FINAL REPORT
June 20, 2007

CEPSA Refinery, San Roque/Gibraltar, Spain

Environment Assessment and Recommendations

Denny Larson, Global Community Monitor • www.gcmonitor.org
In collaboration with the Environmental Safety Group

Summary

On September 13, 2006, European Union Member of Parliament for Gibraltar, Neil Parish, met with CEPSA refinery environmental officials along with long time international refinery expert, Denny Larson, of the Global Community Monitor/Bucket Brigade for eight hours. As a result of that meeting, this report has been compiled for the European Union to consider urgent action with regard to threats to public health and environment in the region.

Given the detailed information supplied in this document which confirms the steady expansion undertaken by the CEPSA oil refinery over the last decade and a half *nullifying its Grandfather Clause Status* additional information is provided here which underlines the **need for an independent inspection by the European Commission** for compliance to highest European environmental standards by CEPSA in order to safeguard the health of populations and surrounding environment.

Contents:

Overview of industries in the area:

There are over a dozen different industries in the area, concentrated in the vicinity of the Campo and San Roque. Most of the industries have a primary or direct relationship with the CEPSA refinery. The refinery is the engine that drives the industrial base and is responsible for other heavy industries locating in the existing zone. The CEPSA refinery creates feedstocks and special chemicals that are intended to be used by related industries in the area, thereby establishing a responsibility of the CEPSA refinery for pollution and hazards beyond its own individual operation.

CEPSA has created new corporate entities, such as Petresa and Interquisa, which process materials solely from the refinery and produce products and pollution concentrated in the industrial area.

In addition, other industries such as Voridian and Repsol, owned by other corporations have clearly located in the area due solely to the proximity of the refinery.

Petresa: process benzene and aromatics, with 100% of the benzene coming from the refinery. The facility was built in the 1970's, with new units added in the 1980's and five years ago, the production capacity was doubled.

Interquisa: processes p-xylene, which is supplied by the refinery. The facility was built in 1976 and three years ago the capacity was doubled. There is a major new unit under construction for completion in 2007.

Voridian: processes feedstocks from Interquisa. The facility was built in 2000 and is owned by Eastman Kodak.

Description of Gibraltar/San Roque Refinery

The original refinery was built in 1967 on land encompassing 1,500,000 square meters. The refinery originally processed less than 5 million tons of crude oil annually. The refinery constructed 150 tanks with capacity of 2,100,000 cubic meters of materials.

The refinery has repeatedly expanded and diversified its operations since it was originally constructed. The refinery is now capable of processing 12 million tons of crude oil, which is more than double its original capacity of crude oil processing. During the meeting with CEPSA officials, the following refinery expansions were detailed:

- 1985 - FCC unit expansion
- 1987 – new Separation unit
- 1990 – new MTBE unit
- 1992 – FCC unit expansion
- 1994 – new Hydro Desulphurization unit
- 1998 – added additional sulfur unit

This information appears in conflict with the claim that the CEPSA refinery qualified for relaxed European Union regulation under "grandfather clause" that would only apply to older facilities that have not expanded greatly.

Given the doubling of refining capacity and other listed expansions above it is difficult to see how this has not caused an impact on the surrounding population and environment.

(following extract taken from file produced by ESG and submitted to Environment Commissioner in February 2006)

This photograph depicts an area of outstanding beauty which is becoming increasingly industrialised.

a: Gibraltar – the principle bunkering port in the Med (2002, over 3.3 million tonnes of fuel) **(an increase of 168% since 1995)**

b: Algeciras – Spain's busiest port, handling over 60 million tonnes of freight per annum **(about to significantly expand port capacity –massive land reclamation into the Bay –)**

c: At the centre of the photograph is the **CEPSA Refinery** impacting on the many coastal towns. Winds disperse the toxins and in fact **are relied upon** to dilute the heavy load upon the environment. On still days, these emissions are staggering. CEPSA Refinery (production of 12 million tonnes, including 43.2 tonnes of benzene – making it the "dirtiest" in Europe) **(about to expand its activities)** Associated petrochemical plants and power generating stations and their contributory emissions
and **ACERINOX** steel smelting plant has often contributed to serious pollution with its radioactive releases

d. **Puente Mayorga** – the worst affected residential area is situated at the foot of the refinery plant and has seen countless spontaneous and impassioned protests supported by Cross Border environmental NGO's. This explosion of industrial and commercial activity in the Bay in recent decades has not been matched by appropriate levels of investment in technologies to reduce environmental damage and effects on population. Thus, fears of excessive levels of cancers and other serious health disorders are present in the area. This has prompted the emergence of environmental NGO's, protests and demands for action. Visiting environmental specialists usually describe the area as an *environmental hotspot or crisis area*.
Other factors contribute towards a fast degrading environment in the Bay incompatible with healthy communities and its former rich biodiversity

1. Over **80,000 tankers** enter the Mediterranean every year and a **lot more cross** the entrance affecting important migratory paths for threatened marine mammals
2. **Military activity**/sonar and nuclear powered submarines
3. **Illegal driftnet fishing** at unsustainable levels

end of extract../

The text of the exemption (grandfather clause) which can delay full compliance with Directive 96/61 concerning Integrated Pollution Prevention and Control (IPPC Directive) for existing installations states that:
" Full compliance with Directive 96/61/EC would already be required if the operation of the installation had been substantially changed. Article 10(b) of the Directive defines substantial changes as "changes that may have, in the opinion of the competent authorities, significant negative effects on human beings or the environment".

During these upgrades and expansion of petrochemical facilities the local communities have borne the brunt of the many dangerous toxins being pumped daily into the air and marine environment with very little efforts made to reduce pollution. CSIC, a highly esteemed group of Spanish scientists was commissioned by the pertinent Spanish Authority, to carry out several environmental studies in the Bay in response to public disquiet and genuine concerns over higher rates of mortality and serious illnesses like cancer.

Reports were made public by CSIC over concerns that worrying levels of pollutants were found in neighbourhoods adjacent to the Refinery (and other installations). The scientists recommended that blood and urine samples should be taken from these frontline communities to establish how much of these toxic chemicals were present in their bodies. This statement was inexplicably retracted publicly in a subsequent report issued by CSIC on the 18th May 2005, also on its website.

The allergic asthma rate amongst children and the overall mortality rate are the highest in Spain; the mortality rate is 20% above the national average.

(ref:- Seaprise and CEPSA factsheet July 2006-
and Short Report on the geography of the highest mortality in Spain – a striking cluster in the southwestern region of the country- by Professor Joan Benach, February 2003 see ESG website)

These reports do indicate that there exists an environmental and public health crisis in the area and the massive expansion of the petrochemical installation considered the dominant causative factor in this crisis.

The refinery has been engaged in "benchmarking" exercises with the Solomon system of comparative analysis with other similar industries.

According to their website, Solomon:

"We have been performing our comparative benchmarking and consulting services in Europe for more than 20 years. Over 85% of all European refineries and 90% of olefins plants participate in our Comparative Performance Analysis (CPA) studies. We initiated a pilot study for pipelines last year, in which 35% of Europe's pipeline capacity was involved. Based on early indications, we expect participation to grow to more than 60% in this year's study. In 2003, Solomon introduced our world-class power generations methodology to Europe. With our office in the UK, we can provide our European clients easier access to our knowledge and expertise, supplied by consultants who are familiar with European operations. With our reputation and years of experience, Solomon has become the recognized standard for performance improvement consulting."

