing on the prevention of road accidents and technical risks. At AQP, all workers are aware of the risks at work and receive adequate training on how to handle the products.

Também na AQP todos os trabalhadores conhecem os riscos de trabalho e recebem formação adequada para a manipulação dos produtos.



## Immediate response to health

Workers are prepared to respond immediately to any potential emergency. At Air Liquide, Luís Ferreira says "everyone has training on First Aid and Fire Fighting". António Esteves, company doctor, adds they also have training to "give First Aid to someone who has suffered an accident and needs an air mask." The company has a Sick Room for First Aid. When this is not enough, "the company doctor is called in", says the doctor himself, who decides which procedure to follow.

AQP General Manager says the company has the capacity to "give First Aid locally", which is assured by "the intervention of the company nurse", at CUF (considering both companies work in partnership in some areas). João Maia, the company doctor, states the sick room is adequately equipped, and guarantees the presence of a nurse from 8 a.m. to 8 p.m. "prepared for any type of accident". In case of a hypothetical emergency, "a first intervention" is guaranteed, as stated by the doctor, which may be provided by workers who "have First Aid Training". Whenever justified, João Maia and other colleagues at CUF service may be called to intervene.





"Besides First Aid" CIRES has "a fire brigade team trained and ready to intervene both day and night" says their EH&S responsible person. "The doctor, nurse or First Aid person evaluates the situation and decides whether there is a need to go to the hospital", explains Tavares da Silva, company doctor. The company also assures Sick Room service with a nurse during working day time.

Dow has a Sick Room with "equipment to administer oxygen and other treatment in case anyone is exposed" to a chemical product. In case of an emergency "the on-call system is activated and the doctor on-call provides immediate assistance to the workers", says João Maia, one of the doctors assuring 24-hour service for the company all year round. The victim goes to the Sick Room and, the doctor on-call is asked to intervene", says João Maia.



Rui Baptista

## Articulated Action

All the ECC companies have internal emergency plans, drills and promote a close cooperation with the Estarreja Fire-Brigade in case of an emergency. The adhesion to the Principles of Responsible Care, which is expressed through the existence of PACOPAR, includes complying with high standards of social responsibility in order to promote health and safety. Besides the internal work done by each company, the PACOPAR Risk Prevention Group (RPG) has undergone a complementary job towards a greater articulation and efficiency provided by the various entities involved in health care. Along the years, RPG has given training to Fire-Brigade and medical personnel from the Visconde de Salreu Hospital and the Infante Dom Pedro Hospital (HIP) in Aveiro regarding the chemical products. The needed Material Safety Data Sheets are also provided. However, with the restructuring of the region's health services, the Urgency Service of the São Sebastião Hospital (HSS) in Santa Maria da Feira (belonging to the Entre o Douro e Vouga Hospital Centre) along with the Aveiro Hospital have now become the reference for the Estarreja Chemical Complex, explains Rui Baptista, coordinator of the RPG. This change made PACOPAR restructure the articulation process with the health services and emergency response, which shall now involve INEM's intervention.

## INEM and the coordination of means

Following the work developed by RPG, INEM has been visiting the ECC industries in order to better understand their realities and their products. Regina Pimentel, manager of INEM's Regional Centre Delegation, has organized meetings with the Regional Health Administration (RHA) Centre, HCG (Health Centre Groups), regional Health Centres, and the local hospital manager, evaluating their internal emergency plan in order to define future strategies. After the work done together with the GPR and INEM, the need to elaborate a specific external emergency plan for the ECC was found, which according to Rui Baptista, would fill the gaps which had not been foreseen in the existing emergency plans.

## More Knowledge Needed about Chemical Products

The doctors who were interviewed are unanimous in stating that the immediate treatment of any victim from an accident at the ECC demands a deep knowledge of the products handled at the Complex. According to Regina Pimentel, INEM's DRC already has the product Safety Data Sheets. The Centre for Information in Cases of Poisoning (CICP), is also involved in PACOPAR's work to help the RPG update their Safety Data Sheets.



Fátima Rato, CICP manager, considers that the activities at the ECC "inevitably involve risks". However, these are minimized by the whole risk prevention system in terms of training, equipment and the intervention of company doctors, along with the interaction with the authorities. "Together an efficient minimization of risk and reduction of consequences in case of an accident are met."

The RPG coordinator says that presently, a phone call to 112 is expected in case of an accident. COUV (Centre for Orientation of Urgent Victims), decide what to be done with the victim. Regina Pimentel says "the Integrated Medical Emergency System is activated as early as possible". According to the person in charge, there are means to serve this area such as "the INEM ambulance for Basic Life Support along with the Estarreja Fire Brigade Emergency ambulances". Other means depended upon are the Aveiro and/or Feira Emergency and Reanimation Medical Vehicles, a helicopter based in Santa Comba Dão and Porto to transport the victims to the Health Units located in Aveiro, Santa Maria da Feira or any other if needed depending on the clinical situation of the victim." Regina Pimentel says there is still the possibility of mobilization "of a vehicle for the Intervention in case of a Catastrophe, with a mobile Sick Room, which is located in Coimbra and Porto to the place of the accident."



Jorge Teixeira

According to this specialist, every doctor should be able to treat a victim from the ECC since on a first instance it is intended to guarantee “measures which will maintain human vital functions, independently of the cause. In the case of the ECC, the majority of the products require a high level of care in case of intoxication.” Carlos Mesquita, manager of the HIP Urgency re-inforces “Basically, we are talking about assuring vital functions, independently of the cause and the HIP assures the basic means”.



However, Fátima Rato admits there is information inherent to tackling an intoxicated victim, “such as knowledge of the symptoms, the required therapy, the need to perform certain complementary diagnostic exams, the existence or not of the appropriate antidote, etc”, which is important for the doctor to know. However, this is not supposedly a required knowledge for a General Practise doctor.

Therefore, it is “current practise between doctors at the urgency services in any hospital, to contact the CICP.” This is what Jorge Teixeira the HSS urgency service manager, would do if he did not know how to treat a wound resulting from a chemical product. The doctor guarantees “the capacity to isolate and treat victims coming from any kind of chemical accident” at the urgency, providing physical means and the needed personnel for immediate care, but admits there may be the need for specific knowledge to intervene adequately on the situation.

“In these cases, we apply to CICP or do our own research in order to provide a timely response”, says Jorge Teixeira, who considers it advantageous to have a vaster articulation in terms of information between the hospital and the ECC. “Having the Material Safety Data Sheets here is a first step, along with training programmes, and suggests an informative interface about the toxicity of the products”. Fátima Rato is of the same opinion and considers that the hospital Urgencies should have some information related to the type of products in order to be able to apply immediate measures right from the beginning in case of possible intoxications.” At the HIP, Carlos Mesquita guarantees that “updated information is available in terms of product toxicity which enables an adequate intervention”.

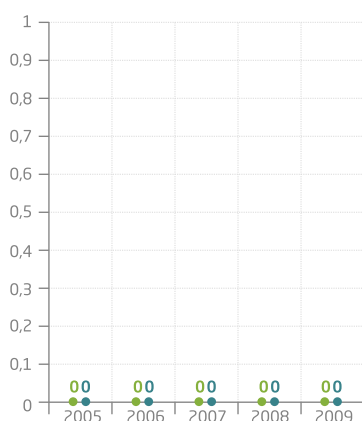
The opinion is unanimous among the doctors who were contacted. Ofélia Almeida, the health delegate in Estarreja involved in the coordination of the GRP medical work, considers the availability of the safety data sheets at the urgency services in the hospitals “a very important measure in terms of replying to health hazards”. Company doctors João Maia, António Esteves and Tavares da Silva reinforce this position. Carlos Mesquita states the need to have a “permanent” articulation between hospitals and companies and it is the “the companies’ responsibility to keep the hospitals informed regarding their toxic products”.

