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MANAGEMENT OF AIR QUALITY AROUND THE INDUSTRIAL SITE OF ETANG DE BERRE IN FRANCE

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SUMMARY

This work is part of the European RISKGOV project. The objective of this project is to analyse and identify quality criteria for the governance of industrial activities giving rise to risks to people and the environment from radioactive and chemical discharges during normal operations. For this purpose, RISKGOV aims at:

- Analysing and comparing the elements contributing to the quality of governance systems associated with environmental discharges from nuclear and chemical installations;
- Providing a series of criteria to assess the quality of the governance of risk activities.

In order to achieve the objectives of the RISKGOV project, case studies were identified in France, Sweden and the United-Kingdom in the nuclear and chemical industries. The presence of innovative risk governance processes was obviously the key guiding factor in the selection of case studies, but the willingness of the key actors involved in each case to provide assistance to the project (mainly in the form of interviews and access to relevant documentation) was a material consideration. In total, eight case studies were performed, among which the analysis of the management of air quality around the industrial site of Etang de Berre in France and more precisely the management of sulphur dioxide (SO_2) releases. In fact, for historical reasons, the area of the Etang de Berre has a very high density of industries among which oil refineries, chemical industries or electricity generation plants that lead to the emission of many air pollutants. This report aims at presenting the results of this study.

The first part of this work was devoted to the collection of information on the existing dialogue structure around the Etang de Berre, including historical data, identity and role of the key actors, procedures set up to reduce SO_2 releases… Several interviews were then conducted with experts, members of Non Governmental Organizations (NGOs), local elected people, public authority representatives and operator representatives.

On the basis of the collected material, an analysis of the risk governance process was carried out. The following dimensions were particularly addressed though this analysis:

- The guiding principles of the decision-making process;
- The role of expertise;
- The involvement process of the stakeholders;
- The factors integrated into the decision-framing and decision-taking processes;
- The implementation of decisions and review.

A particular aspect of this case study appears to be the co-existence of two kinds of structures, which illustrates, among others, the multi-level risk governance feature:

- On one hand, a “regional” structure, the Permanent Board for the Problems of Industrial Pollution (SPPPI) aiming principally at the implementation and the respect of French and European regulations;
- On the other hand, Local Liaison Committees (LLC), lead by industrial and / or local environmental NGO, like the Shell Local Commission of Information and Exchanges (CLIE), aiming at developing a dialogue at the very local level.

The Permanent Board for the Problems of Industrial Pollution (SPPPI) is not a mandatory structure. It was created 30 years ago to temper a crisis created by the local authorities and due to their concern about the potential pollution which would result from the development (supported by the State) of the industrial area located around the Etang de Berre. Though the SPPPI, its various commissions and working groups, the public authorities pursue the implementation of the regulations and keep the pressure on the operators as regards to their environmental performances, while keeping a certain degree of dialogue with them and with the other actors (local authorities or environmental NGOs). The functioning of the SO_2 working group of the SPPPI was analysed: the prominent role in the decision framing and the decision taking processes of the public authority (the Regional Directorate for Industry, Research and Environment, DRIRE), the operators and AIRFOBEP (which is responsible for the air

quality follow-up), was confirmed, as was the limited role of the NGOs and local authorities. The durability of this structure is probably due to the constant emergence of new issues (linked for example to the EC regulation evolutions) leading to the creation of new working groups, which integrate new members and faces new challenges.

Within our analysis, it appeared that such a dialogue could not really answer the increasing need of the civil society to be, at least, well-informed and eventually to play a growing role in the decision framing and taking processes. This is certainly one reason among others behind the creation of Local Liaison Committees (LLC), which are structures rather close to the population.

The purpose of LLC is to favour dialogue between one operator and the population (or relays, such as community leaders or local NGOs) living in the neighbourhood of its plant, who is *a priori* the most exposed to the plant's pollutant emissions. The CLIE of Shell, for example, has emerged from the willingness of the operator to answer the demand of a local environmental NGO (Association Rognacaise pour la Défense de l'Etang de Berre, ARDEB) for more information on the operation of the petrochemical site: the CLIE is a non-formal forum of dialogue between the operator and the local population. The DRIRE, even if it participated in a few meetings, does not play a prominent role in the discussions. Over the last two years, other commissions of this type have been created around the Etang de Berre. Somehow, operators used those structures to determine which efficient measure(s) can be adopted in order to comply, as far as possible, with the priorities requests of the local population (information delivery, modification of a process...).

The SPPPI and the CLIE both deal with air quality management and various actors attend the meetings organized by those structures. Nevertheless, issues raised during the debates are rather different and those structures appear, by some means, to be complementary.

As far as expertise is concerned, the key source of knowledge is AIRFOBEP (Association des Industriels de la Région de Fos-étang de Berre pour l'Etude et la

prévention de la Pollution). AIRFOBEP was created and funded by the operators located around the Eétang de Berre in order to measure air quality and to prevent high pollutants' concentration levels by managing an alarm system. Its structure has deeply evolved and today, the fact the administrative board of this structure and its general assembly are composed of representatives of state services, operators, local authorities and NGOs contributes to the credibility of its measurements and recommendations. This credibility has been clearly reinforced since the AIRFOBEP chairmanship was given to a mayor instead of an operator (1996).

The risk governance process highlighted within this case study is characterised by several relevant elements, which were also outlined within the other case studies performed in the RISKGOV project. Those elements are:

- Multilevel governance: a key feature of the studied governance process is its ability to respond to the fact that complex situations raise questions for multiple levels (local and regional) of government;
- Inclusiveness of participation and issues: an undeniable characteristic of this process is the extent to which actors who would not traditionally be involved in such issues are engaged, but also the associated broaden scope of a problem once those stakeholders become involved;
- Role (and the nature) of expertise: AIRFOBEP, by being pluralistic and chaired by local actors, is perceived to produced reliable information that is widely accepted at the local level.

RESUME

Cette étude a été réalisée dans le cadre du projet Européen RISKGOV. L'objectif de ce projet est d'analyser et d'identifier les critères de qualité pour la gouvernance des activités industrielles donnant lieu à un risque pour le public et l'environnement du fait de rejets d'effluents radioactifs et/ou chimiques lors du fonctionnement normal des installations. Le projet RISKGOV consiste ainsi en :

- Une analyse comparative des éléments contribuant à la qualité de certains processus de gouvernance autour d'installations donnant lieu à des rejets d'effluents chimiques et/ou radioactifs ;
- L'élaboration d'un ensemble de critères de qualité de la gouvernance des activités à risque.

Dans cette optique, un ensemble d'études de cas ont été identifiées en France, en Suède et au Royaume-Uni, tant parmi les industries nucléaires que chimiques. Le caractère innovant des processus de gouvernance, mais aussi l'intérêt porté au projet par les acteurs de ces processus (principalement sous la forme d'interviews ou par la fourniture de documents) ont été des éléments clés dans la sélection des études de cas. Huit études de cas ont ainsi été conduites, parmi lesquelles l'analyse du processus de gestion de la qualité de l'air - plus particulièrement des rejets de dioxyde de soufre dans l'atmosphère - sur les pourtours de l'Etang de Berre. L'Etang de Berre, situé dans le sud de la France près de Marseille, présente en effet pour des raisons historiques une importante densité d'industries (raffineries de pétrole, industries chimiques, centrales thermiques) qui conduit à l'émission de nombreux polluants atmosphériques. L'objet de ce rapport est de présenter les résultats de cette étude.

La première partie du travail a été consacrée à la collecte des informations disponibles sur les structures de dialogue existantes, tant sur leurs historiques que sur l'identité et le rôle des principaux acteurs ou la mise en place des procédures de réduction des rejets de SO_2. Plusieurs entretiens ont été menés avec des experts (AIRFOBEP), des membres

d'Organisation Non Gouvernementales - ONG - (MNLE 13, ARDEB), un élu (le maire de Berre), des représentants de l'autorité publique (DRIRE) et un représentant du secteur industriel (BP). A partir de ces entretiens, une analyse du processus de gouvernance a été effectuée. Cette analyse a porté, plus particulièrement, sur les points suivants :

- les caractéristiques du processus décisionnel (la construction puis la prise de décision, son application et enfin son suivi) ;
- le rôle de l'expertise ;
- le processus d'implication de nouveaux porteurs d'enjeux.

Un aspect intéressant de la gouvernance des risques liés à la qualité de l'air autour de l'Etang de Berre est la coexistence de deux types de structures ayant pour vocation de favoriser le dialogue entre les différents acteurs concernés par ces risques. La présence de ces deux types de structures renvoie à un mode de gouvernance des risques à plusieurs niveaux :

- d'une part, le Secrétariat Permanent pour la Prévention des Pollutions Industrielles (SPPPI) veille principalement à l'exécution et au respect des règlements français et européens en matière de gestion des pollutions liées aux rejets industriels ;
- d'autre part, des comités locaux, animés par des associations et/ou des industriels, telle que la Commission Locale d'Information et d'Echanges (CLIE) créée à l'initiative d'un membre associatif et d'un représentant de l'industrie (Shell), qui ont pour but de développer le dialogue au niveau local.