Limits of Benchmarking:

According to the Canadian Industry Program for Energy Conservation, benchmarking has its limitations:

"Benchmarking and the Petroleum Refining Sector

Success in the operation of a business or company depends on many factors. Efficiency in the production of one's product is one of these factors. A number of alternatives exist to drive managers and operators towards efficiency targets, one of which is to compare one's operation to others of similar type locally, regionally or internationally. Such comparisons often involve benchmarking, a tool that provides some mean or norm against which comparisons can be made. The purpose of this document is to provide such a tool where one's own refinery can be compared to others to allow the manager to make reasonable, appropriate decisions about energy use and efficiency. Thus, the objectives of this benchmarking guide are to:

- provide a summary picture of the petroleum refining industry in terms of its energy consumption and production,
- give some indication of the variation of efficiencies and intensities that exist within the industry,
- provide a benchmark comparison against which one can compare one's plant to others and
- provide some indication of a relative road to action regarding energy intensity and efficiency."

It is clear, the measuring and comparing refineries on energy and production efficiency is not an appropriate reflection of the environmental performance of a refinery. While efficient use of energy at a refinery might result in better environmental performance, there are a variety of additional factors that must be considered.

In the case of the CEPSA refinery, the increased expansion of production capacity alone has clearly increased emissions from the facility, which have negated any possible reductions from energy and production efficiency. In addition, the lack of clear pollution prevention action plans and the minimal implementation of pollution reduction programs has further led to large increases in unnecessary air pollution from the facility. When the pollution generated by the attraction of additional related industries by the refinery is factored into the equation, there is no doubt that the refinery's operations are responsible for very large and unsustainable amounts of pollution in the cross border region.

CEPSA has used international development loan funds for many of its expansions. It is not clear that the refinery has followed the appropriate guidelines as required, especially as it relates to alleged 'social benefit' of pollution generating industry.

Air and water pollution numbers reported by CEPSA

Air emissions:

According to the European Pollutant Emission Register, The CEPSA Gibraltar refinery is the single largest source of benzene emissions in Spain. CEPSA self reported emissions to the EU as of July 2005 include 43.3 tons of benzene emissions per year. The refinery also reported the following emissions:

- CO2 1,790,000
- SOX 24,400
- VOC's 8,530
- PAHs 4.21
- PM10 375

EPER and emission information supplied by CEPSA:

It's important to note that benzene data supplied by CEPSA to the EPER has fluctuated tremendously over the last 4 years. This should be independently checked as part of CEPSA's expansion has involved the creation of new petrochemical industries (100% CEPSA owned) that now display benzene emissions previously attributed to the CEPSA Refinery.

Benzene hazards

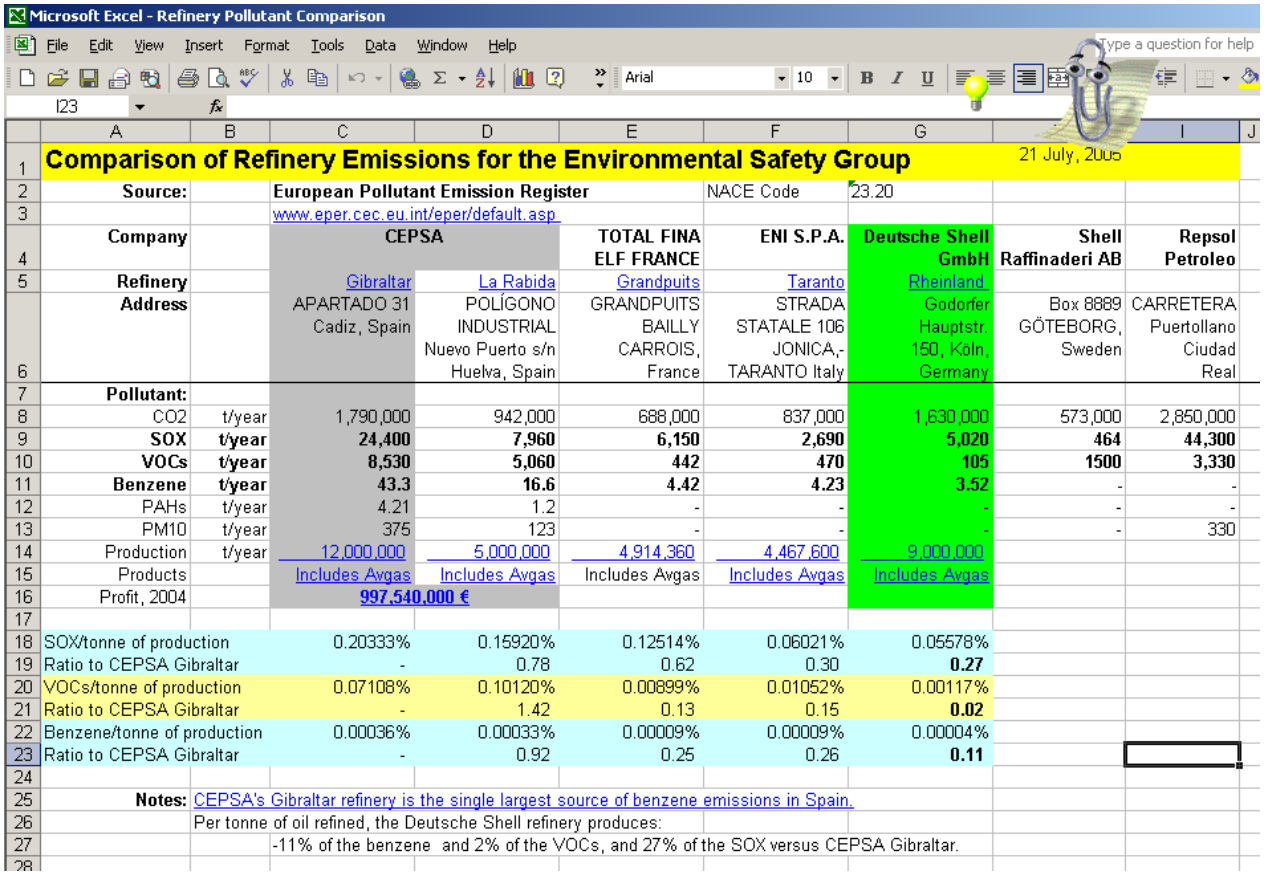
Benzene is a major cancer causing chemical emission from CEPSA, because it is both a component of crude oil and finished products such as gasoline and pure chemical benzene manufactured by the refinery.

Benzene causes specific types of cancer, such as leukemia, which attacks the body's ability to produce healthy blood. The chemical targets many specific organs in the body and harms their ability to operate normally. These so-called 'target' organs include: eyes, skin, respiratory system, blood, central nervous system, and bone marrow

Benzene also causes harmful immediate acute symptoms such as irritation of eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; and bone marrow depression.

CEPSA's environmental performance compared to other EU refineries

The CEPSA refinery's reported production was 12,000,000 tons per year of various fuel and related products. Not only are the amounts of pollution extremely high for a refinery, a comparison of pollution emitted as it relates to production is of grave concern. A comparison of European refineries was undertaken by environmental consultant, Stephen Salter, to determine how extreme the pollution problem was in Spain. (see below)
Mr. Salter's comparison looked at emissions reported by other CEPSA, Total, Shell and ENI refineries. By its own numbers, CEPSA Gibraltar refinery was by far the most polluting refinery in Europe.