Jorge Teixeira refers the ideal situation would be a direct communication channel with the Feira Hospital for “an immediate contact in case of emergency situations”. This would allow the urgency services to be prepared for immediate intervention in case of need. “Drills could also be performed in articulation with the companies, which would be important for us to improve”, considers Jorge Teixeira. Ofélia Almeida and Rui Baptista reveal the intention to involve the hospital urgencies to hand over the Safety Data Sheets and even begin training to medical personnel. “The type of lesion each product can cause is defined as well as the necessary medical treatment. Our objective is to guarantee the surrounding hospitals have the means of diagnosis and treatment to deal with these cases”, says the PACOPAR GPR coordinator. This is a job which demands continuous improvement and therefore, will not stop here.

The companies within the Estarreja Chemical Complex (ECC) add high internal policies and standards to the legislative obligations in terms of Safety. These result in investment on process technology, equipment and training. The number of accidents and their severity is an occurrence which reveals the result of the investment on prevention in Safety. Therefore, we hereby show the frequency and severity accident rates of the companies within the Estarreja Chemical Complex. The accident frequency rate is reached through the number of accidents with sick leave during one year divided by each million hours worked by an employee. The severity rate represents the number of working days lost per year divided by each thousand hours worked by an employee.

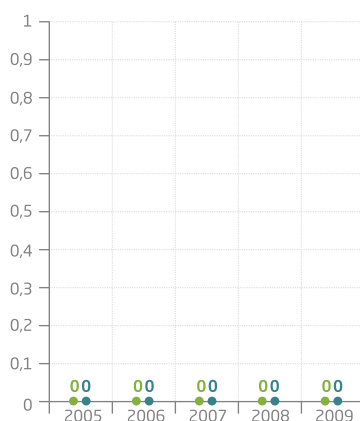
### AIR LIQUIDE

The zero values are due to no accidents having occurred during the mentioned years.



### AQP

No accidents along the past years show an excellent performance in terms of safety.



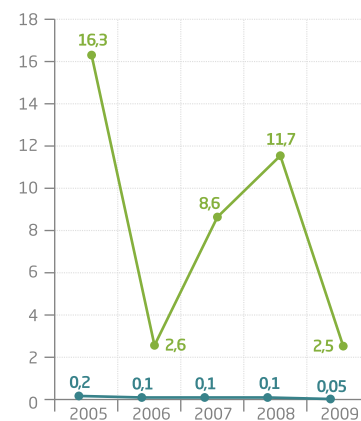
2009 confirmed the low accident rate (zero accidents) which proves Safety is treated as a priority in all aspects related with the companies' activities. Within this context, the following has revealed great importance:

The management and development of all activities under safe conditions, minimizing all risks through the use of the latest technology.

All workers undergo training.

### CUF

Despite some oscillation in the incident severity rate, there is an improvement trend due to efforts put into training and investment in that area.



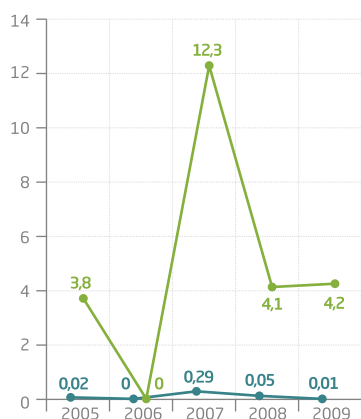
CUF QI has made significant efforts in safety in that which concerns training, having promoted a weekly safety day, along with modernization of fire fighting equipment.

# Safety Performance Accident Rate

For more detailed information please visit [WWW.PACOPAR.ORG](http://WWW.PACOPAR.ORG)

## CIRES

The severity rate continues to be very low, revealing the efficiency of employee awareness programs and training in addition to the preventive measures applied at the site. The high value in 2007 results from 3 accidents, which were not serious, but originated 70 days sick leave.



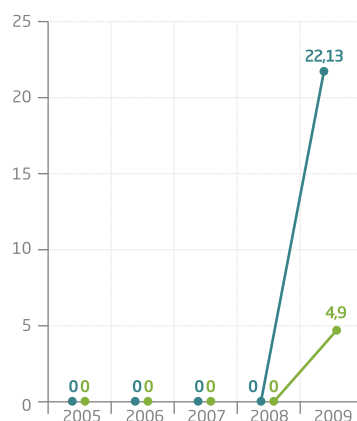
"Safety First" is the company banner and the company has invested continuously in risk prevention both at the site as well as for the safety and health of its employees.

CIRES abide by the principle Safety and Environmental First. The Company is committed to continuously improve their behaviour in relation to environment and risk prevention. With this motive the company adjusts its goals and action plans periodically in order to assure the compliance in terms of Social Responsibility and Sustainable Development.

It is here that the Environmental Management System certification according to ISO 14001:2004, the Safety and Health at Work Management System, according to OSHAS 18001:2007 and the Quality System (ISO 9001:2000) are of particular relevance. These certifications have been maintained after the audits done by APCER, the Portuguese Certification Association, which attested that all requisites were applied by the Company in these domains and that improvement action plans were implemented.

## DOW

Dow Portugal had 2 accidents in 2009, one at the Aveiro Terminal and another at the Styrofoam Plant. Both accidents had no serious consequences but were investigated in order that the same issue would not be repeated.



● Accident Frequency Rate  
● Severity Rate

# The ECC Environmental Performance

In order to better understand the meaning of the Estarreja Chemical Complex (ECC) safety and environmental performance indicators, PACOPAR simplified the presentation of these figures. The values are shown in graphs allowing for a better understanding of their evolution. The presentation is synthesized in groups: Air Emission, Solid Waste and Water and Energy Consumption, separately for each company.

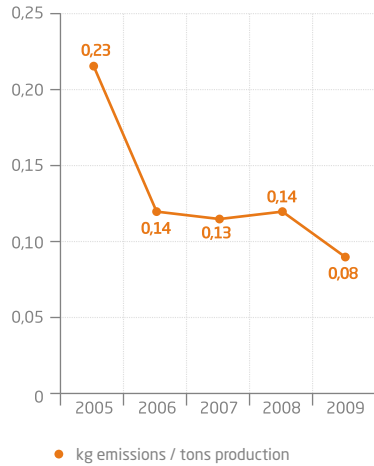
In order to provide an in-depth view of the ECC environmental performance, the indicators reflect the relationship between the value of consumption and emissions with their production. Thus, the air emissions are presented using the ratio between the total air emissions in kg (which include the sum of emission of Particles, Sulphur Dioxide, Nitrogen Oxides, Carbon Monoxide, COV and Heavy Metals); and the production in tons.

The waste indicator results from the ratio between the total waste in kg and the production in tons. In the same way, the consumption of energy is presented in the ratio between the consumption of energy in Mj and production in tons. Water consumption is presented through the ratio between the consumption of water (in m3) and production expressed in tons. The liquid effluents are not shown here since all the ECC companies send their waste water to SIMRIA - the Ria de Aveiro Multi-municipal Waste Water Treatment System.

For more details please visit  
**[WWW.PACOPAR.ORG](http://WWW.PACOPAR.ORG)**

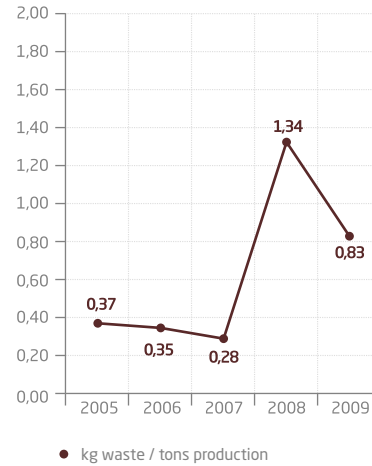
# AIR LIQUIDE

## AIR EMISSIONS



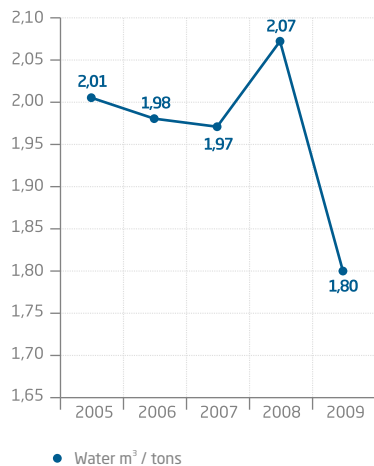
The ratio of total emissions (Kg) versus production (tons) underwent a significant reduction. This change occurred due to the installation of a new HyCO<sub>3</sub> unit, responsible for a better performance in this indicator.