Le Secrétariat Permanent pour la Prévention des Pollutions Industrielles n'a pas de statut légal. Le SPPPI a été créé il y a une trentaine d'années afin de gérer une crise résultant du mécontentement des autorités locales de l'époque face au développement industriel important du pourtour de l'Etang de Berre et des fortes pollutions qui pouvaient en résulter. A travers le SPPPI, les autorités publiques veillent à ce que l'application des règlements soit respectée en maintenant une certaine pression sur les

industriels et en préservant une place pour le dialogue avec les autres catégories d'acteurs (autorités locales et associations notamment).

La participation à plusieurs réunions du groupe de travail dédié à la gestion des rejets de SO_2 a confirmé le rôle prépondérant, au sein du SPPPI, de la DRIRE, des industriels et d'AIRFOBEP, qui est en charge du réseau de mesures des rejets industriels autour de l'Etang de Berre et siège au SPPPI en qualité d'expert, ainsi que le rôle limité des associations de protection de l'environnement. La longévité de cette structure peut s'expliquer par l'émergence continuelle de nouvelles problématiques, souvent associées à la publication de nouvelles directives européennes. Si besoin est, de nouveaux groupes de travail, qui peuvent intégrer de nouveaux acteurs, sont créés pour gérer ces problématiques.

Il s'est avéré toutefois dans le cadre de cette étude que ce type de structure n'était pas suffisante pour répondre au souhait croissant de la société civile de prendre part au débat en matière de protection de l'environnement et des conditions de vie. Ceci explique, entre autres, l'émergence de Commissions Locales d'Information. L'objectif de telles structures est en effet de favoriser le dialogue autour d'une installation entre l'industriel concerné et la population environnante.

La mise en place, en 2001, de la Commission Locale d'Information et d'Echanges de Shell est ainsi issue de la volonté d'un industriel de répondre à une demande d'information d'une association de protection l'environnement (ARDEB). C'est un forum de dialogue informel entre l'industriel et certains représentants - ou relais - de la population locale. La DRIRE, même si elle participe à quelques réunions, ne prend pas part au débat. La CLIE permet à l'industriel de déterminer quelles actions efficaces peuvent être entreprises prioritairement en fonction du ressenti de la population locale en matière de gêne (problèmes d'odeurs, manque d'informations…). D'autres commissions de ce type ont été créées depuis 2001.

SPPPI et CLIE traitent tous deux, entre autres, de la qualité de l'air, mais leurs priorités, leurs mandats, diffèrent. De ce fait, SPPPI et CLIE apparaissent comme des structures complémentaires.

En matière d'expertise, AIRFOBEP est l'acteur clé. La transparence de ses mesures est renforcée par le caractère pluraliste de son conseil d'administration (représentants des services de l'Etat, d'industriels, d'autorités locales et d'associations). La crédibilité de AIRFOBEP a par ailleurs été renforcée depuis que la présidence de son conseil d'administration est assurée par un élu local (et non plus un industriel comme ce fut le cas auparavant).

Le processus de gouvernance mis en lumière au travers de cette étude est caractérisé par certains éléments qui sont communs à d'autres études de cas du projet RISKGOV :

- la gouvernance « à plusieurs niveaux » : c'est une caractéristique essentielle du processus complexe de gestion de la qualité de l'air sur les pourtours de l'Etang de Berre,
- la capacité du processus à s'ouvrir à de nouveaux porteurs d'enjeux et à de nouvelles problématiques,
- le rôle de l'expertise : AIRFOBEP, structure présidée par un élu local et perçue comme pluraliste, produit des informations jugées unanimement fiables par les différents porteurs d'enjeux.

1. INTRODUCTION

This work is part of the European RISKGOV project[1]. The objective of this project is to analyse and identify quality criteria for the governance of industrial activities giving rise to risks to people and the environment from radioactive and chemical discharges during normal operations. For this purpose, RISKGOV aims at:

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The Etang de Berre is located in the south of France, close to Marseille. This area presents a very high density of industries, like oil refineries, chemist industries or thermic power plants. Such a concentration of industries leads to the emission of many air pollutants (O_3, NO_X, SO_2…). The objective of this study is to analyse the dialogue

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1 SCHNEIDER T., SCHIEBER C., VAILLANT L., HERIARD DUBREUIL G., GADBOIS S., OUDIZ S., BOURGOIGNON F., MILOCHEVITCH A., PATERSON J., BROWNLESS G., BANDLE T., HANSSON S.-O., HAYENHJELM M., **RISKGOV European Project: Comparative Analysis of Risk Governance for Radiological and Chemical Discharges of Industrial Installations - Final report**, CEPN-R-289, November 2004.

structures set up at the local and regional level to manage air pollution, and more precisely the SO_2 releases.

The releases of SO_2 are mainly due to the burning of sulphured fossil fuels (coal, lignite, oil coke…) and to industrial processes like the production of sulphuric acid, the oil refining… The main contributors are usually coal-fired or oil-fired power plants, oil refineries and the large burning plants. Table 1 outlines the evolution of the SO_2 releases for the main industries located in the area of Fos-Etang de Berre.

The SO_2 is an irritant gas. It affects the pulmonary defence and increases the respiratory and cardiovascular existing diseases. The epidemiological studies presented by the World Health Organization (WHO) in its publication on Air Quality Guidelines for Europe[2] outlines the synergies between SO_2 and particulate matter. High concentrations (measured in $\mu g/m^3$) over 24 hours can lead to:

- An increase of the mortality (total mortality, cardiovascular and respiratory mortality);
- An increase of the number of hospital emergency admissions for total respiratory causes;
- Chronic obstructive pulmonary disease.

The presence of SO_2 can also affect the environment. In case of humidity, SO_2 forms sulphuric acid, which contributes to the acid rains' phenomenon resulting in harmful impacts on the vegetation and soils characteristics' change. It also damages stones and buildings' materials.

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2 World Health Organization - Regional Office for Europe, **Air Quality Guidelines for Europe**, Second Edition, WHO Regional Publications, European Series, No.91, 2000.

Table 1. Evolution of SO_2 releases between 1994 and 2001[3]

Industry	Sector of activity	1994 (tonnes)	2001 (tonnes)	Evolution 2001/1994
BP Lavera	Refinery - Petrochemistry	19 737	12 272	- 38%
TOTAL La Mède	Refinery	10 817	11 837	+ 9%
SOLLAC	Steel industry	12 710	11 172	-12%
SHELL Chimie	Petrochemistry	15 845	8 898	- 44%
SHELL oil refinery	Refinery	19 040	6 910	- 64%
NAPHTACHIMIE *	Petrochemistry	3 714	5 485	+ 48%
ESSO	Refinery	6 132	5 197	- 15%
CABOT France	Chemistry	2 551	2 108	- 17%
EDF Ponteau **	Oil-fired power plant	310	1 953	+ 530%
TOTAL		90 856	68 832	- 28%
Mean tonne/month		7 571	5 486	
Mean tonne/day		252	183	

* *NAPHTACHIMIE: Increase of a capacity of production*

** *EDF Ponteau: 1994 is not representative as the power plant had operated for only a limited number of hours*

3 Etat de l'environnement industriel, DRIRE PACA, 2002

2. BACKGROUND AND CONTEXT

2.1. Historical context

This chapter aims at introducing the events that led to the creation of the SPPPI[4]. It allows a better understanding of the way the various dialogue structures that play today a role into air pollution concerted management around the Etang de Berre had been initiated.

2.1.1. Creation of the French Ministry for the Environment

The French Ministry for the Environment was created in 1971, on the 7th of January. Mr J. Poujade was nominated at the head of this new Ministry. Among its scope of activities, management of industrial sites or other institutions listed for their potential impacts on the environment was a major concern.

One of its very first actions was to try to avoid a strong social conflict due to the creation of a new harbour industrial area at Fos-sur-Mer. The development of a competitive French iron and steel industry was strongly supported by the French President, Georges Pompidou, who was convinced by the irremediable decline of the Lorraine industry and the need for building new complex for iron and steel industry near the places where the ore was discharged. From this point of view, Dunkirk and Fos-sur-Mer areas were selected.

2.1.2. Local protesting against the industrial area at Fos-sur-Mer

Mr J. Poujade asked to the state representative of the Country, the Prefect, to write down a report on the current situation and its prospects. At the same time, two commissions, the OREAM (Organisation for Studies on the Development of Marseille)

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4 Secrétariat Permanent pour les Problèmes de Pollution Industrielle, **30 ans de concertation : le SPPPI ; 10 ans de communication : le Cyprès - Rétrospectives autour de la sécurité et de l'environnement industriels en Provence-Alpes-Côte d'Azur,** Novembre 2001.

and the MAEB (Mission for Development of the Etang de Berre area) achieved first proposals for the priority actions and studies to be carried out for the management of the area located around Fos-sur-Mer. These commissions where composed of administration representatives.