Microsoft Excel - Refinery Pollutant Comparison

File Edit View Insert Format Tools Data Window Help

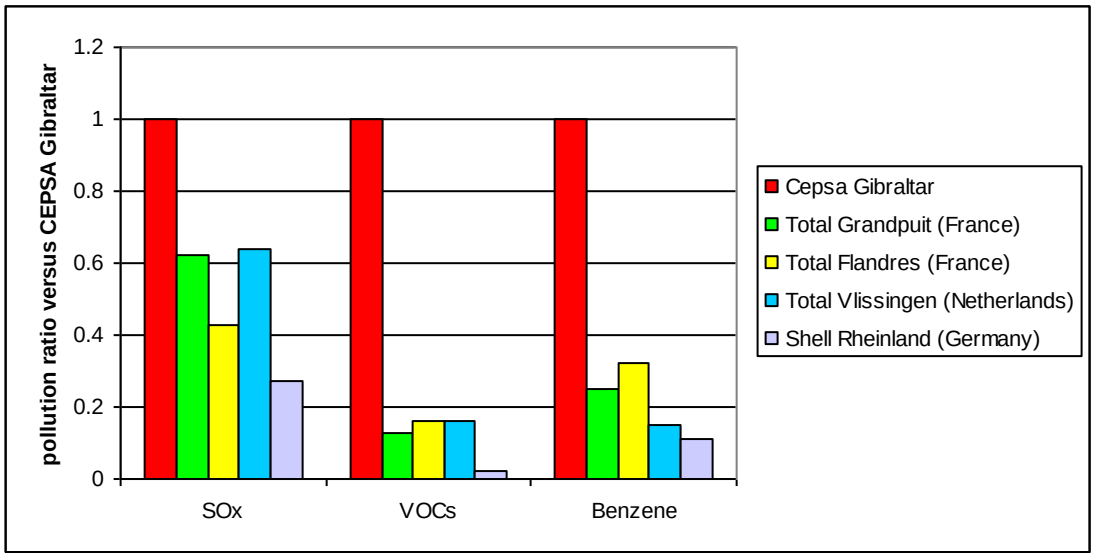
	A	B	C	D	E	F	G	H	I
1	**Comparison of Refinery Emissions for the Environmental Safety Group**							21 July, 2005	
2	**Source:**		**European Pollutant Emission Register**			NACE Code	23.20		
3			www.eper.cec.eu.int/eper/default.asp						
4	**Company**		**CEPSA**		**TOTAL FINA ELF FRANCE**	**ENI S.P.A.**	**Deutsche Shell GmbH**	**Shell Raffinaderi AB**	**Repsol Petroleo**
5	**Refinery**		Gibraltar	La Rabida	Grandpuits	Taranto	Rheinland		
6	**Address**		APARTADO 31 Cadiz, Spain	POLÍGONO INDUSTRIAL Nuevo Puerto s/n Huelva, Spain	GRANDPUITS BAILLY CARROIS, France	STRADA STATALE 106 JONICA,- TARANTO Italy	Godorfer Hauptstr. 150, Köln, Germany	Box 8889 GÖTEBORG, Sweden	CARRETERA Puertollano Ciudad Real
7	**Pollutant:**								
8	CO2	t/year	1,790,000	942,000	688,000	837,000	1,630,000	573,000	2,850,000
9	**SOX**	**t/year**	**24,400**	**7,960**	**6,150**	**2,690**	**5,020**	**464**	**44,300**
10	**VOCs**	**t/year**	**8,530**	**5,060**	**442**	**470**	**105**	**1500**	**3,330**
11	**Benzene**	**t/year**	**43.3**	**16.6**	**4.42**	**4.23**	**3.52**	-	-
12	PAHs	t/year	4.21	1.2	-	-	-	-	-
13	PM10	t/year	375	123	-	-	-	-	330
14	Production	t/year	12,000,000	5,000,000	4,914,360	4,467,600	9,000,000		
15	Products		Includes Avgas	Includes Avgas	Includes Avgas	Includes Avgas	Includes Avgas		
16	Profit, 2004		**997,540,000 €**						
17									
18	SOX/tonne of production		0.20333%	0.15920%	0.12514%	0.06021%	0.05578%		
19	Ratio to CEPSA Gibraltar		-	0.78	0.62	0.30	**0.27**		
20	VOCs/tonne of production		0.07108%	0.10120%	0.00899%	0.01052%	0.00117%		
21	Ratio to CEPSA Gibraltar		-	1.42	0.13	0.15	**0.02**		
22	Benzene/tonne of production		0.00036%	0.00033%	0.00009%	0.00009%	0.00004%		
23	Ratio to CEPSA Gibraltar		-	0.92	0.25	0.26	**0.11**		
24									
25	**Notes:**	CEPSA's Gibraltar refinery is the single largest source of benzene emissions in Spain.							
26		Per tonne of oil refined, the Deutsche Shell refinery produces:							
27		-11% of the benzene and 2% of the VOCs, and 27% of the SOX versus CEPSA Gibraltar.							

Analysis S.Salter PEng, Canada

With regard to the most dangerous pollutant to human health, benzene, the CEPSA Gibraltar refinery emits more benzene than CEPSA La Rabida refinery, Total Grandpuitts refinery (France), the ENI refinery (Italy), Shell Rheinland refinery (Germany) and the Shell Gotenburg refinery combined. These other refineries produce a combined 24,000,000 tons of products per year; yet release less than 29 tons per year of benzene. The CEPSA refinery releases more than 43 tons per year of benzene while only producing 12,000,000 tons of products. This analysis makes clear that the CEPSA Gibraltar refinery is far more polluting than its competitors. Clearly CEPSA and its co-owners Total are aware of how to produce their products without as much pollution.

CEPSA is clearly benefiting from potential unfair competition by manufacturing its products in a manner that pollutes the environment and surrounding communities more than other oil refineries.

If CEPSA were to follow the best practices of the Deutsche Shell refinery for example, it could reduce 89% of its benzene emissions, 98% of its other VOC's, and 73% of its SOX emissions.



-Source CEPSA factsheet July 2006 Seaprise/ESG

Water pollution:

The CEPSA refinery reports massive discharge of hazardous chemicals known to cause cancer and other diseases and harmful substances to the natural environment (such as nitrogen), which interfere with the healthy life of aquatic plants and animals. Each year, CEPSA claims to dump at least 368.123 tons of chemicals and substances into the Bay.

EPER Report

CEPSA emission to water (Bay)	Direct release tons per year
Nitrogen	109.00
Zinc and its compounds	0.523
Halogenated Organic Compounds (AOX)	6.60
Benzene, toluene, ethylbenzene, xylenes (as BTEX)	1.41
Phenols	1.39
Total Organic Carbon (TOC)	233.00
Fluorides	16.20

The impact and ongoing threat by CEPSA to the Bay is undeniable and has been the subject of recent scholarly studies. One such study, *Bay of Algeciras: Biodiversity Hotspot and Environmental Crisis Area*, by Kloff, Nash and Gómez, 2002, states:

"For the manufacturing of CEPSA's chemicals, four processive steps are needed, separating, conversion, reorganisation and finishing. In these processes, unwanted substances are removed and the chemical itself is made more suitable for consumption. These purification processes release various gases and fuels into the air as well as discharges of unwanted liquids. As chemical based pollutants are released into the air, water and earth, the toxicity does not merely affect the ecosystem but dominoes into the invincible human world as well. These effects of the chemical industry come to us in the form of acid rain, or drift down as fall out which creeps into agricultural soil, carries itself into the systems of wildlife and finally enter into human bones where this toxicity

will remain until death. Thus CEPSA is proving to be an indestructible poisonous chain. In general the manufacturing process in the chemical industry continues to be the number one polluter of the environment anywhere in the world. Long term exposure, especially to air pollution of the petro-chemical industry, is known to provoke cancer in surrounding inhabitants."

Independent air testing by the Bay Bucket Brigade

The Bay Bucket Brigade was formed out of a need to collect scientific data on the air quality surrounding the communities living around the Bay. The concerns for the many inhabitants in this area lie mainly with the very heavy, daily emissions of sulphur dioxide, particulates, volatile organic compounds and other noxious gases from the refinery, petrochemical industries, paper, steelworks, power stations, bunkering, traffic and other fuel related pollution.