## SOLID WASTES



The ratio of total waste versus production (tons) showed a slight increase in 2008 due to activities involved in the installation of the new HyCO<sub>3</sub> production unit.

## WATER CONSUMPTION



A slight increase in the consumption of water ratio (m<sup>3</sup>) versus production (tons) occurred in 2008 due to the installation period of the new HyCO<sub>3</sub> production unit. There was a significant decrease in this ratio during 2009 after the startup of the new HyCO<sub>3</sub> unit. The result is a much better performance indicator.

## ENERGY CONSUMPTION

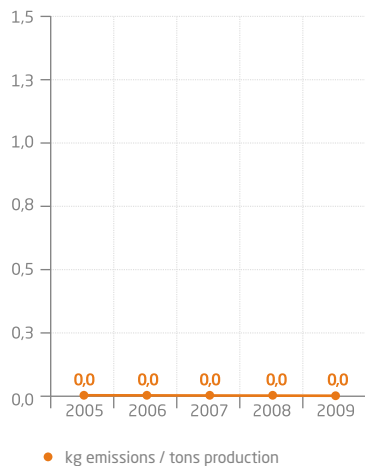


There is a slight increase in the energy consumption ratio (Mj) versus production (tons) during 2008 due to the installation of the new HyCO<sub>3</sub> production unit. A considerable decrease in this ratio occurred in 2009 after the start up of the new HyCO<sub>3</sub> production unit. The result is an improved performance indicator.

Air Liquide Portugal had its Quality certification (ISO 9001:2008) and since September 25, 2009, they have added the Environmental (ISO 14001:2004) and Safety (OHSAS 18001:2007) certification. This is a new step towards Integrated Management, as described in these norms, promoting a Safe attitude in all their activities, assuring Quality in their services and products along with full Respect for the Environment.

# AQP

## AIR EMISSIONS



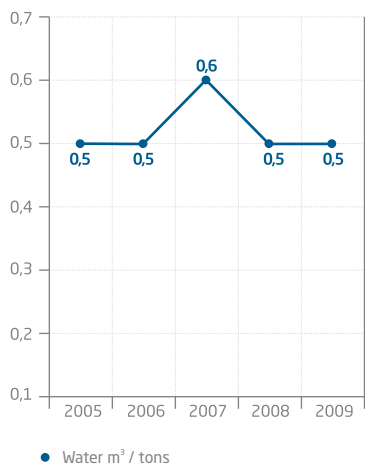
The value of emissions is very low, and 2009 was no exception.

## SOLID WASTES



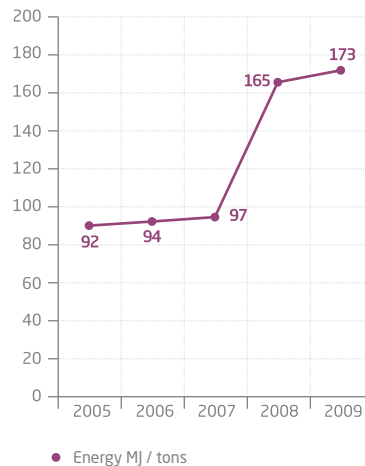
Despite slight fluctuations, the quantity of solid waste has been within expected due to no changes in the production process nor considerable maintenance works to justify a significant variation.

## WATER CONSUMPTION



Similar to the consumption of energy, water consumption is also directly related with the type of product being manufactured. Therefore, the small decrease in the rate of water consumption in 2009 is a consequence of the percentual increase in the fabrication of products with lower water consumption.

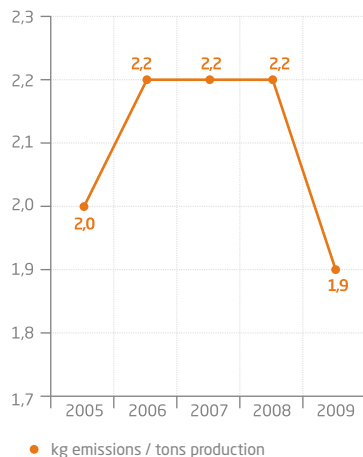
## ENERGY CONSUMPTION



The increase in energy consumption along 2008 is not real as this variation results mainly from a change in the calculating method (use of a new conversion factor recommended by APEQ / CEFIC). As for 2009, the small increase in the consumption rate is due to a percentual increase in the fabrication of products with higher energy consumption.

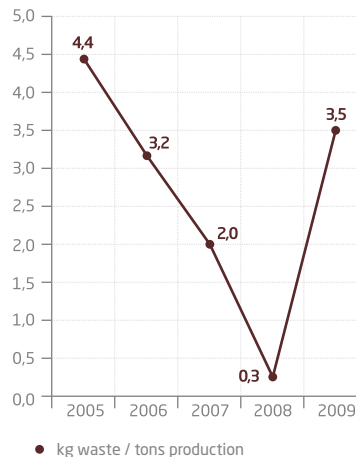
The indicators show that the year 2009 did not suffer significant variations in terms of environmental performance, confirming the positive attitude along the past years. The use of good practises in performing activities as well as the use of the latest technology/techniques which include all measures in general and most specifically, measures implemented along the production process as well as in the finishing line. Management System have been audited by the LRQA substituting the DNV with whom the company had been working for quite a number of years. Therefore, the Quality and Environmental Management System were audited and approved by the LRQA, according to ISO 9001:2008 and ISO 14001:2004 respectively.

## AIR EMISSIONS



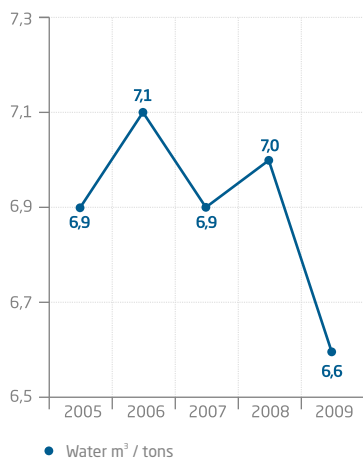
The decrease derives from correct operation of the dusting systems installed in the PVC production process along with the vapour production boilers which use natural gas instead of fuel oil.

## SOLID WASTES



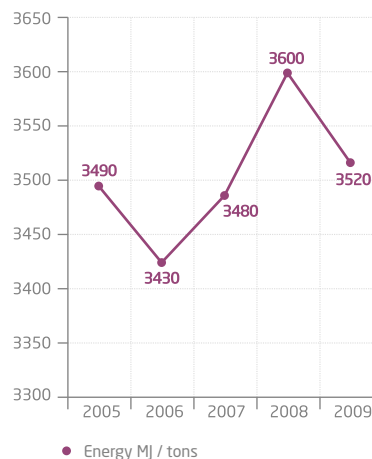
The increase in the quantity of waste is due to the reclassification of PVC waste, considered a sub-product (non-standard PVC) since mid-2007. Although we are talking about innocuous waste with commercial value expedited to the PVC transformation industry which uses it to produce several PVC items with lower performance demand, they do need some previous transformation to be processed. According to APA, the Portuguese Environmental Agency, this product does not meet the criteria to be considered a sub-product.

## WATER CONSUMPTION



CIRES receives its raw water directly from the Antuã River and treats the water internally, adjusting the quality to the plant's diverse usage. The decrease in this consumption derives from the improved quality of the water coming from the river and less losses during the treatment process as well as in the site. It is here that re-utilization of water in some cooling circuits is also done.

## ENERGY CONSUMPTION

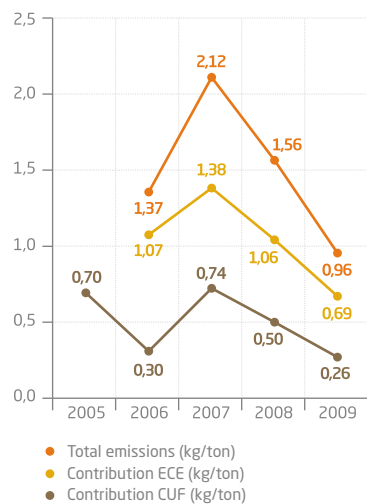


Energy consumption has a tendency to increase when the activity levels are lower and especially due to plant efforts to reduce emissions, especially if they have no impact on productivity. The implementation of measures in the PRCE-Energy Consumption Rationalization Plan for the period between 2007 and 2011 will allow an improvement in the company's energy performance.