The Prefect created four commissions on air, water, urbanism and nature reserves in February 1971 to answer the Minister request. Those four commissions were composed by OREAM and MAEB members, Marseille harbour representatives and representatives of the various public institutions concerned by the project. But there was no local elected representative. Reports were achieved in August 1971 and the Prefect addressed them to the Minister in September 1971. While the four commissions were working, population concern for pollution problems was growing up. A local NGO for pollution study and health care (AFNPS) was created in February 1971 to record the evolution of the living conditions in the city of Fos-sur-Mer.

In the spring 1971, the MAEB commission presented a first project for urban development of the area located on the west coast of the Etang de Berre. In this report, the project of urban development of the Fos-sur-Mer municipality was particularly low compared to other larger municipalities like Martigues or Arles. The mayor of Fos-sur-mer, Mr J-J. Féraud, who was not consulted by the MAEB, protested against the project. The director of the MAEB wrote him a letter explaining that the pollution associated with the future industrial complex was not compatible with a harmonious development of his city. Mr J.-J. Féraud forwarded the letter to the media, to Mr J. Poujade and to the Prime Minister and he decided to dismiss from his political party to protest against the policy of the Government. The local problem quickly turned into a national affair as somehow it could be considered as a protest against a project strongly supported by the President.

2.1.3. Creation of the Permanent Board for the Problems of Industrial Pollution (SPPPI)

2.1.3.1. The Schnell report

Considering the situation, the Minister of Industry and Mr J. Poujade decided together to send a small group of experts to study the problem and to propose solutions at the end of October 1971. The group led by Mr Schnell gave his report 15 days later. Actually, it was quite important to avoid any decisions linked to the growing fear of pollution that could block further industrial developments in the area of Fos-sur-Mer.

A major proposal of the report was the creation of the SPPPI in order to:

- Conduct the investigations for the delivering of planning permissions, authorisation for water taking, authorisation of opening for industrial sites listed for their potential impacts on the environment;
- Define a coherent environmental policy;
- Look for the possible ways to reduce the pollution;
- Animate a public information centre on pollution and the measures that are taken to reduce it.

Further proposals were made:

- Fixing of an objective for SO_2 release before the 1st of January 1973;
- Experiment of a process aiming at decreasing sulphur release from thermic power plant;
- Creation of a network for the atmospheric pollution measuring;
- Study of the current and foreseen quality of the water of the Etang de Berre and the gulf of Fos.

2.1.3.2. The SPPPI

Proposal made for the creation of the SPPPI was debated within several Ministers who finally adopted it (as well as the other proposals of the Schnell report). The Prefect

officially created the SPPPI on the 14th of February 1972. The SPPPI was then composed of four commissions in charge of air quality, underground water quality, the Etang de Berre water quality and the Gulf of Fos water quality and a central office with public institutions representatives. The OREAM commission was in charge of the creation of a public information centre.

The SPPPI was an innovative structure with no legal status. But in fact, even if its creation was due to the local political protesting, as soon as public institutions representatives took on all the responsibilities, the creation of the SPPPI led to the reinforcement of the "central administration power" in the field of pollution prevention.

Once more, Mr J.-J. Féraut sent a letter to Mr J. Poujade to protest against the creation of such a structure with no representatives of the local population. As a consequence, local elected representatives from surrounding municipalities (Marignane, Martigues, Vitrolles, Saint-Chamas...) were involved in the four commissions.

2.1.3.3. First achievements of the SPPPI for air pollution prevention

SO_2 emissions have been recognized as a major issue since the creation of the SPPPI. The following paragraph illustrates the actions carried out by the SPPPI in order to limit the release of SO_2 in the atmosphere.

Several plants started operations within 1971 - 1972. As a consequence, SO_2 releases into the air increased: 250 tons per day in 1970, 300 tons per day in 1971 and 470 tons per day in 1972. SO_2 impacts on health and environment (acid rains) were known but there was clearly no quantitative information allowing to fix an objective in terms of emissions or concentration in the air. The Ministry for the Environment together with the industry representatives and the local elected representatives adopted a limit of 800 tons per day of SO_2 releases into the atmosphere. Furthermore, it was decided to decrease SO_2 releases by 50% by the end 1975 and 90% by the end of 1978 (considering as a reference the year 1972). In 1983, emissions did not exceed 400 tons per day.

Another goal of the policy initiated at the beginning of the 70ies was to limit the occurrence of high pollution events: in case of high acid concentration in the atmosphere, it could be asked to concerned operators to reduce their SO_2 emissions by the use of low sulphur concentration fuel or the reduction of their operations. These procedures could clearly not function without an efficient measure of SO_2 concentration. Thus, at the same time, a network for atmospheric pollution measurement was progressively put on (40 measurement devices by the end of 1972). AIRFOBEP, Association in charge of the surveillance of air quality, was officially created in June 1972. A major part of the cost of the network was funded by the operators. Since 1971, there has been a continuous effort to develop and to improve the quality of the network.

Considering the health impacts, several studies have been carried out in order to get data on the impact of atmospheric pollution on human health since 1974[5]. The PAARC study[6] (1974 - 1976) showed the link between SO_2 concentration in the atmosphere and respiratory infections. Other studies were carried out in Gardannes (1983 - 1984) - where a thermic power plant is located - and around the Etang de Berre (1993 - 1994). Both led to the same conclusions than the first study quoted above, the last one was very discussed and criticised. Recently, a national study[7] carried out by the French "Institut National de Veille Sanitaire" (National Institute for Health Monitoring) between 1997 and 2002 led to the following results:

- There is a linear relationship between atmospheric concentration of several pollutants (SO_2, NO_2, O_3) and the rate of mortality (from cardio-vascular and respiratory diseases);
- This relationship is not site-dependent;

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5 AIRFOBEP, "Problématique régionale de la qualité de l'air - étude bibliographique", décembre 1998. AIRFOBEP Web site : http://www.airfobep.org/

6 Pollution Atmosphérique et Affections Respiratoires Chroniques ou à Répétition (PAARC), Groupe coopératif PAARC, Bull. Europ. Physiopath. Resp., 1982, 18, 87-99 et 101-116.

7 Institut National de Veille Sanitaire, "Programme de surveillance Air et Santé 9 villes", juin 2002.

- An excess of mortality can be evaluated.

A new SPPPI working group (Air and health) devoted to this topic was created in 2002.

Finally, it should be quoted that in 1989, as a result of the European SEVESO directive, an information centre called CYPRES was created in Martigues, mainly to improve the access of the local population to information on industrial risk activities and environmental protection in the region.

2.2. Political and legal context

2.2.1. European Directive on ambient air quality assessment and management

Within the framework of the fifth action plan for the environment, the European Community aims at carrying on the actions linked to the management of environmental problems and setting up new relationships between the stakeholders involved in those actions. In this perspective, the Council adopted in September 1996 a Directive[8] concerning the assessment and the management of ambient air quality. It provided the foundations of a common strategy aiming at defining and laying down objectives related to ambient air quality. As specified in the Article 1:

"*The general aim of this Directive is to define the basic principles of a common strategy to:*

- *Define and establish objectives for ambient air quality in the Community designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole;*
- *Assess the ambient air quality in Member States on the basis of common methods and criteria;*

8 Council Directive 96/62/CE of 27 September 1996 on ambient air quality assessment and management, Official Journal of the European Communities L 296, 21/11/1996, P. 0055 - 0063.

- *Obtain adequate information on ambient air quality of the air and ensure that it is made available to the public, inter alia by means of alert thresholds'; Maintain ambient air quality where it is good and improve it in other case*s."

A list of atmospheric pollutants (including SO_2) is provided in the Directive, and the Commission will have to submit limit values and alert thresholds ("*level beyond which there is a risk to human health from brief exposure and at which immediate steps shall be taken by the Member States*") for those pollutants. The Directive also requires the Member States to draw local, regional or national programmes for improvement in the air quality.

The limit values for SO_2 were published in 1999[9] (see Table 2).

Table 2. Limit values for SO_2 set by the European Directive 1999/30/EC

	Period	**Limit value**	**Margin of tolerance**	**Date by which limit value is to be met**
Hourly limit value for the protection of human health	1 hour	350 µg/m^3 not to be exceeded more than 24 times a calendar year	150 µg/m^3 (43 %) on the entry into force of this Directive, reducing on 1 January 2001 and every 12 months thereafter by equal annual percentages to reach 0% by 1 January 2005.	1st January 2005
Daily limit value for the protection of human health	24 hours	125 µg/m^3, not to be exceeded more than 3 times a calendar year	None	1st January 2005
Limit value for the protection of ecosystems	Calendar year and winter (1 October to 31 March)	20 µg/m^3	None	19th July 2001

The alert threshold for SO_2 corresponds to a concentration higher or equal to 500 µg/m^3 during at least three consecutive hours.