Example of recent flaring at CEPSA Refinery creating volumes of noxious smoke in resident neighbourhoods

Gemma Fritschi March 2007, CEPSA, San Roque

The Bay Bucket Brigade referred to from now on as the BBB, is made up of individuals and organisations from Gibraltar and Spain and is supported by several others through funding and at regular open meetings. The BBB invited Director of Global Community Monitor, Denny Larson, to Gibraltar and Spain three years ago to introduce the concept of the bucket sampling technique, a system he helped pioneer along with the legendary Erin Brockovich, who successfully challenged highly polluting industries in the USA by taking independent samples. Mr Larson returned in May 2004 to train the BBB team to collate background data, take samples, and organise for laboratory analysis to be done effectively and efficiently. The BBB embarked on a sampling programme which has now been running for a few years and has effectively used the bucket technique to monitor air quality.

A simple yet effective sampling tool (the bucket) was built based on a regular industrial model by Global Community Monitor and Erin Brockovich (a well-known film was made

about this extraordinary person). Denny Larson then developed a training programme to teach ordinary citizens how to collect polluted air samples in their neighbourhood: from identifying harmful pollutants to collection of evidence and presentation of data. The aim of BBB was to prove how toxic the ambient air can become in many parts of the Bay by collecting air samples and having these analysed by an accredited and independent laboratory. This would support the view that fugitive emissions from the Refinery plant during normal operational procedures were highly toxic and dangerous. The team obtained a hit which revealed levels of Benzene, a class 1 carcinogen at levels 22 times that deemed safe under EU law along with 13 other chemicals. Actions carried out by the BBB using the bucket technique are covered on the ESG website www.esg-gib.net These include raising community awareness, organising petitions and cross border protests.

As well as sampling air quality, the BBB team has been logging pollution incidences, using "Pollution log sheets" to record a particularly strong chemical smell or unusually thick clouds of noxious smoke emanating from the industrial zone. This log file has seen many reports lodged covering pollution in Spain and Gibraltar. The most intense has been at the refinery where a run of very heavy polluting incidences related to power shutdowns and subsequent start-ups, has produced voluminous clouds of particulate pollution covering the surrounding area. Heavy sulphurous emissions have also been produced in the Bay with inversion climatic conditions creating a pea-soup type of environment, setting off alarms in monitoring stations for dangerous levels of SO2. The authorities however, have chosen not to publicly acknowledge these incidences claiming the overall performance of these industries has always been within the law.

In Gibraltar the climatic conditions protect the ecology and residents to a great degree but **not** altogether and the impact from the refinery can often be seen with visible plumes of sulphurous emissions, or through nauseating odours when processing VOC's (benzene, toluene, xylene etc.) under the right wind conditions. This makes residents close up their homes due to difficulty in breathing; to also experience sore throats, headaches and a worsening of allergies, and it is feared, is contributing **towards the many cases of rare and unusual illnesses and cancers**. It was this chronic pollution that motivated two of the BBB members, the ESG and the GONHS to submit a lengthy and detailed official complaint to the European Commission in November 2002 (S*ee ESG website for background document*). This has since had several follow-ups, although the desired inspection by the EC has not yet taken place. It is hoped that the data obtained by the BBB team will help support this complaint.

The BBB led to a **13,500 strong Bay wide petition** demanding for independent health studies to be started immediately which has produced strong statements from senior politicians responsible for environment and health matters against the lack of standards practised by the Oil Refinery.

Flaring

Whenever flaring takes place, usually caused due to power failure, the emissions are unacceptably heavy and toxic and are long-lasting creating a sense of panic within the communities of loss of control at the Refinery especially in light of non-existent emergency community measures informing people of what was going on.

Furthermore, the absence of adequate **on-site power back-up** means that flaring can continue until the national power supply is back on line which can sometime last for a few hours. The fact that some of the affected communities live a few metres from the plant mean the full impact of the noxious emissions is felt by several hundred with many more thousands also affected, dependant on wind direction.

There is clear need for separate and independent inspection of the operational standards of this plant which impacts as heavily as it does and to ensure that residents and environment are protected.

Sulphur Escapes

In 2004 sulphur readings picked up by monitoring cabins show that dangerous levels were present and likely to be linked to the Refinery– (see end of report)
In November 2006 the refinery was fined by government authorities because it was discharging high levels of sulphur dioxide into several monitored areas. Media reports suggested that a fine of up to 150,000 euros was being considered.

Just a few weeks ago in April another sulphur incident occurred which again affected citizens- they complained of symptoms of eye irritation and throat burning sensation. (see end of report) While the levels were assessed as being within the legal limit, the levels were clearly high enough to register for health impacts and given the proximity to resident populations this **enhances the need both for evaluation of permissible levels of pollutants/emissions at specific sites as well as the need for monitoring at source.**

Just after this extreme sulphur incident a recent public statement by a Bay representative of a national Spanish union (CC.OO) supported the call for industries like CEPSA to take whatever steps necessary to adhere to the upcoming IPPC and improve its emission performance and impact on the environment and the people who live here.

A study published in the British Medical Journal: Ref21 "Health Effects of SO2 in Europe-Katsouyanni et al" stated that data gathered from 12 European cities showed that increases in sulphur dioxide and particulate matter are associated with increased total mortality.

The public considers that while politicians are now beginning to express increasing support for the negative environmental impacts from these large petrochemical plants that direct economic benefits will not allow them to take the action necessary.

Cancer and serious illnesses related to high pollution levels

The prevalence of cancers and rate of mortality recently revealed in a Spanish health study conducted by the University of Barcelona shows that the Cadiz Province is the worst affected zone in Spain. This supports what is common knowledge within these communities and underlines the frustration experienced by many that the constant promises by authorities for epidemiological studies to be done never materialise. While important for such studies to begin immediately, these alone would not address the necessary operational changes to be made by industry within the desired time frame.

A study by Professor Benach called the "Atlas de Mortalidad" underlines the urgent need for immediate action to be taken by health authorities to address the health of the resident populations situated around the industries. His studies reveal clusters of higher than national mortality in the South West region of Spain and in the Bay area in particular. He calls for specific and targeted health studies, not only long ranging epidemiological studies, which are not actionable until completed.

An independent report produced in the London School of Economics, "*Equal Protection for All Populations? Evaluating the Links between Corporate Social Responsibility and Environmental Justice in the Oil and Gas Sector"* in relation to refineries in Europe, Durban and the USA suggests a correlation between higher levels of emissions from refineries operating in areas of lower income (*author permission obtained*).

The industrial pollution has directly been impacting on the frontline communities creating high incidences of cancers, allergies, respiratory and cardiovascular problems, abortions, childhood leukemia, skin conditions and many others, commonly associated with chemical emissions from refineries and associated industry.

Economic growth within the Bay has created serious pressures on the natural environment and ecosystems as well as significantly increasing the risk factor of industrial and marine accidents. All signs are there for continued economic growth without parallel investment in proper environmental management or policy-making strategies.

Within the European Union the creation of the **EPER** (European Pollutant Emission Register), has also provided evidence that the industrial zone in this area is among the highest polluters in Europe (***See*** *link to EPER website on ESG website*).

For the past decade NGO's from both sides of the border have lobbied authorities in Gibraltar, Spain and complained officially to the European Commission over the unsustainable levels of air and water pollution.

Social Responsibility/Environmental Performance

Materials were distributed including the CEPSA 2005 Social Responsibility Report. This included a message from the Chairman, Juan Perez deHaro, stating:

"A person's life has no price. We can go further than that by including this person's physical integrity and health. This principle implies that, for all the great industrial complex we have created, our most important asset is our team of people.