CIRES environmental performance abides by the emission limits established in the Principles Charter in the ECVN-European Association of PVC Producers and in the BREF-Polymers of the European Commission. The company applies the latest technology in their production process.

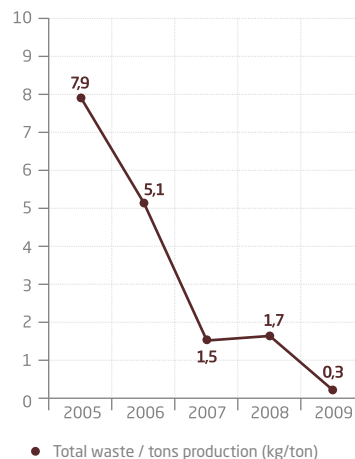
# CUF

## AIR EMISSIONS



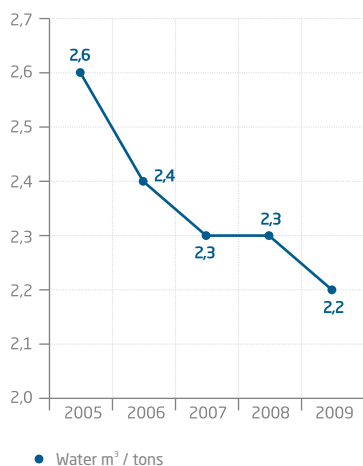
In 2006, the Portuguese Environmental Agency required the emissions effected by the Estarreja Cogeneration Company Ltd, ECE, to be integrated within the CUF QI emissions.

## SOLID WASTES



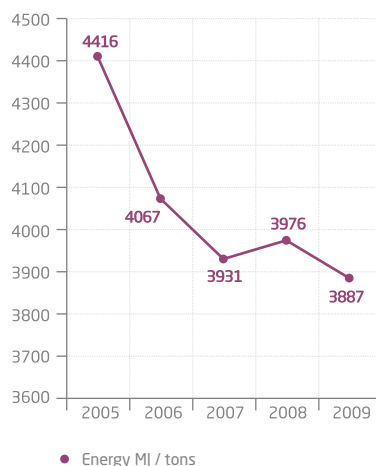
There is a significant decrease in 2007 due to the use of highly pure salt.  
Note: Only solid waste produced by CUF QI and shipped abroad.

## WATER CONSUMPTION



We highlight a sustainable reduction in the consumption of process water.

## ENERGY CONSUMPTION

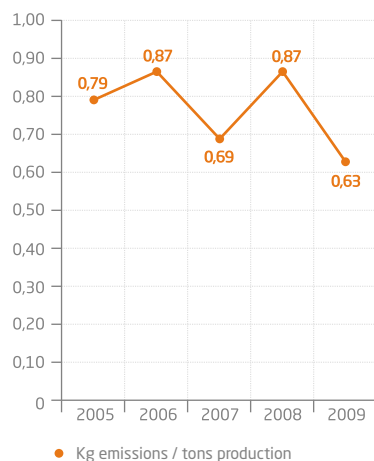


We highlight a sustainable reduction in the consumption of energy.

In terms of Environment, the Capacity Expansion Project completed in 2009, (except for the construction of a new nitric acid unit), had the expected positive environmental impact. Also worthy of mentioning is the conclusion of an optimization and automation project to draw water from the Antuã River, which will allow CUF to optimize their water consumption.

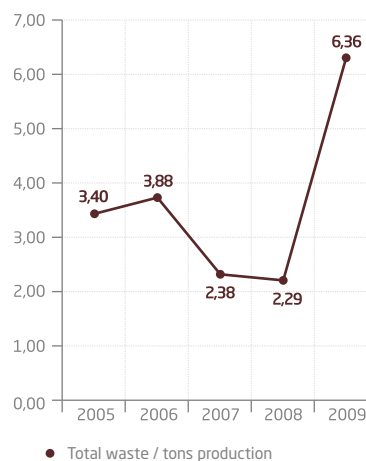
# DOW PORTUGAL

## AIR EMISSIONS



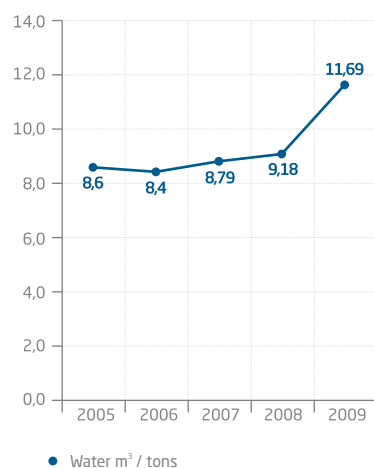
Dow Portugal showed a low production in 2009 due to the expansion projects, resulting in a reduction of gas emissions.

## SOLID WASTES



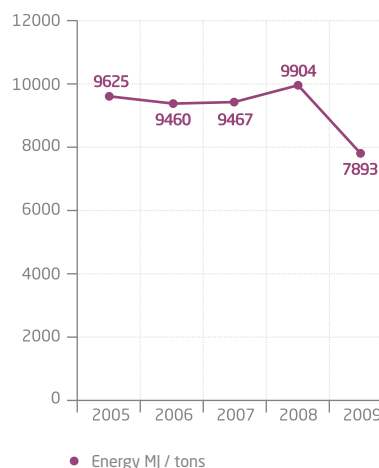
The activities to prepare for the MDI shutdown along with pipeline and equipment cleaning as well as dismantling other for the expansion project, produced a lot of solid waste, especially a great quantity of offscourings.

## WATER CONSUMPTION



The increase in water consumption is also due to preparation activities and construction of the project.

## ENERGY CONSUMPTION



2009 was impacted by the MDI and Styrofoam expansion projects. The time dedicated to the construction resulted in long shutdowns causing a decrease in production and less energy consumption.

Dow Portugal completed the MDI and Styrofoam expansion projects successfully. 2009 was a year of extraordinary activity, where work related to safety and the protection of the environment called for special attention. Dow Portugal revalidated its ISO14001 certification and awaits the EMAS certification.



[LF]

# Expansion of the Chemical Complex happened one year ago

## Local development, national interest, European affirmation

On July 8th, the Estarreja Chemical Complex (ECC) will complete one year production after its expansion. Prime Minister, José Sócrates inaugurated the project involving Air Liquide, CUF-QI and Dow Portugal which turned Estarreja into one of the most competitive chemical complexes in Europe. Considered a Project of National Interest (PNI), it involved a total investment of 250M€ which came from financial applications from the three companies and from the government, via AICEP – the Portuguese Agency for Investment and Foreign Business. We can therefore say the expansion of the ECC is the perfect communion of multiple interests by congregating synergies.

### Integrated Expansion

The execution of the project took over two years and resulted in the renewal of the raw material contracts between the three companies for another 15 years, once the plants in Estarreja operate under a co-dependent production. Therefore, the projects had to be developed in an integrated way, since Air Liquide supplies CUF-QI and both supply Dow Portugal. Consequently, CUF-QI doubled its former production capacity to 200 thousand tons of aniline per year, 70% of which are absorbed by Dow Portugal who also doubled their production capacity of PMDI (Polymeric Isocyanate based on MDI) used in the production of polyurethanes. To supply the two plants, Air Liquide also increased its production of hydrogen and carbon monoxide needed to produce Dow's PMDI and CUF's aniline.



## A Conciliation of interests

With this expansion, the ECC assures its continuity in Estarreja as well as employment. At the same time, it stimulates the local economy by creating both direct and indirect jobs while encouraging these on a national level. This is of utter importance at a time when the country faces financial and economical difficulties. Local and national interests are thus conciliated with those of the three chemical companies for which the chemical complex in Estarreja has become crucial in terms of global business strategy.

### More safety and a healthier environment

The improvement of the production processes also implied the improvement of safety conditions as well as the environmental performance of the three plants. One of the requirements to double the production at Dow Portugal was the enclosure of its phosgene unit eliminating any possibility of a leak into the atmosphere. These investments conferred the Estarreja Chemical Complex the right features to position it as one of the most modern European *clusters* within a Competitive and Technological Complex amongst the Petrochemical and Chemical Industries with world-wide reference.