9 Council directive 1999/30/EC of 22 April 1999 relating to limit values for SO_2, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air, Official Journal of the European Communities L 163, 29/06/1999, P. 0041 - 0060

2.2.2. French law on air and rational use of energy

The implementation of the European Directive 96/62/CE on ambient air quality into the French law was made through the framework Law on Air and Rational Use of Energy[10]. Within this law, the right to breathe an air which does not harm its health is recognized for everyone, and the following items are made mandatory:

- The monitoring, assumed by the State, of air quality;
- The establishment of air quality objectives, alert thresholds and limit values in agreement with the European Directives or with the World Health Organization recommendations for the substances which are not regulated by the EC;
- The public information.

The monitoring of air quality is delegated to non governmental organisations which received an agreement by the Ministry of Environment[11]. The limit values for air pollutant are set by specific decrees. As far as SO_2 is concerned, those values have been published in 2002[12]. They correspond to EC values (see Table 2). They will become effective as from the 1st of January 2005. Moreover, the decree set:

- An air quality objective: average concentration of 50 $\mu g/m^3$ over the calendar year (corresponding to the WHO recommendation);
- An information/recommendation threshold: average concentration of 300 $\mu g/m^3$ over one hour;

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10 Loi n°96-1236 du 30 décembre 1996 sur l'air et l'utilisation rationnelle de l'énergie, Journal officiel n°1 du 1er janvier 1997, p. 11.

11 Décret n°98-361 du 6 mai 1998 relatif à l'agrément des organismes de surveillance de la qualité de l'air, Journal Officiel du 13 mai 1998.

12 Décret n°2002-213 du 15 février 2002 portant transposition des directives 1999/30/CE du Conseil du 22 avril 1999 et 2000/69/CE du Parlement européen et du Conseil du 16 novembre 2000 et modifiant le décret n°98-360 du 6 mai 1998 relatif à la surveillance de la qualité de l'air et de ses effets sur la santé et l'environnement, aux objectifs de qualité de l'air, aux seuils d'alerte et aux valeurs limites. Journal Officiel n°42 du 19 février 2002.

- An alert threshold: average concentration of 500 µg/m^3 over three consecutive hours, which corresponds to the European Directive.

The Law on Air and Rational Use of Energy details other measures to guarantee the quality of the air. In particular, it is outlined that a Regional Plan for Air Quality (*Plan Régional de la Qualité de l'Air*, PRQA) must be established by the Prefect in each administrative region in France. This plan, which has to be revised every 5 years, must lay down the main orientations:

- To reach the air quality objectives;
- To prevent or reduce atmospheric pollution;
- Or to reduce the impact of this pollution.

An Atmosphere Protection Plan (*Plan de Protection de l'Atmosphère*, PPA*)* has also to be established for each city of more than 250,000 inhabitants, as well as for specific areas where the air quality objectives or limit values may be exceeded. This plan has to be in accordance with the Regional Plan for Air Quality.

2.2.3. The Regional Plan for Air Quality in the Provence-Alpes-Côte-d'Azur administrative region

The Regional Plan for Air Quality of the Provence-Alpes-Côte-d'Azur (PACA) administrative region [13] was elaborated by a Regional Commission for the Elaboration of PRQA (*Commission Régionale d'Elaboration du PRQA*, COREP). The COREP was opened to a large audience and a first version of the draft PRQA was made available for public consultation before its approval by the Prefect.

The PRQA defined 38 orientations to improve the current situation. They concern:

- The development of air quality monitoring;

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13 Regional Plan for the Quality of the Air (PRQA), DRIRE PACA. http://www.paca.drire.gouv.fr/publications/environnement/rapports/prqa/Index.htm

- The information of the population and the implementation of health monitoring in relation with air pollution;
- The evaluation of the air pollution impact on the environment and the buildings;
- The reduction of photochemical and ozone pollution;
- The reduction of industrial pollution;
- The reduction of the pollution associated with road traffic;
- The setting-up of groups representing the main stakeholders concerned by air pollution.

These orientations determine quantitative objectives for the reduction of pollutant releases. The implementation of these orientations will be followed by the COREP. It is now considered as an evaluation commission and its role is to monitor the evolution of the situation, without waiting the 5 years revising period, as recommended by the law on air quality and rational use of energy.

Atmosphere Protection Plans for the city of Marseille and the area of the Etang de Berre are currently under development.

3. STAKEHOLDERS AND CONSULTATION FORUMS

3.1. The stakeholders

3.1.1. State representatives

The DRIRE (Regional Department of Industry, Research and Environment) is in charge of implementing and following the implementation of all or part of the policy decided by the Ministries of Industry, Environment, Transport, Labour, Research and Technology. It is notably in charge of preparing the chemical discharges authorizations for the local industries.

We have interviewed Mr Ulasien, in charge of air pollution in the Division of industrial environment, risks and underground and secretary of the working group on SO_2 of the SPPPI.

Several other State representatives are also deeply involved in the management of air quality among whom representatives of the Departments in charge of health and social affairs (DRASS), equipment (DRE) or environment (DIREN and ADEME).

3.1.2. Industry representatives

The Etang de Berre is characterized by a high concentration of industries. The main industries contributing to discharges of SO_2 are refineries, chemical and petrochemical industries and the oil-fired and coal-fired power plants.

We have met the environmental quality manager of British Petroleum Lavera's site, Mrs Durand Pinchard.

The representation of the industries within the dialogue structures is also made through national organisations such as the French Union of Oil Industries (*Union Française de*

l'Industrie du Pétrole, UFIP) or the General Syndicate of Chemical Industries (*Syndicat Général des Industries Chimiques*, SGIC).

3.1.3. Local authorities

This term is used to designate local or regional elected people such as Mayors, Associations of Mayors, Regional or County Councils.

We have interviewed M. Andreoni, Mayor of Berre, and President of AIRFOBEP.

3.1.4. Non Governmental Organisations

Several non governmental organisations (NGOs) usually in the field of environmental protection participate to the dialogue structures.

The National Movement for the Environment (*Mouvement National de Lutte pour l'Environnement*, MNLE) was created in 1981. Its members are scientists, politicians, Union representatives... County delegations have been created. In the county of Bouches-du-Rhône, where is located the Etang de Berre, the MNLE 13 is composed of 150 to 200 members. Resources are provided by its members, the County Council and the Regional Council. In the 1970ies, and even before, a major issue for most of the environmental NGOs was the protection and the clearing of the Etang de Berre. Most of NGOs were grouped together into a larger NGO, which still exists (Coordination for Rehabilitation and Development of the Etang de Berre, *Collectif Etang Marin*). The MNLE 13 was interested by the water quality of the Etang de Berre, but it was also concerned by other topics such as the atmospheric pollution. Furthermore, the MNLE 13 was not claiming for the closing of polluting industries, but it was looking for solution allowing the development of industrial activities together with the protection of environment. It thus left the Coordination for Rehabilitation and Development of the Etang de Berre at the beginning of the 1990ies.

The Rognac Association for the Protection of the Etang de Berre (*Association Rognacaise pour la Défense de l'Etang de Berre*, ARDEB) was created in 1993 in the town of Rognac. It is a local network of stakeholders concerned by air pollution management, among whom chemists, physicians... Together with Shell, ARDEB created in 2001 the Local Commission for Information and Exchange (CLIE) of the Shell facility.

Within our study, we have met Mr Nevière (MNLE, president of the Vitrolles' committee) and Mrs Molgosa (ARDEB), local elected representative of the city of Rognac, Honorary President of ARDEB and also a founder member and the secretary of the CLIE.

3.1.5. Control and measurement institutes

AIRFOBEP was created in 1972 at the initiative of several operators in order to develop in the area of Fos - Etang de Berre a network of pollution measurements devices and to recommend, promote and achieve actions that could reduce pollution or at least prevent from its increase. In 1986, the State services and the Local Authorities joined the association, as well as NGOs for the protection of the environment in 1991 and 1996.

AIRFOBEP is now formally recognized by the Ministry of Environment as an air quality control association for the county of Bouches-du-Rhône. As a matter of fact, this type of structures need a formal agreement delivered by the Ministry to pursue their activities, as expressed in the law on air quality and rational use of energy.

The members of AIRFOBEP are representatives from 4 colleges:

- State authorities, 8 members;
- Local authorities, 10 members (Mr Andreoni, the mayor of Berre, has chaired AIRFOBEP since 1996);
- Operators, 10 members;
- NGOs, 7 members.