We do not need convincing – we understand very clearly that we should value this concept. Anything that could directly or indirectly affect our human resources becomes a factor of the highest magnitude, above and beyond production and equipment requirements, or even emergencies, should they arise.

We have always been sure of it, but now we have put the philosophy into practice: if any potentially noxious or harmful element may affect the health of one of our workers or our surrounding citizens, this becomes the one and only thing to be solved – the primary aim to be achieved. Everything else can wait."

If CEPSA is guided by the previous statement, there is a clear need to move more rapidly on its fledgling pollution prevention and control programs. The Chairman's statement that the company is taking the precautionary approach of acting swiftly to prevent possible toxic exposures from its operations. In particular, the statement: *"if any potentially noxious or harmful element may affect the health of one of our workers or our surrounding citizens,"* clearly indicates the company will act before harm occurs if there is even the potential for harm.

The statement goes on to indicate that fast action will become the company's top priority: "*this becomes the one and only thing to be solved – the primary aim to be achieved. Everything else can wait*."

However, the recently developed pollution prevention/control programs at CEPSA fall far short of their potential. For example, CEPSA's new Leak Detection and Repair (LDAR) program for fugitive emission control claims to employ US EPA's protocols and approved equipment. However, instead of following the US EPA required schedule for quarterly monitoring, CEPSA apparently only monitors for leaks once a year prior to maintenance. The leak rate chosen by CEPSA to trigger repair is also quite high at 10,000 parts per million as compared to the 500 parts per million level used by many refineries.

CEPSA's chairman's statement further indicates that there should prevention of potential harm should be fast and the number one priority, "*this becomes the one and only thing to be solved – the primary aim to be achieved. Everything else can wait*."

Another example of a laudable, but limited future pollution prevention program is the vapor recovery project for ship loading at the refinery. The marine loading and unloading of materials such as crude oil, gasoline and other chemicals that include volatile organic compounds are known to release large amounts of air pollution. These escaping vapors can include dangerous toxic chemicals such as benzene.

CEPSA stated that the refinery will install marine vapor recovery systems at their wharf. While this is a good step, the officials stated that the use of vapor recovery will be limited to aromatics (i.e. benzene) loading only. Again the refinery is implementing an extremely

limited version of the type of pollution prevention program advocated by environmental organizations and their experts. If CEPSA were committed to following the guidance of their Chairman's statement, the refinery would greatly expand their use of vapor recovery to prevent worker and community exposure.

CEPSA stated that the refinery is examining the possibility of covering their wastewater system in order to reduce VOC emissions, benzene and odors. However, the officials also stated that another option under consideration is the use of "odor masking" agents instead. Odor masking or using fragrances to cover up the odor of chemical pollution is at best entirely ineffective at reducing or preventing exposures. At worst, odor masking is dishonest and at odds with CEPSA's polices.

CEPSA stated at the meeting that the refinery has installed flare gas recovery systems in order to reduce flaring. However the sight of flares frequently in use at the refinery raises the question as to whether the refinery has sufficient capacity in its flare gas systems to be effective.

Answers to specific questions by MEP Parish

The following list of questions was supplied by MP Neil Parish to CEPSA in advance of the September 13th meeting:

1) CEPSA's long-term plans for the refinery; does CEPSA plan to invest to keep the plant in operation
2) The Euro value of their planned investments in the refinery over the next 1-5 years
3) The Euro value of their planned investments in pollution prevention over the next 1-5 years
4) What air pollution permits and regulations the refinery currently recognises and reports their compliance with (Spanish and EU)
5) Their current levels of air emissions of the following pollutants, compared with the regulations which they recognise

-Volatile Organic Compounds (VOC)
-Sulphur oxides (SOx)
-Benzene
-Polycyclic Aromatic Hydrocarbons (PAH)
-PM10, PM2.5

6) What programmes do they have in place to reduce the levels of these five pollutants?
7) What programmes do they have in place to detect and reduce fugitive leaks?

The bulk of the meeting did not focus on these issues due to the length of the discussion and presentations on general information about the company, the industrial area and the history of development at the facility. Despite this, refinery officials did provide answers to many of the questions posed by MP Parish. CEPSA's presentations were informative and responsive to the concerns widely expressed about the need to reduce pollution. In addition the officials seemed open to have a substantive dialogue with the environmental stakeholders to continue to make more progress.

One important consideration not factored into CEPSA's environmental programs are the constant expansions of the refinery's production. These expansions have overwhelmed the reductions achieved by CEPSA's efforts to cut back on emissions. Additionally, CEPSA has built auxiliary facilities to the refinery that have brought increased emissions in the entire region. When a comprehensive comparison between CEPSA's emission reductions and expansions and industrial growth facilitated by the refinery, pollution increases are orders of magnitude higher than all of the refinery's programs.

CEPSA officials presented some information about air quality monitoring systems used to measure compliance with regulations.

Unfortunately, the current monitoring stations are only capable of monitoring a few square meters or less than a fraction of the impacted area because they monitor a single point no larger than a few centimeters. Point source monitors such as the ones in place in Spain and Gibraltar have become outdated technologies in the wake of 'open path' systems which can monitor the air over hundreds of meters.

The lack of comprehensive fenceline monitors and open path systems appear to be the reason for the conclusions reached by CEPSA and local officials that the air around the refinery is "safe" for residents to breathe and within EU norms. The parties should rapidly improve the monitoring network to assure that programs to reduce pollution are actually making a measurable improvement in the air breathed by residents in the region.

The following questions are yet to be answered by CEPSA:

- What air pollution permits and regulations the refinery currently recognises and reports their compliance with (Spanish and EU)

- Their current levels of air emissions of the following pollutants, compared with the regulations which they recognize:

  -Volatile Organic Compounds (VOC)
  -Sulphur oxides (SOx)
  -Benzene
  -Polycyclic Aromatic Hydrocarbons (PAH)
  -PM10, PM2.5

- What programmes do they have in place to reduce the levels of these pollutants?
  -Polycyclic Aromatic Hydrocarbons (PAH)
  -PM10, PM2.5

  Recommendation: CEPSA and cross border environmental groups should meet to begin a transparent process to verify the refinery improvement projects, such as the newly launched LDAR program. The parties would engage in an honest dialogue to resolve outstanding concerns about the health and safety of nearby communities and the environment.

Verification and transparency requires third party reviews by parties with no financial conflict of interest. The cost of such third party should be borne by the refinery in recognition of the need to build trust.

Tour of refinery

A tour of the refinery was conducted by CEPSA officials. The tour confirmed the complexity and the size of the facility. Some areas of the refinery appeared new and clean, while others showed signs of age and rust. The operation of the refinery appeared to be at a low level of production. Despite this, in several locations noxious odors were observed.

The tour confirmed the extreme proximity to several large residential areas. This situation creates a serious concern for the health and safety of residents from both the daily exposure to refinery chemicals as well as the threat of a catastrophic chemical accident.

The geography of the industrial area also creates serious concern for residents of San Roque to the north, Algeciras to the east and Gibraltar to the south. Because the refinery and related facilities lie at low elevations surrounded by populated hills and elevations in all directions, emissions drift offsite and can become trapped against elevated landscapes.

Unfortunately, the CEPSA refinery and associated industries are located in a geographic area that is viable for economic interests due to its proximity to the Bay and shipping opportunities and ill suited for combined residential and industrial development.

Conclusion

The CEPSA refinery and related industries are creating an increasingly hazardous environment to residents of the region due to continuous and unsustainable expansions of production with the requisite pollution prevention planning and implementation. The carrying capacity of the air, water and land of the entire region has undoubtedly been exceeded by the toxic intensive processes of oil refining and petrochemical production. The continued operation of the current level of industrial activity can only lead to comprehensive destruction of public health, the environment, resources and the future of the region as a whole.