Prime-minister José Sócrates headed the inauguration of the project, sided by top-management company world leaders and considered the investment as an indicator of "more expansion, more production, more opportunities for other companies to establish themselves in Portugal, more competitive companies and a healthier environment in Estarreja." The PM praised the companies for their unity and ambition to be competitive in order to prepare the ECC to face the global economy.

### **Air Liquide: reinforcement of technological competence**

With an investment of around 60M€, Air Liquide, world-wide leader in industrial, health and environmental gases, continues betting on dynamic and sustainable growth. The new production unit in Estarreja relies on the Group's highest technology in conversion of natural gas to hydrogen and carbon monoxide. Bearing that in mind, Ron Labarre, vice-president of the Group stated: "In general, we wish to reinforce our leadership in Portugal and in the Iberian region and turn Air Liquide into an even bigger reference within the industry of industrial gases." This concern is yet another evidence of Air Liquide's dynamic growth and of its strategy to become even closer to its customers, of which Estarreja is a clear example. In giving privilege to technological competence, innovation and respect for the environment, the unit which belongs to this integrated project within the ECC, is yet another aggregate of the Group's competitive bet. Luís Ferreira, who is responsible for this site, says: "This investment reflects Air Liquide's commitment towards its customers and creates the needed conditions to reply to their present and future needs in a more efficient way, adding value to the corresponding activities."



António Maria Melchor, Castro Guerra, Ron Labarre, José Sócrates, Luís Ferreira



José Sócrates and João de Mello





### CUF-QI: Iberian leader

With the highest portion of investment, 125M€, CUF positioned itself as one of the first five in the chemical sector operating in the Iberian region and the Group has become one of the biggest in Europe with their own technology. Estarreja is the example of competitive strategy, which CUF wants to expand in order to position itself internationally. Being closer to its customers, CUF may thus supply the needed raw materials directly by pipeline. The system proves to be more efficient in terms of logistics and environmental protection by reducing the hazard of the transportation of products. João de Mello, CUF's president, intends to expand this concept. Just as he stated to the newspaper *Expresso*, on 25/07/2009, the Estarreja integrated industrial system enables "important operational synergies and added value all together".



### Dow Portugal: an European reference in PMDI

By duplicating its capacity in the production of PMDI, Dow Portugal, an affiliate of The Dow Chemical Company, one of the world's largest chemical industries, has become one of the most competitive PMDI production units in Europe. It is also strategic for the company's global polyurethane business. "We are very proud that Estarreja has become one of the most important production units in the world. The operational excellence of our employees as well as the support of the Portuguese government were crucial for this to have happened", said Anton Valero, Dow president for the Iberian Region. Dow Portugal inaugurated also a second line for the production of Styrofoam™, the trade name for The Dow Chemical Company extruded polystyrene boards.



Washington Dantas, José Sócrates, José Eduardo de Matos, Markus Wildi and Pat Dawson

# CIRES is part of one of the largest chemical companies in the world

CIRES, Lda - Companhia Industrial de Resinas Sintéticas was fully acquired by Shin-Etsu Chemical Co.Ltd. after a Public Acquisition Offer, which was concluded in August 2009.

Shin-Etsu, CIRES most relevant shareholder since its foundation in 1960, will maintain the activity developed by CIRES and its associates - Previnil, Bamiso and Sociprev in Portugal, and Compuestos y Granzas in Spain – in line with its current practice and strategy, guaranteeing normal operation and the continuation of the company's mission. However, the integration with Shin-Etsu suggests a fundamental and qualitative change in CIRES' development. This change shall confer CIRES an even greater international and strategic dimension, which are of utter importance in the present globalization context.

Shin-Etsu, [www.shinetsu.co.jp](http://www.shinetsu.co.jp), is one of the main chemical industries worldwide with over 19 thousand employees and a consolidated business volume of around 10 thousand million Euros focused on 3 main business areas: Organic and Inorganic Chemical Industry (52,4%), Electronic Devices (38,9%) and Functional Material, among others (8,7%). Shin-Etsu is the world's greatest PVC producer with a production capacity of over 3.8 million tons. The company is based on three main poles: United States (68%), Europe (17%) and Japan (14%). The company also has a worldwide leading position in the production of other materials, namely, chips for computers, cellulose derivatives, rare earth magnets and synthetic quartz, and it is the third greatest silicon producer (first in Japan).

Presently commemorating 50 years of activity in Estarreja, CIRES is now more solid and well-prepared to face the demanding challenges of the future with success.





Pieces of wood plastic composites obtained by extrusion

# Research and Development

## Wood/plastic composites

The production of wood / plastic composites is presently one of the most dynamic businesses in the plastics industry. Although we are not talking about a recent technology, there is an increasing demand for these materials which combine the best features of both wood and plastic. These have shown an enormous potential in a vast number of applications.

CIRES produces PolyChloride-Vinyl (PVC), the second thermoplastic polymer with the highest consumption in the world. CIRES is keeping an eye on the market progress and the way it reacts to the introduction of new products. An I&D project is underway to increase its know-how in terms of production of wood/PVC composites for rigid applications especially indicated for the building industry.

The wood/plastic composites – better-known as WPC (Wood Plastic Composites) – are hybrid materials produced from a mixture of wood, thermoplastic polymers and additives.

These composites usually contain a high percentage of wood (40 to 70%), which can be incorporated as dust or fibres.

In terms of environmental sustainability, wood/plastic composites are very attractive materials since they allow the use of wood leftovers and wood dust which would otherwise not have much value; this allows them to be classified as environmental friendly materials. Technological advances during the last decades have enabled the production of products with high added value even when they are obtained from materials considered to be less noble, such as waste deriving from mechanical works on wood and recycled thermoplastics.

Composites with PVC are highly used in the production of window panels and decks especially used in applications outside due to the high resistance to climatic changes. When comparing to traditional wood products, WPC have a greater capacity of acquiring new forms and are more resistant to humidity as well as fungus and insect attacks. Therefore, they resist well to aging without needing any further treatment. In addition, they are a lot cheaper when compared to synthetic plastics, have a much better appearance (surface and touch is very similar to wood) as well as improved technical properties (more rigidity, better mechanical properties, lower heat expansion coefficient). They last longer than common wood, whereupon they are expected to last between 25–30 years.

### Examples of WPC applications

The WPC market around the world shows promising growth.





### Additional information in [www.pacopar.org](http://www.pacopar.org)

Three years after its presence on the Internet, PACOPAR renewed its homepage in the beginning of 2009. With a new graphic structure and contents, the intention was to change the [www.pacopar.org](http://www.pacopar.org) into a platform of functional and dynamic information, which results in an even closer communication between the Panel and the community.



### PACOPAR in the Estarreja II Civil Protection Week

The Panel participated in the Estarreja II Civil Protection Week with a speech on "PACOPAR within Civil Protection." The conference, held at the Estarreja Library Auditorium on March 13th, was open to the Pardilhó EB 2,3 School students and to the population of the Quinta do Rezende Old People's Home.

### AMUPB becomes a member of the Panel

The Association of the Urbanização da Póvoa de Baixo Population (AMUPB) became an official member of PACOPAR on 19th March 2009 and participated in the first quarterly meeting. The integration of this collectivity falls under the Panel's aim to diversify the representation of the Estarreja community.



### PACOPAR and RVR

In 2009, the cooperation between PACOPAR and Radio Voz da Ria followed in order to focus on subjects of interest to the local community, including live debates. Programmes such as "The Firebrigade and their Relationship with the Community", and "The Estarreja Chemical Complex—Past, Present, and Future" focused on Dow, CUF and Air Liquide expansion projects and the new production capacity.

# briefs



## Donations attributed to nine projects

Last year, PACOPAR donated 73 thousand Euros to nine projects. Six projects in the educational area, two in social support and one to a sports association. The following schools: EB1-Santo Amaro, EB1-Canelas, EB1-Pinheiro- Veiros, EB1-Terra do Monte, Fermelã, Estarreja Junior School, as well as the Agro Kindergarten and Primary School, the Quinta do Rezende Association, ASE-Estarreja Solidarity Association and the Arsenal de Canelas Sports Association received the aforementioned donations.