AIRFOBEP is funded by the local authorities (18%), State services (24%) and the operators (57%). Its main missions are:

- To develop a network of atmospheric pollution measurement devices (34 permanent devices are now under operation, plus a mobile laboratory);
- To analyse the measurements, notably in order to check the compliance with national and European standards;
- To provide its members, the media and the public with transparent information on air quality;
- To carry out actions and studies in order to improve air quality;
- To develop and improve the forecast of pollution and implement, in coordination with the State services, preventive actions when necessary. These actions concern notably information or alert procedures for the population in case of pollution events and the implementation of SO_2 releases reduction actions (the STERNES procedures).

3.1.6. Information structures

The CYPRES (Public Information Centre for the Prevention of Industrial Risks and the Protection of the Environment) was created in 1991 at the initiative of the SPPPI. It aims at providing a free access to information on the technological risks and the industrial environment in the PACA region. The administrative board of the CYPRES is composed of 20 members representing local authorities (6), State services (6) and operators (8). More than 100 members have now joined the CYPRES.

3.2. The SPPPI and the working group on SO_2

As mentioned in the previous chapter, the SPPPI of the PACA region was created in 1972. It is chaired by the Prefect of the region. As stated by the SPPPI[14]: *"the main*

[14] Bilan SPPPI Provence - Alpes - Côte d'Azur, Juin 2003

mission is to group around the table some actors having a priori opposite interests: operators' representatives, local authorities and environmental protection NGOs". The SPPPI addresses many topics of interest, among which water, air, wastes, polluted sites and soils as well as technological risks. Several working groups have been created according to the issues at stake. They are animated by the DRIRE and composed of representatives from the State, the local authorities, the operators and the NGOs.

The SO_2 working group (WG) was created at the very beginning of the SPPPI as SO_2 was considered as one of the main contributor to the air pollution. The DRIRE chairs the WG and prepares the meetings in coordination with operators' representatives and AIRFOBEP. Its main mission is to improve the actions to be immediately undertaken in case of high SO_2 concentration in the air and to elaborate action plans in order to meet the quality objectives and the limit values to be applied in 2005. The main participants to this WG are presented in Table 3. This list can evolve according to the issues at stake. The DRIRE is also in charge of sending the invitations. Local authorities from new cities have joined the group recently following their request to the DRIRE (around 50 persons attended the meeting in April 2003).

Table 3. SO_2 working group participants

ADEME (E)	OXOCHIMIE (I)
AIRFOBEP (M)	Préfecture 13 (E)
CCI-MP-Environnement Industrie (I)	SETCM (I)
Commune D'Aubagne (C)	SGIC (I)
CYPRÈS (A)	SHELL Pétrochimie Méditerranée (I)
DRIRE - GS 13 (E)	SOLLAC Méditerranée (I)
EDF Ponteau (I)	Sous-Préfecture d'Istres (E)
ESSO (I)	TOTALFINAELF
Marseille Provence Métropole (C)	Raffinerie de Provence (I)
MÉTÉO France (M)	UDVN 13 (A)
MNLE 13 (A)	UFIP (I)
Multipôle de l'Étang de Berre (C)	URVN (A)
NAPHTACHIMIE (I)	VIE Collectif Air – Velaux (A)

(E) State representative; (C) Local elected people; (I) Industry representatives'; (M) Control or measurement institutes, laboratories; (A) NGOs.

3.3. The Regional Commission for the Elaboration of the Air Quality Regional Plan (COREP)

The COREP was created in 1997. It is composed of approximately 80 persons. The DRIRE ensures the secretariat and animation. The reflections were organized according to 4 working groups (air qualification, health priorities, environmental priorities, control of the emissions of fixed sources and mobile sources). Representatives of 5 colleges took part to those WG (local authorities, economic actors, NGOs, qualified personalities - experts -, State services).

3.4. Local Commissions of Information

Several local commissions of information have been recently created in the County of Bouches-du-Rhône at the initiative of operators, local NGOs or local authorities. Thus, the Local Commission of Information and Exchange (CLIE) of Shell was created in August 2001 following a request by a local NGO - ARDEB - to the Shell plant. It was created by both Shell and ARDEB. The meeting organised by the CLIE are opened to local NGOs (including MNLE 13 and ARDEB) and local elected representatives. Depending on the agenda, experts (AIRFOBEP...) or other industry representatives' are invited. The agenda and the minutes of the meeting are written by the NGO. Shell only reviews the technical aspects of those documents. Nowadays, more than 40 participants (mayors, DRIRE, NGOs, operators, citizens…) attend the meeting. The issues discussed concern industrial risks, environmental pollution and nuisances associated with the Shell facility.

In 2002, BP decided to create a dialogue forum with the local inhabitants to discuss some local issues. This structure looks like the Shell CLIE. NGOs, local elected people, School director, etc. are invited to the meetings (3 or 4 times per year), which are organised by the BP’s communication direction. It prepares the agenda according to the population demands and the minutes of the meeting. The presentations of the discussed topics are made by experts.

4. THE ACHIEVEMENTS OF THE AIR QUALITY MANAGEMENT PROCESS

4.1. The decisions associated with the Regional Plan for Air Quality

The PRQA was published before the 1999 European Directive and the consequent national regulations (for example the 2002 decree on SO_2 air concentration limits). The COREP was however aware of the future limits for SO_2 concentration and proposed, among the 38 orientations of the PRQA, several objectives for 2003 in order to anticipate the new SO_2 legislation, notably:

- The SO_2 emissions must be reduced by 30% in 2003 (on the basis of 1994 figures). The third of this reduction must be carried out by the end of the year 2000 because of the implementation of prefectoral decrees relating to oil refineries. Complementary measures will be decided, based on the technologies available to give off sulphur;
- The STERNES procedures, aiming at preventing SO_2 pollution peaks (see §4.2.1), will have to be improved in order to better take into account the weather conditions and the effects of wind (the wind can concentrate the fume emitted by one or more factories on the same zone);
- The follow-up of these orientations must be ensured by the DRIRE through the SO_2 WG of the SPPPI, notably with the collaboration of other State agencies and industry associations.

The PRQA also proposed some orientations with regard to the health impacts, among which:

- The improvement of the population information on the health effects associated with air pollution;
- The setting of a health surveillance system to define and improve health indicators such as children health reports, medicines consumption or hospital admissions;

- The continuation of epidemiological surveys;
- The follow-up of the implementation of these recommendations though the SPPPI air and health WG[15].

It must be also quoted that one orientation of the PRQA is devoted to the composition of the working groups of the SPPPI, recommending that their composition should be modified to add new members in order to guarantee the representation of all stakeholders.

4.2. Achievements of the SO_2 working group

4.2.1. The STERNES procedures

The prevention of pollution peaks is one of the main concerns of the SO_2 WG. A devoted procedure, which has been continuously improved, was elaborated by the WG at the beginning of the 1980ies: the STERNES (Temporary System of Regulatory and Normative Framing for Sulphur Emissions). Depending on weather conditions and SO_2 air concentration, two sub-procedures can be distinguished:

- A general procedure (during winter):
    - If an accumulation of SO_2 can be envisaged regarding the weather forecast, 11 industries must limit their releases of SO_2 to an intermediate quota of 242 tons per day[16];
    - If, despite this procedure, the alert threshold (600 µg/m^3/h) is reached, the 11 industries must limit their releases of SO_2 to a quota of 210 tons per day.

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15 The various working groups of the SPPPI will be used as a relay of the DRIRE for establishing action plans to meet the objectives of the PRQA.

16 When an industry has to reduce its releases, it can either burn a less sulphured fuel (more expensive than the usual one), or reduce its production. The releases reduction quotas are specific to each industry. They are discussed between the industry representatives' and the DRIRE and implemented through a specific decree.

- A local procedure that concerns only small geographic areas which might be highly impacted by the pollution under specific meteorological conditions. If a particular wind direction is observed, the industries concerned must reduce their releases if a concentration of 350 µg/m^3 is measured. This threshold was reduced in 2003 at the initiative of some operators in order to better anticipate the potential pollution peaks (initially 450 µg/m^3).

The DRIRE relies on AIRFOBEB to inform the industries when the procedures have to be started. AIRFOBEB also plays a key role in the development of studies to determine when the procedures should be started and to analyse their effectiveness.

The SO_2 WG meetings are mainly devoted to the STERNES procedures:

- What about their effectiveness?
- How those procedures can be optimized in order to meet the 2005 air quality objectives?

These topics are mainly discussed between the industry representatives', the DRIRE and AIRFOBEP, despite the presence of local authorities or NGOs.

4.2.2. Other issues discussed in the SO_2 working group

The meetings of the SO_2 WG start with a detailed presentation of SO_2 air concentration measurements carried out by AIFORBEP, focusing notably on the current and future limit values' exceeding. The STERNES procedures launched are also detailed.

All the participants and notably those who are not directly involved in the STERNES procedures implementation (namely the local authorities and the NGOs) are thus aware of the situation and can discuss the results with AIRFOBEP.

In April 2003, a discussion took place on the information to be provided to the population when the information/recommendation or the alert thresholds are exceeded.