The political mechanisms of the national, regional and local government agencies in Spain and Gibraltar have continuously failed to deliver action to resolve this serious crisis. Therefore swift and decisive action must be taken by the European Union.

The detailed information supplied in this document confirms the steady expansions undertaken by the CEPSA Oil Refinery over the last decade and a half which nullify its Grandfather Clause Status. This calls for **an independent inspection by the European Commission** for compliance to highest European environmental standards by CEPSA in order to safeguard the health of populations and surrounding environment.

Such an action would only be the first step in reducing and eliminating the extreme and unsustainable levels of pollution of air, water and land by the CEPSA refinery. Sustained and long-term solutions are needed over a long period of time in order to restore the region to its previous health and well being.

In addition, legal mechanisms by a variety of national and international entities must be employed to hold CEPSA and its other investors to account for the damages to life, liberty and the pursuit of happiness that past contamination has caused.

(Three documents follow with additional material and official data printouts.)

Provincia	**CADIZ**
Municipio	**LINEA DE LA CONCEPCION (LA)**
Estacion	**E7:EL ZABAL**
Direccion	**COLEGIO PÚBLICO ANTONIO MACHADO**

FECHA-HORA	SO2	PART	NO2
14/04/07-00:10	29		20
14/04/07-00:20	22		22
14/04/07-00:30	18		30
14/04/07-00:40	18		28
14/04/07-00:50	17		17
14/04/07-01:00	16		18
14/04/07-01:10	15		14
14/04/07-01:20	14		12
14/04/07-01:30	14		18
14/04/07-01:40	15		21
14/04/07-01:50	15		13
14/04/07-02:00	14		19
14/04/07-02:10	15		24
14/04/07-02:20	19		24
14/04/07-02:30	22		21
14/04/07-02:40	24		23
14/04/07-02:50	25		18
14/04/07-03:00	26		18
14/04/07-03:10	25		18
14/04/07-03:20	23		17
14/04/07-03:30	21		17
14/04/07-03:40	21		16
14/04/07-03:50	18		15
14/04/07-04:00	16		15
14/04/07-04:10	15		19
14/04/07-04:20	15		18
14/04/07-04:30	15		19
14/04/07-04:40	15		20
14/04/07-04:50	17		24
14/04/07-05:00	19		24
14/04/07-05:10	21		29
14/04/07-05:20	23		34
14/04/07-05:30	24		27
14/04/07-05:40	25		26
14/04/07-05:50	25		32
14/04/07-06:00	26		34
14/04/07-06:10	24		37
14/04/07-06:20	22		49
14/04/07-06:30	19		37
14/04/07-06:40	18		26
14/04/07-06:50	17		28
14/04/07-07:00	16		32
14/04/07-07:10	14		20
14/04/07-07:20	14		52
14/04/07-07:30	15		62
14/04/07-07:40	14		32
14/04/07-07:50	15		35
14/04/07-08:00	15		30

14/04/07-08:10	14		26
14/04/07-08:20	13		29
14/04/07-08:30	13		44
14/04/07-08:40	13		42
14/04/07-08:50	14		41
14/04/07-09:00	15		38
14/04/07-09:10	16		25
14/04/07-09:20	17		26
14/04/07-09:30	17		38
14/04/07-09:40	18		38
14/04/07-09:50	18		34
14/04/07-10:00	18		36
14/04/07-10:10	19		41
14/04/07-10:20	21		37
14/04/07-10:30	21		38
14/04/07-10:40	22		38
14/04/07-10:50	25		37
14/04/07-11:00	27		37
14/04/07-11:10	27		34
14/04/07-11:20	25		44
14/04/07-11:30	25		35
14/04/07-11:40	24		30
14/04/07-11:50	24		35
14/04/07-12:00	29		23
14/04/07-12:10	28		23
14/04/07-12:20	79		64
14/04/07-12:30	117		61
14/04/07-12:40	108		53
14/04/07-12:50	74		37
14/04/07-13:00	62		39
14/04/07-13:10	63		39
14/04/07-13:20	52		34
14/04/07-13:30	71		47
14/04/07-13:40	99		53
14/04/07-13:50	98		50
14/04/07-14:00	71		38
14/04/07-14:10	54		31
14/04/07-14:20	45		29
14/04/07-14:30	43		31
14/04/07-14:40	83		59
14/04/07-14:50	87		47
14/04/07-15:00	83		47
14/04/07-15:10	126		66
14/04/07-15:20	124		57
14/04/07-15:30	97		49
14/04/07-15:40	85		42
14/04/07-15:50	68		40
14/04/07-16:00	101		57
14/04/07-16:10	96		48
14/04/07-16:20	71		41
14/04/07-16:30	74		44
14/04/07-16:40	69		36
14/04/07-16:50	54		34
14/04/07-17:00	56		38
14/04/07-17:10	64		48
14/04/07-17:20	120		50

14/04/07-17:30	90		49
14/04/07-17:40	80		50
14/04/07-17:50	85		49
14/04/07-18:00	65		38
14/04/07-18:10	84		54
14/04/07-18:20	74		40
14/04/07-18:30	58		35
14/04/07-18:40	63		30
14/04/07-18:50	89		30
14/04/07-19:00	63		32
14/04/07-19:10	57		26
14/04/07-19:20	104		24
14/04/07-19:30	106		26
14/04/07-19:40	67		29
14/04/07-19:50	121		22
14/04/07-20:00	156		26
14/04/07-20:10	122		32
14/04/07-20:20	78		32
14/04/07-20:30	43		29
14/04/07-20:40	65		33
14/04/07-20:50	63		26
14/04/07-21:00	47		29
14/04/07-21:10	166		34
14/04/07-21:20	234		36
14/04/07-21:30	286		39
14/04/07-21:40	333		40
14/04/07-21:50	382		38
14/04/07-22:00	234		43
14/04/07-22:10	165		47
14/04/07-22:20	102		35
14/04/07-22:30	52		29
14/04/07-22:40	34		38
14/04/07-22:50	27		35
14/04/07-23:00	23		35
14/04/07-23:10	20		39
14/04/07-23:20	19		46
14/04/07-23:30	18		30
14/04/07-23:40	17		23
14/04/07-23:50	16		22
15/04/07-00:00	17		24

NB: La Linea is a few kilometers from the sulphur plant so readings should be interpreted accordingly

Provincia	**CADIZ**
Municipio	**SAN ROQUE**
Estacion	**GUADARRANQUE**
Direccion	**PLAYA DE GUADARRANQUE**