## Homage to Castro Valente

It was in honour of Mr. Castro Valente's retirement as Head of the Estarreja Voluntary Firebrigade, that PACOPAR paid homage to the man who worked voluntarily during 50 years for the "Peace Soldiers". His assiduous presence and active cooperation with the Panel contributed greatly to its evolution. The PACOPAR members offered a gift to this former commander and were unanimous in recognizing his valuable contribution to the safety of Estarreja.



## PACOPAR approves Strategic Plan

At the end of 2009, PACOPAR approved a Strategic Plan for 2010-2012, and established the Panel's future goals, focused on the improvement of working methodologies and new activities involving the environment, risk prevention, communication and landscape. The document also stipulates the presence of a coordinator. José Fernando Correia, one of the PACOPAR founders at the time he was a Dow Portugal employee, was invited under a voluntary regime. The document took effect at the beginning of this year, when Air Liquide began its secretarial responsibility.



## Discovering the Science and the Sea

On February 10th, students from the Padre Donaciano de Abreu Freire School visited the Sea Museum in Ílhavo as well as the Live Science Factory in Aveiro. The students learnt the particularities of codfish fishing and visited a replicate of the fishing boat "Faina Maior". They learnt about the lifestyle of the old codfish fishermen comparing to the modern fishing techniques they found when they visited the Santo André vessel. The afternoon was spent in the Live Science Factory where they had the opportunity to observe and make several experiments.



## TJA - paving the way to sustainability

TJA is undergoing projects to save fuel and consequently reduce the impact on the environment. The projects are already underway and include the use of alternative fuels for their trucks as well as aerodynamic parts for the trailers, along with an entirely revolutionary and aerodynamic design of a fuel tank truck. TJA expects to obtain a reduction in diesel consumption, contribute to a healthier environment, and reduce costs by implementing such measures.

## Energy Efficiency at the UA-Aveiro University

Complying with its role in social responsibility and rationalizing its financial management, the Aveiro University (UA) has been producing energy for its own consumption since November 2009. 920 photovoltaic panels were installed, a project implemented within the "Energy Efficiency at the UA", which was co-financed by the government. The panels supply two buildings at the UA, and they expect to expand the photovoltaic installations.

## ESE creates a Department with Information about Sexuality

The implementation of the 3-S project: Safety, Health and Sustainability", by the Estarreja Junior School (ESE) during the 2009 / 2010 school year, was supported by PACOPAR. It allowed the creation of a Department which provided Support and Information on Health and Sexuality. This Department is open twice per week at school, and it provides service in partnership with the Estarreja Health Center. Nurses are available once per week to give support to students. During the school year, ESE also performed several educational activities on Health and Healthy Eating Habits.



## APEQ Actions in 2009

Actuação Responsável®

Responsible Care®

### Meetings and Reports

Restart of regular meetings and approval of the 2000-2006 and 2007 Responsible Care® Reports. Approval of amendments introduced by APEQ to the "Guide to Performance Indicators Responsible Care(R)."

(See [www.apeqimica.pt](http://www.apeqimica.pt))

### CEFIC - Conseil Européen de L'Industrie Chimique - General Assembly

Under the theme "Beyond the crisis, opportunities and challenges for the chemical industry", the Cefic General Assembly took place in Lisbon, 2-5 October 2009. The President of APEQ, CEO of CUF-Químicos Industriais S.A., made a speech on this subject, much appreciated.

### Website APEQ

In early 2009, it was launched the new website of APEQ, [www.apeqimica.pt](http://www.apeqimica.pt) with one public area and another one reserved to the Associated companies, becoming a privileged organ for the APEQ information.

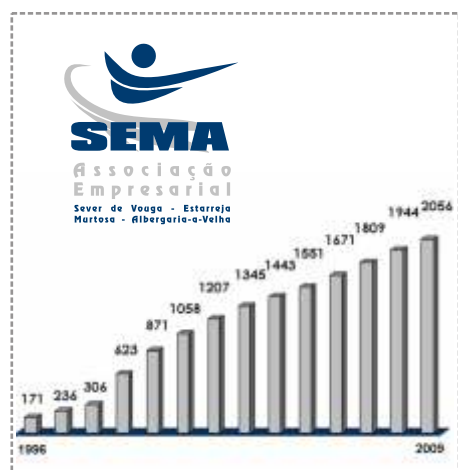
### Other Entities

AIPQR - Association of Petrochemical Industry, Chemical & Refining

Has been set up aimed at boosting the Association of Pole of Competitiveness and Technology Industries Refining, Petrochemical and Chemical Industry, to attract new investment and development of knowledge in their respective areas. APEQ became its member and collaborator.

### Supporting Members

Given the special circumstances of economic crisis, all employees of APEQ pay special attention to the problems of the Associated Members, contacting and visiting them personally, sending them qualified experts whenever necessary.



## SEMA has over 2000 members

In 2009, SEMA, the Business Association for the towns of Sever do Vouga, Estarreja, Murtosa and Albergaria-a-Velha, worked on its goal to increase its members and reached a total of 2056 members. Founded in 1996 with 171 members, this increase reveals the usefulness and vitality of this association. Among the many services provided to its members are, law, training, and certification. In 2009, SEMA trained 852 people in courses which were co-financed and 258 courses which were not financed. A business volume of 45 million Euros was reached in the Food Control Area.



## The Pardilhó School - an example of Ecology

The EB 2,3 Pardilhó School was one of the 10 schools which won the prize for Photography called "The Best Waste is the one which is not Produced", an integrated initiative in the "Eco-Schools" program during the 2009/2010 school year. The students say the image of their school may be "recognized through these photos". Daily attitude, reduction of toxic waste, improvement in individual, collective, local and global quality of life is thus reached. If this practice would have been applied everywhere and by everyone, the Earth would surely be a better place to live in.



# Balance of PACOPAR activities

**Opinion by José Fernando Correia**

*Actual Pacopar Invitee Coordinator, Dow Portugal Employee, 1981-2004, Responsible for the Dow Portugal Responsible Care Programme, 1996-2004*

I have been asked to write an article about the historical evolution of PACOPAR. This task would have been much easier to talk than to write about. It would have been easier to talk about since the subjects and memories would connect themselves, just like the cherries do, thus allowing for a natural and fluent conversation.

But writing is definitely a lot more complicated. A beginning and an ending need to be defined and a linking cord established between the two. Knowing the beginning, I shall now have to find the linking cord. As for the ending, I do not need to nor want to worry about it, for that ought not to even be equated for this project.

Therefore, this story does not yet have an ending. It did, however, have a beginning and the genesis of the Panel followed the international concepts of the CAP (Community Advisory Panels), in conjunction with the principles of Responsible Care, which were already active in the companies within the Estarreja Chemical Complex since the mid-90's. These principles were the basis for the very first discussions. The reality of an already existing image of the local chemical industry, which we could call the image of "the factories", was joined together with these two concepts/principles. Adding to this was the recognized need to straighten the relationship between the neighbourhood and give voice to the different inhabitants who reside in this vast Estarreja condominium.

This basic idea of building a forum for an assembly discussion composed by representatives from the chemical industry and each one of its units, known to be the "face" of the companies together with representatives from Health entities, Civil Protection forces and the Town Hall began by answering Immediate Emergency Response issues, as its first main theme.

As of this point, the conducting element began to be a progressive openness, phased but pondered, to new entities – Education, Environment, Business partners and Industry, The Aveiro University, The Inhabitants Association as well as discussing other subjects and action plans.

The panel action, and one should recall that PACOPAR means "Painel Consultivo Comunitário do Programa Actuação Responsável" (Community Advisory Panel for Responsible Care Program), diversifies and enlarges both in actions (Open Doors, Seminars, ...) as well as support (Donations, Technical Education, Community Projects).

Its action ends up, in some cases, to bring out its initial intention of Commitment to the principles of Responsible Care and Ethics in the Chemical Industry, and almost makes its way through community interaction, typical of an Agenda 21, though in an informal and subliminal form.