Several mayors complained on the fact that they do not know exactly what to do when AIRFOBEP informed them that the thresholds are exceeded. Following this discussion, the DRIRE decided to create a specific WG to discuss this topic.

The SO_2 WG meetings constitute an opportunity for the NGOs to relay some of their concerns, for example the problem of the health impacts associated with the exposure to the background level of pollution, which is never raised. But these reactions have only a poor influence on the final orientations of the WG, which are finally planned by the DRIRE. For example, the DRIRE, according to the PRQA orientations, recently asked the industry representatives' to provide technical-economic studies on the possibilities to reduce their SO_2 releases.

4.3. Achievements of the Shell CLIE

The meetings organised by the CLIE of Shell are opened to several local NGOs and local elected representatives. Depending on the agenda, experts or other industry representatives' are invited. Three to four meetings are organised each year. The issues to be discussed (atmospheric and liquid releases, SEVESO procedures, waste management…) are planned in advance. Very detailed questions related to the operation of the petrochemical site are asked by the NGOs or by the local authority representatives. The last events (small incidents, peak of pollution) which occurred on the site are discussed. A few people have the opportunity to visit the plant and a detailed report of the visit is integrated in the minutes of the meetings.

The topics addressed in these meetings are closer to the local population concerns than the discussions of the SO_2 WG. The final objective is not the same, as the SO_2 WG is more devoted to the elaboration of action plans to comply with the regulation, while the purpose of the CLIE is to provide a place for dialogue and communication between the operator and the local population. Some modifications of the operation of the site can be decided as a result of a questioning of the population. For example, following a request of the population, relayed by the ARDEB, Shell decided to launch an engineering study

in order to modify a tank that was responsible for hydrocarbons emissions and disgusting odours in the area of Berre and Rognac.

5. THE STAKEHOLDERS POINT OF VIEW

5.1. Interview of a local environmental NGO representative

Mr Nevière lives in Vitrolles, a city located close to the Etang de Berre. He is retired and President of the local committee of the MNLE 13, an environmental NGO.

In the field of air quality management around the Etang de Berre, the MNLE 13 participates to working groups of the SPPPI (SO_2 and O_3), the COREP (in charge of writing down the PRQA and its application) and the CODEP (in charge of writing down the PPA and its application). The MNLE 13 has participated to AIRFOBEP general assembly since the beginning of the Nineties thanks to the support of local elected people. Mr Nevière recognised that the perception of AIRFOBEP works improved in 1996 when a local mayor, Mr Andreoni, became the president of AIRFOBEP (before 1996, AIRFOBEP was chaired by an operator). Mr Nevière estimates that NGOs and local representatives played an important role in the implementation of the STERNES procedures. As an example, he explains that a study was carried out by AIRFOBEP a few years ago thanks to the protesting of local NGOs strongly supported by local representatives and the MNLE 13 in a location that was particularly exposed to atmospheric pollution. It resulted in the installation of a permanent air quality measurement device in that location.

Nevertheless, Mr Nevière wonders if some experts from AIRFOBEP's administrative board or operators profit by the ignorance of NGO's representatives on specific technical aspects and he wishes NGOs had more resources in order to be able to finance survey or to hire technicians who could check the pertinence of the location of measurement devices, the choice of the pollutants to be sampled, or the way measurements are carried out and interpreted. Furthermore, he thinks that some NGO's claiming do not find an echo among public authorities or operators, and he finds it tiring to repeat the same questions without getting any answer. A specific claim concerns the treatment of the background levels of pollution by a global reduction of emissions whereas the debate is always focused on the reduction of number and the duration of

pollution peaks. He also regrets the way the PRQA was written down as once more he thinks that his remarks were only partly taken into account.

Concerning health impacts associated with the atmospheric pollution, Mr Nevière explains he does not trust the results of the Panoxy-Berre study. This study concluded on the non-existence of any relationship between air pollution levels and public health, as there are no more sanitary impacts in the area of the Etang de Berre and the "reference city", Salon-de-Provence. To Mr Nevière, as Salon-de-Provence is as polluted as cities located around the Etang de Berre (contrary to the hypothesis of the Panoxy-Berre study), this conclusion cannot be received (as Salon-de-Provence was not as monitored as today, the real level of air pollution was not known in details). Furthermore, from the point of view of Mr Nevière, it is often reminded of inside air pollution to minimize outside air pollution impacts, but those two types of pollution should not be compared. People suffer from both pollutions and they often have to stay at home because of the noise and the outside pollution.

The emergence of new structures, the Local Commissions for Information and Exchange, managed by operators, is seen as a good way to get reliable information, to ask specific questions or to visit plants. He regrets that no specific budget is allocated to those structures contrary to what is done in the nuclear sector. For instance, the Local Commission for Information of the Nuclear Installations of Cadarache produces a newssheet which is distributed to the population.

Finally, Mr Nevière explained his fear to see the participation of NGOs to the debate held in the various dialogue structure interpreted as a way to validate decisions that come from operators or public authorities, which could result in a loss of confidence in NGOs. To conclude, Mr Nevière wishes the MNLE 13 could:

- Get reliable information before any decision taking;
- Be able to rely on external experts;
- Be able to express his opinion, be heard and get answer to all his questions.

Mr Nevière also outlines the lack of financial resources of NGOs and their difficulty to participate to all the working groups of sub-committee that are created.

5.2. Interview of a local elected representative

Mr Andreoni is mayor of Berre and President of AIRFOBEP.

Up to 1996, AIRFOBEP had been chaired by an operator. In 1996, the industry representatives' asked Mr Andreoni to chair AIRFOBEP. They felt that it could bring more confidence in the works that was carried out by AIRFOBEP's experts and to Mr Andreoni mind, they were right. Mr Andreoni adds that today NGOs are largely represented during the general assembly (the vice-president of AIRFOBEP is a NGO representative).

AIRFOBEP is mainly responsible for the respect of regulations by operators. Mr Andreoni thinks that the information produced by AIRFOBEP's experts must be shared with the population, transparency in the presentation of the work being a major component of AIRFOBEP's credibility.

Mr Andreoni explains that there is no conflict between industry representatives', public authorities or NGOs who participate to AIRFOBEP general assembly. He believes that the strong risk culture among the population associated with the historical industrial vocation of the region could explain this. But even if industries bring jobs and professional taxes, it is not a reason to forget the protection of the environment. Thus he estimates that chairing AIRFOBEP is a good way "to keep the pressure on operators".

Concerning the drafting of the PRQA, Mr Andreoni believes that the predominant role of the DRIRE (public authorities) is normal since they have the technical competence to carry out this mission. He wishes the presence of public authorities in the SPPPI could be a way to influence decisions taken by the Ministries. For example, he regrets the decision of the State (with no consultation) to increase the capacity of the Marignane

airport (that will lead to an increase of the atmospheric pollution) while constraints on industrial practices are more and more severe.

Finally, Mr Andreoni believes that the creation of a Local Commission for Information and Exchange by Shell is a step forward for a “collective” management of air quality and another way to “keep the pressure” on operators in order to maintain their atmospheric releases at a low level.

5.3. Interview of the director of AIRFOBEP

Mr D. Savannes, director of AIRFOBEP, explains that AIRFOBEP is a technical support for the SPPPI, in charge of presenting the results of measurements, regulating the STERNES procedures or proposing studies on specific topics. The studies performed by AIRFOBEP, notably those related to the elaboration of decision-making aiding tools, are used as a basis for discussion within the working groups. These studies are decided by the administrative board of AIRFOBEP. The results of all studies must be available to the public (according to the status of the association).

The purpose of AIRFOBEP is not to be a consultation structure, but it contributes indirectly to a dialogue between the 4 colleges represented in the association. The objective of AIRFOBEP is to provide an open, objective and transparent information (all measurements are broadcasted on their internet web site). The presence of these 4 colleges contributes to the credibility of the information provided by AIRFOBEP.

AIRFOBEP also participates sometimes to industrial Local Commissions for Information and Exchange, which favour a better understanding of the local concerns.

One of the main advantage of AIRFOBEP is the small size of the Etang de Berre area, which permits to perform proximity actions to the local population. Mr Savannes notes also that because air quality issues are well known in the region, AIRFOBEP can provide a more technical information than other air quality control associations (which usually provide a "general public" information).

5.4. Interview of a Shell Local Commission for Information and Exchange founder member

Mrs Molgosa is a local elected representative of the city of Rognac, located close to the Shell oil refinery. Rather concerned by the problem of air pollution in the area of the Etang de Berre, because of her son's health, she became in 1998 a member, and soon after the president, of the Association for the Protection of the Etang de Berre (French acronym: ARDEB), a local environmental NGO. Through her activities in this NGO, she meets the various actors concerned by air pollution management: chemists, physicians, operators, public authorities representatives, doctors, air quality measurement experts...