FECHA-HORA	SO2	PART	NO2	CO	O3	SH2
04/11/06-00:10	91		32	248	31	
04/11/06-00:20	132		29	199	29	
04/11/06-00:30	66		32	196	26	
04/11/06-00:40	83		40	169	22	
04/11/06-00:50	75		34	165	25	
04/11/06-01:00	55		35	233	31	
04/11/06-01:10	19		12	200	51	
04/11/06-01:20	9		3	285	67	
04/11/06-01:30	8		3	143	71	
04/11/06-01:40	7		3	186	71	
04/11/06-01:50	7		3	219	69	
04/11/06-02:00	6		3	186	71	
04/11/06-02:10	7		3	154	68	
04/11/06-02:20	5		3	212	72	
04/11/06-02:30	4		3	153	76	
04/11/06-02:40	4		3	235	75	
04/11/06-02:50	4		3	199	77	
04/11/06-03:00	4		3	151	79	
04/11/06-03:10	3		3	218	80	
04/11/06-03:20	3		3	158	76	
04/11/06-03:30	4		3	202	76	
04/11/06-03:40	3		3	98	76	
04/11/06-03:50	4		3	286	78	
04/11/06-04:00	5		3	173	70	
04/11/06-04:10	9		5	189	64	
04/11/06-04:20	8		3	201	66	
04/11/06-04:30	9		3	195	67	
04/11/06-04:40	7		3	200	68	
04/11/06-04:50	7		3	147	69	
04/11/06-05:00	7		3	107	67	
04/11/06-05:10	8		3	230	64	
04/11/06-05:20	6		3	157	72	
04/11/06-05:30	4		3	185	76	
04/11/06-05:40	7		3	271	68	
04/11/06-05:50	12		3	161	68	
04/11/06-06:00	10		8	203	63	
04/11/06-06:10	20		16	150	64	
04/11/06-06:20	21		11	156	64	
04/11/06-06:30	22		9	167	65	
04/11/06-06:40	15		7	168	69	
04/11/06-06:50	34		25	152	57	
04/11/06-07:00	27		17	213	53	
04/11/06-07:10	93		44	351	33	
04/11/06-07:20	36		21	254	64	
04/11/06-07:30	11		3	240	71	
04/11/06-07:40	20		17	140	56	

04/11/06-07:50	38		36	154	40	
04/11/06-08:00	43		31	205	42	
04/11/06-08:10	38		28	252	46	
04/11/06-08:20	47		30	212	46	
04/11/06-08:30	53		32	198	36	
04/11/06-08:40	37		23	142	57	
04/11/06-08:50	17		8	200	66	
04/11/06-09:00	11		3	239	69	
04/11/06-09:10	8		4	248	72	
04/11/06-09:20	11		6	188	69	
04/11/06-09:30	8		3	235	69	
04/11/06-09:40	10		3	159	67	
04/11/06-09:50	27		24	145	50	
04/11/06-10:00	29		15	132	61	
04/11/06-10:10	15		5	263	63	
04/11/06-10:20	19		12	264	57	
04/11/06-10:30	30		19	258	50	
04/11/06-10:40	33		15	150	56	
04/11/06-10:50	42		22	199	46	
04/11/06-11:00	41		26	175	46	
04/11/06-11:10	52		41	168	37	
04/11/06-11:20	55		31	157	40	
04/11/06-11:30	62		33	246	40	
04/11/06-11:40	39		23	160	55	
04/11/06-11:50	39		35	183	46	
04/11/06-12:00	92		46	130	37	
04/11/06-12:10	177		33	162	47	
04/11/06-12:20	142		36	222	46	
04/11/06-12:30	224		39	271	42	
04/11/06-12:40	244		34	290	50	
04/11/06-12:50	287		34	179	49	
04/11/06-13:00	262		33	196	51	
04/11/06-13:10	283		32	243	46	
04/11/06-13:20	258		39	278	44	
04/11/06-13:30	222		31	264	50	
04/11/06-13:40	231		30	272	49	
04/11/06-13:50	133		25	309	49	
04/11/06-14:00	130		20	196	50	
04/11/06-14:10	99		20	262	50	
04/11/06-14:20	64		17	176	51	
04/11/06-14:30	63		20	239	49	
04/11/06-14:40	86		21	327	49	
04/11/06-14:50	163		32	271	40	
04/11/06-15:00	80		22	332	50	
04/11/06-15:10	62		17	225	52	
04/11/06-15:20	52		16	185	54	
04/11/06-15:30	60		19	257	51	
04/11/06-15:40	51		17	267	53	
04/11/06-15:50	60		19	159	51	
04/11/06-16:00	58		20	244	51	
04/11/06-16:10	54		19	270	53	
04/11/06-16:20	65		18	306	54	
04/11/06-16:30	62		20	255	53	
04/11/06-16:40	44		14	237	57	
04/11/06-16:50	43		15	237	56	
04/11/06-17:00	61		19	207	54	

04/11/06-17:10	88		23	271	55	
04/11/06-17:20	132		24	155	60	
04/11/06-17:30	85		19	200	59	
04/11/06-17:40	92		22	246	59	
04/11/06-17:50	142		25	294	58	
04/11/06-18:00	120		20	217	63	
04/11/06-18:10	122		22	178	59	
04/11/06-18:20	140		25	237	59	
04/11/06-18:30	138		24	293	58	
04/11/06-18:40	115		23	240	59	
04/11/06-18:50	118		26	212	57	
04/11/06-19:00	128		24	248	58	
04/11/06-19:10	94		20	218	61	
04/11/06-19:20	80		19	236	62	
04/11/06-19:30	80		18	181	62	
04/11/06-19:40	129		22	289	59	
04/11/06-19:50	124		25	227	57	
04/11/06-20:00	200		29	243	56	
04/11/06-20:10	249		32	209	53	
04/11/06-20:20	204		26	179	59	
04/11/06-20:30	162		23	188	59	
04/11/06-20:40	155		20	331	60	
04/11/06-20:50	282		32	289	50	
04/11/06-21:00	301		35	275	52	
04/11/06-21:10	287		34	272	50	
04/11/06-21:20	295		35	317	51	
04/11/06-21:30	271		34	207	53	
04/11/06-21:40	264		33	255	51	
04/11/06-21:50	118		26	212	50	
04/11/06-22:00	108		25	266	50	
04/11/06-22:10	221		27	168	53	
04/11/06-22:20	177		22	215	57	
04/11/06-22:30	177		21	208	57	
04/11/06-22:40	251		23	260	60	
04/11/06-22:50	230		21	177	60	
04/11/06-23:00	240		20	200	60	
04/11/06-23:10	160		20	268	58	
04/11/06-23:20	290		20	259	60	
04/11/06-23:30	309		20	197	63	
04/11/06-23:40	399		16	284	66	
04/11/06-23:50	598		18	226	65	
05/11/06-00:00	680		20	221	67	

Nota: Los datos, aqui publicados, no han sido sometidos al proceso de validacion.
Las unidades estan expresadas en microgramos/metrocubico(ug/m3).

Provincia	**CADIZ**
Municipio	**SAN ROQUE**
Estacion	**GUADARRANQUE**
Direccion	**PLAYA DE GUADARRANQUE**

FECHA-HORA	SO2	PART	NO2	CO	O3	SH2
05/11/06-00:10	664		20	293	66	
05/11/06-00:20	287		19	437	59	
05/11/06-00:30	376		24	419	54	
05/11/06-00:40	156		22	390	49	
05/11/06-00:50	107		23	357	47	
05/11/06-01:00	100		22	391	50	
05/11/06-01:10	136		21	387	55	
05/11/06-01:20	105		22	354	52	
05/11/06-01:30	263		26	427	55	
05/11/06-01:40	282		30	447	51	
05/11/06-01:50	159		64	474	25	
05/11/06-02:00	107		55	475	37	
05/11/06-02:10	126		60	452	30	
05/11/06-02:20	107		51	485	38	
05/11/06-02:30	114		57	390	33	
05/11/06-02:40	43		20	427	69	
05/11/06-02:50	43		19	428	67	
05/11/06-03:00	29		21	373	58	
05/11/06-03:10	41		33	348	55	
05/11/06-03:20	36		21	284	67	
05/11/06-03:30	40		34	471	61	
05/11/06-03:40	20		14	399	65	
05/11/06-03:50	30		19	425	60	
05/11/06-04:00	29		24	338	63	
05/11/06-04:10	50		42	362	46	
05/11/06-04:20	103		39	423	48	
05/11/06-04:30	279		32	415	57	
05/11/06-04:40	213		25	571	60	
05/11/06-04:50	194		26	431	51	
05/11/06-05:00	106		23	464	52	
05/11/06-05:10	107		20	440	52	
05/11/06-05:20	126		22	339	50	
05/11/06-05:30	221		25	411	51	
05/11/06-05:40	184		22	426	54	
05/11/06-05:50	179		21	453	56	
05/11/06-06:00	207		22	423	57	
05/11/06-06:10	135		16	403	60	
05/11/06-06:20	113		19	406	56	
05/11/06-06:30	284		19	391	58	
05/11/06-06:40	149		23	422	57	
05/11/06-06:50	105		17	305	58	
05/11/06-07:00	147		20	382	55	
05/11/06-07:10	124		20	359	55	
05/11/06-07:20	79		20	324	51	
05/11/06-07:30	55		18	327	54	
05/11/06-07:40	57		14	349	58	
05/11/06-07:50	42		12	322	60	
05/11/06-08:00	33		8	350	60	
05/11/06-08:10	44		13	325	54	
05/11/06-08:20	64		20	363	50	