2010 Pacopar Members



# yesterday, today and always...

After nine years of continuous and intensive action, mostly recognized outside than inside, and may be proven by the fact that PACOPAR received the 1st European CEFIC Prize in 2005 for the best European Programme undergoing the principles of Responsible Care, among 25 candidates coming from 9 countries. Today, the panel is an element of life amongst the local community, an element which brings together social entities with different interests, propitiating responsible and multi-disciplinary approaches, facing past issues, present challenges and considering future impacts, both at an environmental, economical and social level, within a true integration of the key elements for Sustainable Growth.

Facts and numbers could, and perhaps should even, be cited along this course. But this would be a counterpoint with the essence of this project: an idea of collectivity, assembly, partnership. Thus, the most important in this project is the "we", "we have done" and "we will continue doing".

And we also know, though this ought not to be seen as a vanity but as a realistic form of self-recognition, that what has been done has in many ways been innovative and pioneer. The fact is that few may have such participation and openness, surely at a national and probably at an international level, too.

We should not let a hypocritical humbleness withstand in our pride in something which may not suffer any stigma just because it was "invented here". PACOPAR belongs to the local community, to Estarreja and, just like it appears in its logotype, "For Estarreja".





# Responsible Care

## Opinion by Lubélia Nogueira Penedo

*APEQ Director General - Responsible Care® Portuguese Coordinator*

The year 2009 left us with worries we would like to have seen resolved, or at least, to have seen the beginning of an unequivocal solution to them. Examples of these are some economic sectors and public organisms which lack a deep reform involving attitudes, behaviours, and hard work towards adopting good practices. Recession, corruption, unemployment, a slowdown in sales which included those of the chemical industry, companies shutting down, families in crisis due to lack of income and resources, it keeps fill daily news in media.

Within this picture and sure that the problems of today will not be settled down at short term, APEQ adopted its "Plan of Activities for 2010", the first year of a Strategic Plan 2010-2013, subject to the following Strategic Mission:

"To get recognition so that the national Chemical Industry is vital for the Portuguese economy and society, clearly integrating all aspects of Sustainable Development.

To promote continuous improvement of its practices, within the highest standards of integrity, responsibility and innovation."

### The crisis

It was and it is different from any other known until today.

It was hoped to have lasted one year or so, but it still goes on, showing new facets in an unexpected way, making governments and citizens lose their hopes, impeding everyone from believing we will ever get out of it, and leading to think that Portugal is sinking. But people forget that countries do not sink!

People forget to smile and to believe that better days are still possible, perhaps different, eliminating some comforts of the past, but better days will be ahead.

They also forget that it is possible to live well in many different ways from those we have known or had until today, but to LIVE VERY WELL!

Of course much will have to be changed: our behaviour and above all, the behaviour of those who are ahead of our destinies and who not only have not had the courage to tell us the truth, but most important, have not had the courage to take less unpopular measures, especially in that which relates to the activity of those whose annual accounts always, but always, show profits with numbers which are quite difficult to read, whilst others fade and disappear behind the despair of unemployment.

### The hope

Chemistry is the fountain of life and without it we would not have reached the level of comfort, good living conditions and health we have achieved nowadays.

But Chemistry can do a lot more towards problems-solving: it could be the source of solutions for Climatic Changes; it could contribute positively to save Energy and to use renewable or alternative energies; through Nanotechnologies it can save our natural resources tremendously, making our production processes and uses more efficient simultaneously reducing wastes.

We also have SUSCHEM – Sustainable Chemistry which is giving its first steps towards Green Chemicals, and much more. There are strong reasons to HOPE, so there are will to act!

Will and Act are the keywords. This was the reason which led three of our associates CUF, DOW and AIR LIQUIDE to state both publically as well as to write their will "to double our production capacity" "This is our commitment to the future" when, in the beginning of July 2009, the Estarreja Chemical Complex underwent its Expansion. There is no better example of the Hope they had, of the Hope they actually have, and how they changed wishes into will and will into act!

# PACOPAR and the Future

## Planned Projects

*By Paulo Caetano*

If one of these days you hear a siren and a great deal of bustle coming from the Estarreja Chemical Complex, do not fear! It will most probably be another drill of an industrial incident.

Following the first training in May, which was organized by CUF's Risk Prevention Team, PACOPAR expects to advance with other drills covering industrial disasters. In the first case, a drill was performed with a tank truck transporting hydrochloric acid. The TT was supplied by Transportes J. Amaral. There is another drill programmed for mid-October which shall deal with a rupture in the hydrogen pipeline, followed by a fire. The organization of this drill, which will reinforce the Estarreja Mutual Aid Protocol, will be performed fundamentally by Air Liquide.

The Estarreja and Feira Fire Brigade are the main cooperators and simultaneously the great beneficiaries of these activities – since they will be training with real scenarios and will count on the technical support of the PACOPAR industry. However, the training shall not only be limited to drills. The Emergency Plans will also be made available to the fire brigade, who shall perform several visits to the industry, as explained by Maria do Carmo Oliveira, from the Communication Team: "We want to show how the factories work as well as the means available in case of an emergency. Besides that, training shall be given to the Fire Brigade regarding the main chemical components of each factory and their safety data sheets."



The PACOPAR 2010-2012 Strategic Plan still foresees the plantation of trees in the industrial complex in October, which falls under an environmental awareness campaign. Marisa Machado from the Scenery Group explains that "the idea is to plant from within towards the outside, in other words, first, planting trees within the factory green spaces, and only then in the access to the plants". The Environmental Team will also have a space where the industries can make their environmental indicators available in the PACOPAR site. These are only a few of the activities which have been planned. Along the coming months, the several PACOPAR teams will develop many other actions together with the Estarreja population. Always with a spirit of dialogue and transparency which characterizes the chemical industry.

## PACOPAR introduces new activities





### **The Centre for Interpretation of the Environment (CIA-Centro de Interpretação Ambiental)**

The CIA in Salreu is a place of leisure, has a bathroom and bicycle shed and guides for people who wish to visit the BioRia.

#### **How to visit and watch**

It is best to visit in the morning or late afternoon as it is the time of day when the animals hunt for food and the weather is less hot. Walk slowly and talk softly.

#### **How to get there**

By Car: If you come from the north or from the south, take the A1 or A29 and exit in Estarreja. If you are coming from Aveiro, take the IP5 and exit in Estarreja. Follow the instructions for each circuit.

#### **The Salreu Circuit (2km)**

By train: Get off the train in Salreu and begin your visit.  
By Car: On the EN109, exit to Salreu and turn to the "Salreu-BioRia Circuit".

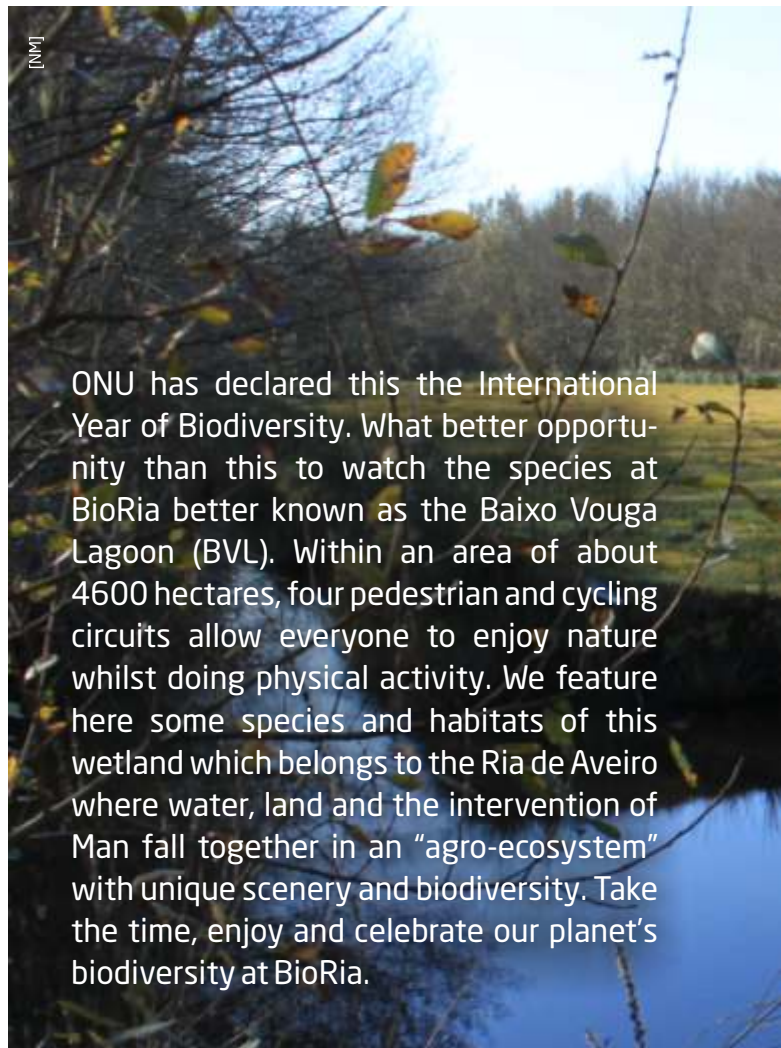
#### **Rio Jardim Circuit | Canelas (2km) and the Bocage Circuit | Salreu / Canelas (4km)**