She realized that operators had to provide information on their activities only once every five years and she felt disappointed about it: that was not enough to her mind. She decided to explain her feelings to the General Delegate of Shell Development (M. Deport) in 2001 and a meeting was organised between Shell and the ARDEB. This meeting resulted in the creation of the Local Commission for Information and Exchange (CLIE) in August 2001.

The CLIE appears to be a "constructive" way at the very local level to discuss between different stakeholders the main issues raised by air pollution. In fact, there is a direct contact between people living just near the plant and the operator (who can explain precisely what is done to improve its environmental performances). It helps to develop a climate of trust. Nevertheless, according to Mrs Molgosa, the presence of public authorities during the last meetings modified the quality of the exchange, as the Shell representatives seemed to feel " less open" to the dialogue.

Mrs Molgosa thinks that the creation of several CLIEs in the area of the Etang de Berre testifies for the efficiency and the usefulness of this local dialogue structures. The CLIE can be seen as an answer to a local demand, whereas the SPPPI mainly aims at solving regional issues. The SPPPI is less "close to the field" and its proposals are made essentially to be used by the DRIRE.

Finally, Mrs Molgosa does not believe that the point of view of an independent expert is systematically needed. Several members of ARDEB are former engineers or managers from the oil industry. As a consequence ARDEB can benefit from their knowledge to understand the technical content of the topics discussed during the CLIE meetings. Mrs Molgosa estimates that non-experts have to do their best in order to be in position to understand the technical aspects of air pollution problems. Finally, depending on the topics dealt with during the meetings, the CLIE can inform the site manager, the DRIRE and the Prefet of how issues raised are, or are not, solved.

5.5. Interview of a British Petroleum environmental quality manager

Mrs M. Durand Pinchart, environmental quality manager, is representing BP at the SPPPI SO_2 working group.

Mrs Durand Pinchart believes that the interesting aspect of the working groups organised by the SPPPI is the possibility to exchange points of view on different topics between the public authorities (DRIRE) and the industry representatives'. It leads to a kind of competition between all operators represented (and mainly the 4 oil refineries) to get the best results as possible in terms of human health and environmental protection. As an example, she quoted the decision of BP to apply innovative “pre-STERNES” procedures (in theory the procedures were launched when the SO_2 concentration rose 450 $\mu g/m^3$ and BP decided to decrease this limit at 300 $\mu g/m^3$) and the consequent decision of the other oil refineries to do so. Mrs Durand Pinchard describes the on-going pressure of DRIRE and European Directives on the operators to decrease their discharges into the environment.

To Mrs Durand Pinchard, although the environmental NGOs who attend the meeting of the SPPPI are free to express their concerns, they only have a little influence on the main orientations decided between the operators and the public authorities. However, at the local level, she sees them as playing an important role of relay of the population questions, wishes and feelings.

If she clearly admits that industrial activities around the Etang de Berre lead to discharges into the environment and are polluting, she outlines “It is of great importance to us to improve our environmental performances. The population must accept us. Our plants must be well integrated into their environment. We understand people’s expectations, we are citizens and we also live close the plants”.

BP created one year ago a structure dedicated to dialogue with local actors (mainly city and local NGO representatives). It has some common points with the Shell CLIE. Meetings are organized three or four times a year and the debate is focused on population questions and needs. The objective of BP is to answer those questions and to indicate the existing sources of information. Meetings are organized by the BP Communication Department, which also writes down the minutes.

Mrs Durand Pinchard thinks that there is a need for having a coherent and global approach of pollution management: transportation and cities contribute to air pollution, and this contribution is far from being negligible. It is one of the key roles of the SPPPI: allowing in next years this global approach (for example by creating a working group dedicated to the sustainable development).

Concerning the role of the expertise, Mrs Durand Pinchard explains that most of the health impact studies are carried out by national agencies or recognised consultants. As a consequence, she does not see the need for another expertise supported by BP and which will provide the same results. Mrs Durand Pinchard thinks it is of great importance for its reputation that AIRFOBEP’s chairmanship is confided to a local elected representative.

The justification of the industrial activities has never been raised (BP has been present since 1922 on this site), but it could be asked for new industries.

5.6. Interview of the secretary of the SO_2 working group from the DRIRE

Mr Ulasien is in charge of air pollution in the Division of industrial environment, risks and underground. M. Ulasien is notably the secretary of the working group on SO_2 of the SPPPI.

Mr Ulasien explains that the SPPPI was first initiated to debate around risk issues. It was then extended to other subjects (like for example, odours, health,…). One major interest of the SPPPI's working groups, is that it permits a broaden discussion with the industry representatives', outside a regulatory context. The presence of NGOs is interesting as they rise some relevant issues.

When the new SO_2 limits were published (to be applied in 2005), the DRIRE had a meeting with the 11 concerned operators, and ask them to present to the working group what was their plan to reach the future values. M. Ulasien thinks that it would have been more difficult to obtain such plans if the WG did not exist, and if the negotiations had to be undertaken only between the DRIRE and each industry.

The orientations defined in the Regional Air Quality Plan have been elaborated by the State Services following the work of the COREP. This plan permitted to better structure the actions undertaken by the Public Authorities or by the SPPPI.

6. ANALYSIS OF THE AIR QUALITY MANAGEMENT PROCESS

6.1. Complementary nature of the SPPPI and the local commissions

The SPPPI and the CLIE both deal, among other topics, with the management of air quality. Various actors attend the meetings organized by those structures, but the issues raised during the debate and the relationship between actors are different. Those structures appear somehow to be complementary. Additionally, the functioning of these structures illustrates the fact that the initiation of a risk governance process is very likely to have a significant impact on its operation.

6.1.1. Analysis of the SPPPI

The SPPPI, which is not a mandatory structure, was created 30 years ago at the initiative of public authority to temper a crisis created by the local authorities. The SPPPI is thus issued from a territorial demand and a political willingness.

Nowadays, it is a mean for the public authorities to favour the implementation of the regulations and to keep the pressure on the operators while keeping a certain degree of dialogue with them and with other actors (local authorities or environmental NGOs). It is a forum of implication of local stakeholders.

The durability of this structure is probably due to its constant adaptation to the social, political and regulatory context and its subsequent capacity to include new issues and new actors into its scope of activities.

Nevertheless, as far as the decision framing and taking processes are concerned, and even if there are more and more participants to the SPPPI meetings, the main players are the public authority (DRIRE) and the operators.

In fact, the role of the SPPPI is not to solve local issues associated with one particular facility. It is concerned with the overall problematic of the industrial pollution of the

region. Thus, in the SO_2 working group, the agenda and minutes of the meeting are redacted by the public authorities. The meetings are prepared in advance by the public authorities, the operators and AIRFOBEP. The dialogue is partly based on the results of air quality measurements presented by AIRFOBEP and the DRIRE representative leads the dialogue. The main issue is to find a consensus on how to comply with the recommendations detailed in the PRQA and, generally speaking, the current regulations, without penalizing the industrial activities.

It can not be attended from a structure such as the SPPPI to answer the increasing need of population to get informed on what is going on. This is certainly one of the reasons at the origin of the creation of the local commissions of information, which are closer to the population expectations.

6.1.2. Analysis of the local commissions

The CLIE of Shell is a one of the local commissions located around the Etang de Berre, the very first one, that focuses on one single facility (a petrochemical site). It is issued from the willingness of the operator to answer the demand of a local NGO for more information on the operation of the facility. It is not a regulatory structure. It is a forum of dialogue between the operator and the local population. The public authorities are somehow excluded from the discussion, even if they have participated to a few meetings so far.

Other local commissions have been created around the Etang de Berre since 2 years, either at the initiative of local authorities, local NGOs or operators or to respond to the demand of the French Ministry of Environment[17].

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17 It can be noticed that, following the severe accident in a chemical industry in Toulouse, a law for the creation of "CLIC" - Local Commission of Information and Consultation (*"commission locale d'information et de concertation"*) for all industrial sites presenting a high degree of risk, in order to provide information to the public, was adopted in July 2003, the 30th. In July 2002, the French ministry of environment has asked the Prefects to create "experimental working groups" which could evolve into CLIC as defined by the project of law.

The purpose of this structure is to favour a dialogue between one operator and the population, or its relays (local authorities or local NGOs), living near a facility and who is a priori the most exposed to its pollutant emissions. In the case of the Shell CLIE, the issues to be discussed are determined in advance by the ARDEB NGO together with the other local NGOs which joined the CLIE, and agreed by the operator. They focus on the operation of the facility, the explanations of recent incidents and pollution issues. New topics and participants have been progressively involved in the commission, depending on the population expectations.

These local commissions appear to be a way for the operator to understand what the feelings of the population are and which efficient measure can be adopted in order to comply with their priority needs (information delivery, modification of a building, decrease of the disturbance associated with the noise…).

For the NGO and the representatives of the population, it is an interesting way to obtain information directly from the operator. It can also be a mean of pressure to obtain the implementation of actions by the operator.