05/11/06-08:30	68		20	428	51	
05/11/06-08:40	61		18	399	55	
05/11/06-08:50	37		13	410	57	
05/11/06-09:00	47		18	307	54	
05/11/06-09:10	59		22	340	51	
05/11/06-09:20	68		22	298	51	
05/11/06-09:30	98		25	397	51	
05/11/06-09:40	102		25	415	50	
05/11/06-09:50	84		20	392	56	
05/11/06-10:00	106		24	352	52	
05/11/06-10:10	109		25	425	53	
05/11/06-10:20	89		26	359	50	
05/11/06-10:30	102		29	458	48	
05/11/06-10:40	75		27	405	50	
05/11/06-10:50	66		25	292	50	
05/11/06-11:00	59		24	306	50	
05/11/06-11:10	59		24	347	51	
05/11/06-11:20	56		22	398	52	
05/11/06-11:30	54		21	352	53	
05/11/06-11:40	62		19	388	55	
05/11/06-11:50	64		17	383	59	
05/11/06-12:00	63		18	364	56	
05/11/06-12:10	99		21	134	58	
05/11/06-12:20	117		24	113	54	
05/11/06-12:30	215		26	218	59	
05/11/06-12:40	114		23	108	57	
05/11/06-12:50	80		22	132	54	
05/11/06-13:00	81		23	238	56	
05/11/06-13:10	58		17	96	60	
05/11/06-13:20	48		15	159	63	
05/11/06-13:30	37		13	150	64	
05/11/06-13:40	44		18	139	60	
05/11/06-13:50	42		15	140	66	
05/11/06-14:00	46		15	207	63	
05/11/06-14:10	48		15	129	65	
05/11/06-14:20	44		14	96	66	
05/11/06-14:30	47		16	115	66	
05/11/06-14:40	56		17	122	65	
05/11/06-14:50	55		19	124	61	
05/11/06-15:00	52		16	193	65	
05/11/06-15:10	48		16	121	65	
05/11/06-15:20	61		19	83	61	
05/11/06-15:30	70		22	165	62	
05/11/06-15:40	53		18	175	63	
05/11/06-15:50	69		22	153	62	
05/11/06-16:00	56		18	196	62	
05/11/06-16:10	74		22	107	62	
05/11/06-16:20	74		20	113	63	
05/11/06-16:30	77		18	144	66	
05/11/06-16:40	128		23	145	64	
05/11/06-16:50	123		24	122	61	
05/11/06-17:00	105		23	115	61	
05/11/06-17:10	90		19	108	66	
05/11/06-17:20	84		17	90	66	
05/11/06-17:30	91		23	149	62	
05/11/06-17:40	119		18	173	67	

05/11/06-17:50	173		22	120	65	
05/11/06-18:00	150		20	144	67	
05/11/06-18:10	161		24	133	60	
05/11/06-18:20	167		28	137	58	
05/11/06-18:30	136		28	180	55	
05/11/06-18:40	106		24	70	58	
05/11/06-18:50	105		25	167	55	
05/11/06-19:00	110		22	133	58	
05/11/06-19:10	111		22	138	58	
05/11/06-19:20	101		21	249	57	
05/11/06-19:30	109		25	225	51	
05/11/06-19:40	175		31	119	49	
05/11/06-19:50	118		22	101	58	
05/11/06-20:00	165		19	120	61	
05/11/06-20:10	172		17	142	64	
05/11/06-20:20	229		20	167	64	
05/11/06-20:30	219		19	212	66	
05/11/06-20:40	264		23	223	62	
05/11/06-20:50	141		26	136	59	
05/11/06-21:00	158		24	110	60	
05/11/06-21:10	114		20	131	63	
05/11/06-21:20	180		21	121	64	
05/11/06-21:30	163		19	108	70	
05/11/06-21:40	221		19	108	68	
05/11/06-21:50	246		19	128	70	
05/11/06-22:00	202		14	83	74	
05/11/06-22:10	245		21	174	68	
05/11/06-22:20	209		20	88	69	
05/11/06-22:30	241		21	140	65	
05/11/06-22:40	302		27	104	65	
05/11/06-22:50	287		28	249	64	
05/11/06-23:00	252		20	127	70	
05/11/06-23:10	290		15	255	72	
05/11/06-23:20	223		16	150	71	
05/11/06-23:30	277		24	188	62	
05/11/06-23:40	217		23	91	62	
05/11/06-23:50	231		25	145	62	
06/11/06-00:00	228		28	107	61	

Nota: Los datos, aqui publicados, no han sido sometidos al proceso de validacion.
Las unidades estan expresadas en microgramos/metrocubico(ug/m3).

Provincia: CADIZ Estacion: GUADARRANQUE
Municipio: SAN ROQUE Direccion: PLAYA DE GUADARRANQUE

FECHA-HORA	SO2	PART	NO2	CO	O3
13/07/04-00:30	106		51		
13/07/04-01:00	187		51		
13/07/04-01:30	409		59		
13/07/04-02:00	477		70		
13/07/04-02:30	754		51		
13/07/04-03:00	461		65		
13/07/04-03:30	930		56		
13/07/04-04:00	302		61		
13/07/04-04:30	199		81		
13/07/04-05:00	207		40		
13/07/04-05:30	551		59		
13/07/04-06:00	825		63		0
13/07/04-06:30	654		49		0
13/07/04-07:00	767		53		0
13/07/04-07:30	908		46		0
13/07/04-08:00	774		40		0
13/07/04-08:30	899		51		0
13/07/04-09:00	654		40		0
13/07/04-09:30			65		0
13/07/04-10:00			29		0
13/07/04-10:30			17		0
13/07/04-11:00			13		0
13/07/04-11:30	221		59		0
13/07/04-12:00	84		40		0
13/07/04-12:30	149		47		0
13/07/04-13:00	117		31		0
13/07/04-13:30	95		27		0
13/07/04-14:00	71		21		0
13/07/04-14:30	89		57		0
13/07/04-15:00	63		51		0
13/07/04-15:30	39		19		0
13/07/04-16:00	17		11		0
13/07/04-16:30	11		18		0
13/07/04-17:00	10		13		0
13/07/04-17:30	7		9		0
13/07/04-18:00	7		18		0
13/07/04-18:30	8		10		0
13/07/04-19:00	7		12		0
13/07/04-19:30	4		7		0
13/07/04-20:00	5		12		0
13/07/04-20:30	5		11		0
13/07/04-21:00	11		11		0
13/07/04-21:30	5		22		0
13/07/04-22:00	9		31		0
13/07/04-22:30	11		23		0
13/07/04-23:00	18		38		0
13/07/04-23:30	257		39		0
14/07/04-00:00	298		54		0

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