Train Circuit: Get off the train in Salreu and follow the directions (500m to the south). By car: from Aveiro – On the EN109 in Canelas, follow the "Canelas – BioRia Circuits"; from north/south – on the EN109 in Salreu, follow the "Salreu-BioRia Circuit" up to the CIA.

#### **Rio Antuã Circuit | Beduído/Salreu (6km)**

By Train: Get off the train in Estarreja and follow the directions (500m to the south).

By Car: from Aveiro – on the EN109 in Salreu, stop at the "Salreu – BioRia Circuit"; from the north/south - in Estarreja, follow the directions "Praias". Cross the bridge over the railway and follow the direction "Esteiro" at the roundabout.



ONU has declared this the International Year of Biodiversity. What better opportunity than this to watch the species at BioRia better known as the Baixo Vouga Lagoon (BVL). Within an area of about 4600 hectares, four pedestrian and cycling circuits allow everyone to enjoy nature whilst doing physical activity. We feature here some species and habitats of this wetland which belongs to the Ria de Aveiro where water, land and the intervention of Man fall together in an "agro-ecosystem" with unique scenery and biodiversity. Take the time, enjoy and celebrate our planet's biodiversity at BioRia.



Book "Estarreja Património Natural – BioRia"  
(Estarreja Natural Patrimony – BioRia)



Leisure

# Fauna and flora at the Baixo Vouga Lagoon

**Celebrate the International Year of Biodiversity at BioRia**

*By Dina Sebastião*

+ INFO [WWW.BIORIA.COM](http://WWW.BIORIA.COM)

## The Otter

Very common in this area, the otter is particularly adept to marshes and ditches. These are also very important for quite a number of aquatic species and “fish streams where they swim up to the areas where they lay their eggs.”

## The Birds

Aquatic birds are the most abundant species at the BioRia. “The herons together with some seagull species are most likely the easiest to observe”, especially in winter when they migrate South.

“The Long-leg birds arrive at the beginning of spring”. They build their nests in tanks and salt marsh banks and walk along the rice fields in the Salreu-Canelas area. Ducks are more difficult to watch as their feeding habits are at night. Birds of prey such as the tower-owl, the turnip-owl, the small-snort, round-wing-eagle, “milhafre” and frog-eagle may also be observed. BioRia is home to “a wide variety of small birds, typical from rural areas and woods such as the “creepers, blinkers or dabblers”.

## The habitat

### Reeds

Reeds and bulrushes are abundant in BioRia, “a place which became known for its reeds.” These were used for farming, bedding for livestock and consequently a way to produce manure. Reeds are also food to many birds and “a place of refuge to waders, ducks and herons.”

### Lagoon

The Lagoon The lagoon is submerged periodically with vegetation “well-adapted to saltiness”, which “performs an important role in retaining pollutants”. The lagoon and its vegetation is an important habitat to many species such as ducks, some waders and the eagle-frog.

### Cane fields

Cane fields have surged with the increasing amount of fresh water. Such has led to the growth of hygrophite plants which are shelter and nesting places for the eagle-frog and the red heron. The Ria de Aveiro is home to 25% of the national eagle-frog (around 68 couples), half of which live in this area.

### “Bocage”

The most extensive and genuine “Bocage” in Portugal is found at the Baixo Vouga Lagoon. The “Bocage” is “an ecosystem which is structured in such a way that the fields are surrounded and closed up by bushes, a way of dividing the cultivated fields, pastures and fallow land, and streams”, with a high biological potential.”

## Biography

António Caetano de Abreu Freire Egas Moniz, Prof. Egas Moniz, (Avanca, 29th November 1874 — Lisbon, 13th Decembre 1955) was a doctor, neurologist, investigator, professor, politician and Portuguese writer. He was attributed the Nobel Prize for Physiology or Medicine in 1949 together with Walter Rudolf Hess. Considered a pioneer in the areas of neurology and psychiatry, he achieved the first exam called brain angiography in 1927 and performed the incision in the frontal zone of the brain – pre-frontal leucotomy – the findind that gave him the Nobel Prize.



### How to reach the Egas Moniz Home-Museum:

By Train: a 5-minute walk from the Avanca train station

By car: on the railway exit to Estarreja. Take EN109, in direction to Avanca. 2,9Km after, turn to Prof. Dr. Egas Moniz Street. 1,6km after, turn to Santa Luzia Street and you'll see the museum.

**Visiting Hours:** From Monday to Friday: 9h-12h; 13h30-16h30; Saturday and Sunday: 14h-17h



## Leisure

# Visit to the Egas Moniz Home-Museum

## The scientist in his intimacy.

*By Ana Paula Valente*

Egas Moniz (Nobel Prize for Medicine in 1949) wrote in his Will that his home, rebuilt in 1915 according to a New Art project by Swiss architect, Ernesto Korrodia, and his neighbouring Quinta do Marinheiro, be would be set up as Home-Museum and School of Arts and Crafts. Egas Moniz planned himself every detail for the organization of the museum.

In “A nossa Casa”, written by Egas Moniz, you will testimony the importance the “Sailor’s Home” for the Nobel Prize. The memories of his life are deeply connected to that home: his childhood and later his hiding place to achieve his investigations, or simply a place where he could find peace, away from the buzzing Lisbon city and the great capitals around the world where he usually travelled to. We feel his presence all through his home and it’s quite a surprise. From the beginning up to the very last moment of the visit, we are close with his rare and rich scientific and artistic assets which lead us to unconsciously relate the scientist to the man with an exquisite taste and love for art.

During the visit, we cross the different rooms which have been kept exactly as they were at the time of Professor Egas Moniz’s life. His daily objects remain intact and the environment remains exactly as it was. It is through them that we can easily imagine his daily rituals: the game room where he enjoyed relaxing moments with his wife, the dining room with a magnificent collection of Canton porcelain, the couple’s sunny bedroom, the individual and personalized toilette rooms, the lady’s prayer room, the chapel and the professor’s study.

It was the Nobel prize’s express Will to have a space dedicated to his investigations and discoveries. There, we can observe the objects used for his scientific Angiography discoveries as well as a graphic exposition of the successive stages of his scientific investigations, which led to the first radiological visualization of a live Man’s brain arteries and a pre-frontal leucotomy.

Along Egas Moniz’ life, he managed to acquire beautiful pieces of art with countless collections that can be admired in his Home-Museum. As an example of this, the Porcelain china from the Companhia das Índias, Canton, Saxe, Sèvres, Porcelain and antique Portuguese china from Vista Alegre, as well as Portuguese crystal from the Marinha Grande and Bohemian factories.

Pieces of art representing Portuguese paintings created by Carlos Reis, João Reis, Falcão Trigo, Eduarda Lapa, Silva Porto, Henrique Medina, José Malhã, Abel Salazar, among many others can be found in his home. Pictures, sculptures, drawings, jewelry, tapestry, and pieces of art of rare beauty allow us to know more about Egas Moniz’s personality.

<http://museuegasmoniz.cm-estorreja.pt>

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