6.2. Role of the relay actors

The functioning of both structures is also rather influenced by the conditions of its creation (who and why?). Within the SPPPI, the local population is not directly involved. The purpose of this structure, initiated by the public authorities, has been to plan actions at the regional level to comply with the national and European regulations for 30 years. The role of the public authorities has always been prominent. The local authorities or the NGOs seem to have a little impact on the decisions taken. Nevertheless, the presence of NGOs within the SPPPI is perceived as necessary by the public authorities or the AIRFOBEP Director, as, from their point of view, NGOs are sorts of stimulus providing pertinent questions which can help the process of improving air quality for example. However, from the point of view of one NGO representative, the questions raised are not answered, and they have sometimes the feeling that their presence is used to guarantee the decision taken. On the contrary, within the local

commission, and namely the Shell CLIE, created by one operator and one NGO, the role of the population relays is clearly reinforced: the objective of the commission is to adopt measures to improve the living conditions in the neighbouring of the facility.

The COREP is composed of the same actors than those who participate to the SPPPI. Several economic actors have been added, like for example the Regional Chamber of Trade and Industry, the Regional Chamber of Farming, the National Society for Railway Transports, the Airport... In fact, the plan had to take into account all sources of pollutions and not only the industrial ones. This is another aspect of the inclusiveness of issues and participants' characteristics of the management of air quality process around the Etang de Berre.

6.3. Expertise

As far as risk governance is concerned, the role of expert is a determinant feature. Within this study, AIRFOBEP, who provides the results of the measurements of air quality, plays a key role in terms of expertise. The composition of its administrative board and general assembly (representatives of public authorities, operators, local authorities and NGOs) contributes to the credibility of its results. This credibility has been reinforced since AIRFOBEP is chaired by a mayor instead of an operator.

While the representative from the ARDEB NGO thinks that it is not necessary to ask systematically for an external expertise - they rely on the knowledge of the members to evaluate the proposals of Shell - , the representative of MNLE13 notes that the NGOs attend to more and more meetings (SPPPI, CLIE, COREP, AIRFOBEP…), but that the knowledge of the NGOs members is not always sufficient to evaluate the relevance of the actions undertaken or the decisions. To him, an external expertise would be useful, but the NGO does not have the financial means to pay some studies, or experts. He wishes that the CLIE created around various industrial sites had a specific budget to be used for external expertise. He also wishes it was feasible within the CLIE to publish a newssheet devoted to the population's information. The representative from BP

estimates that there is no need for external expertise, as the health impact studies are not performed by the operator himself, but by external institutes.

6.4. Question of justification

Regarding both the SPPPI and the CLIE, an interesting point is that the question of justification of the industrial activities has never been raised, even by the NGOs. The NGOs clearly explain that their actions fit in a sustainable development perspective. If they wish they improved human's health and environmental protection, they are not opposed to the economic development. This can be partly explained by the historical context and the economic weight of the industries located in this area in terms of jobs provider.

7. CONCLUSION

Several relevant elements characterising the quality of the risk governance process have been outlined though this case study. These elements have also been identified within the other case studies performed in the RISKGOV project.

Multi-level governance

One of the key features of a strong governance culture is an awareness of and an ability to respond to the fact that complex risk issues will raise questions for multiple levels of government. Where the process elements of inclusiveness and learning described above are present, there is a higher probability, first, that such multi-level issues will become apparent and, then, that there will be a willingness to deal with them appropriately. This then raises the question of how a more flexible and adaptive articulation between the different levels of government may be achieved. This case study involves two levels of governance, local and regional, which appear to be well articulated. The local committees have been established very much with the need to ensure such an articulation in view. While the local committees ensure a good connection between local stakeholders and individual industries or plants, the regional structure ensures that there is the possibility to achieve a coherent regional approach to the risk issues in question. One of the ways in which this is achieved is through the attendance of the members of the local committees at the regional meetings. They are thus able to set their local concerns in regional context as well as being able to feed local concerns up to that level.

Inclusiveness of participation

Among the most interesting features of this risk governance process has been the extent to which actors who would not normally be involved so directly in such issues are engaged. This marks a very clear step change from the top-down expert-led model of dealing with complex risk issues in functionally differentiated societies.

Inclusiveness of issues

This case study demonstrates the tension that can arise between the original mandate and the broader scope of a problem once other stakeholders become involved. Thus, while public authorities focus on pollution caused by industrial discharges to the atmosphere, other stakeholders are keen to know what contribution to the problem is made by atmospheric discharges related to other sources such as the airport and road traffic. By the same token, while AIRFOBEP focuses on pollution peaks, other stakeholders are concerned with the effects of chronic pollution.

Role and nature of the expertise

It is clear that the opening up of the political or the 'proceduralisation' implied by new modes of risk governance does not at all imply that scientific rationality is sidelined, as it were. Scientific evidence and technical knowledge are vital components of any decision making about risk issues. All that these new modes seek to ensure is that societal concerns about technological processes and the risks they may entail are integrated into such decisions in a way that ensures a more appropriate framing of the decisions and ultimately more broadly accepted decisions. It is certainly the case, however, that bringing expert and lay rationalities together in this way does present a challenge. The RISKGOV project reveals different ways in which this challenge can be met. In particular, in this case study, AIRFOBEP, by being pluralistic and chaired by local actors, is perceived to produce reliable information that is widely accepted at the local level

Outcomes of the RISKGOV project[18]

The case studies analysed within the RISKGOV project tend to show that innovative governance process presenting a few common characteristics can help to improve social trust, thus reinforcing the acceptability and the durability of decisions.

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18 Public reports, including all the case studies description, are available on the web www.riskgov.com

Having in mind the necessity for the “operational” aspect of the outcomes from this project, it appeared useful to gather the so identified common characteristics into a framework for the evaluation of risk governance processes. This framework, devoted to the stakeholders engaged in those processes, consists in a set of questions that allow to characterising the process in view of outline elements that favour its efficiency and possible ways for its improvement.

REFERENCES

SCHNEIDER T., SCHIEBER C., VAILLANT L., HERIARD DUBREUIL G., GADBOIS S., OUDIZ S., BOURGOIGNON F., MILOCHEVITCH A., PATERSON J., BROWNLESS G., BANDLE T., HANSSON S.-O., HAYENHJELM M., **RISKGOV European Project: Comparative Analysis of Risk Governance for Radiological and Chemical Discharges of Industrial Installations - Final report**, CEPN-R-289, November 2004.

WORLD HEALTH ORGANIZATION - REGIONAL OFFICE FOR EUROPE, **Air Quality Guidelines for Europe**, Second Edition, WHO Regional Publications, European Series, No. 91, 2000.

DRIRE PACA, **Etat de l'environnement industriel**, 2002.

Secrétariat Permanent pour les Problèmes de Pollution Industrielle, **30 ans de concertation : le SPPPI ; 10 ans de communication : le Cyprès - Rétrospectives autour de la sécurité et de l'environnement industriels en Provence-Alpes-Côte d'Azur**, Novembre 2001.

AIRFOBEP, **Problématique régionale de la qualité de l'air - étude bibliographique**, Décembre 1998.

Pollution Atmosphérique et Affections Respiratoires Chroniques ou à Répétition (PAARC), **Groupe coopératif PAARC, Bull. Europ. Physiopath. Resp.**, 1982, 18, 87-99 et 101-116.

INSTITUT NATIONAL DE VEILLE SANITAIRE, **Programme de surveillance Air et Santé 9 villes**, Juin 2002.

Council Directive 96/62/CE of 27 September 1996 on ambient air quality assessment and management, Official Journal of the European Communities.

Council directive 1999/30/EC of 22 April 1999 relating to limit values for SO_2, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air, Official Journal of the European Communities.

Loi n°96-1236 du 30 décembre 1996 sur l'air et l'utilisation rationnelle de l'énergie, Journal officiel n°1 du 1er Janvier 1997.

Décret n°98-361 du 6 mai 1998 relatif à l'agrément des organismes de surveillance de la qualité de l'air, Journal Officiel du 13 Mai 1998.

Décret n°2002-213 du 15 Février 2002 portant transposition des directives 1999/30/CE du Conseil du 22 Avril 1999 et 2000/69/CE du Parlement européen et du Conseil du 16 Novembre 2000 et modifiant le décret n°98-360 du 6 Mai 1998 relatif à la surveillance de la qualité de l'air et de ses effets sur la santé et l'environnement, aux objectifs de qualité de l'air, aux seuils d'alerte et aux valeurs limites, Journal Officiel n°42 du 19 Février 2002.

DRIRE PACA, Regional Plan for the Quality of the Air (PRQA).

Bilan SPPPI Provence - Alpes - Côte d'Azur, Juin 2003.

Loi n°2003-699 du 30 Juillet 2003 relative à la prévention des risques technologiques et naturels et à la réparation des dommages, Journal Officiel n° 175 du 31 Juillet 2003.