

ESRC Social Contexts and Responses to Risk Network

Cambridge, 29-31 March 2007

The difficulties for chemical companies and public administrations in Spain to define risks. The case of the petrochemical plants of Tarragona

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Abstract

This paper assume a theoretical background which states that to understand social responses to risk it is necessary to understand the institutional context where risk is created, managed and developed. In this sense, we analyze the role played by public administrations and chemical companies in the management of risks related with a big petrochemical plant sited in Tarragona (Spain). We describe how these institutions try to define the risks in the public arena, and how it is perceived by people living next to petrochemical plant. Methodologically we follow a qualitative approach and we have done a set of in-depth interviews to the main actors (public authorities, managers of companies, social movements, citizen associations, etc.) as well as analyzed the content of documents and web sites of such institutions. The main results highlight how institutional definitions shape both conflictive relationship among them and the lack of strategies to generate public trust¹.

¹ This research has been developed in the project 'The process of risk communication in Tarragona: analysis of social perception and reception of petrochemical risk. Social participation, social communication and proximity communication', directed by Dr. Jordi Farré Coma and financed by the Spanish Culture and Science Ministry with the number **SEJ2004-00892**.

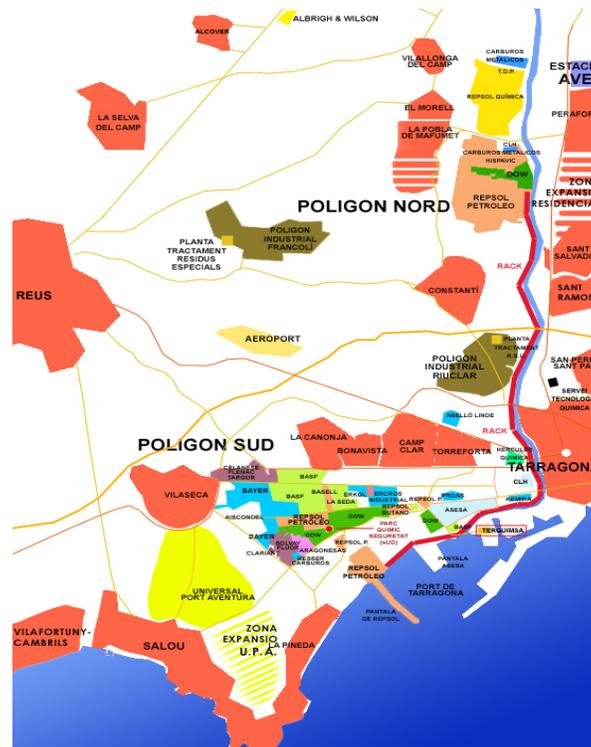
1. Introduction

This paper presents some of the results of a research study into the communication of risk in the petrochemical area of Tarragona (Catalonia, northeast Spain). The research is divided into two parts. The first consists of an analysis of the institutional and business strategies for risk management and communication; the second focuses on an analysis of the social perceptions of risk among the resident population in the area of influence of the petrochemical complex. Here we will only be referring to the first part. The second part is currently at the analysis stage and is expected to be completed over the next few months.

The Tarragona area is very densely populated and one in which the chemical and petrochemical industries are of major importance and occupy a large portion of the territory. In more specific terms, Tarragona's industrial area covers a total surface area of 1,200 hectares and contains 27 chemical and petrochemical companies (including some of the most important on an international scale such as Bayer, Basf and Dow Chemical, as well as Repsol-YPF, Spain's biggest petrochemical company) distributed into two differentiated but very nearby areas of industrial concentration, the *Polígon Sud* (southern industrial zone) and the *Polígon Nord* (northern industrial zone), which are just 10 kilometres away from each other (figure 1). *Polígon Sud*, which is the closest to the nucleus of the city of Tarragona, is located by the sea, and covers 720 hectares distributed between the municipalities of Tarragona, Vilaseca, Reus and land belonging to the Tarragona Port Authority. This area is bordered to the north by the N-340 main road and several city neighbourhoods, to the east by the city of Tarragona itself and to the west by the grounds and tourist facilities of the 'Port Aventura' theme park. Apart from industries, this area also features the loading and unloading terminals used by chemical companies in Tarragona Port, from where a 12 kilometre series of pipelines (the 'rack') begins, which transports the prime materials and products made by the companies and provides a link between the two industrial estates. Meanwhile, *Polígon Nord* covers 470 hectares, located around a huge oil refinery belonging to Repsol YPF, in the municipal districts of La Pobla de Mafumet, Morell, Perafort and Constantí, next to the N-240 main road.

The 27 companies located in Tarragona's two industrial zones are affiliated to the *Associació d'Empres Químiques de Tarragona* (Tarragona Association of Chemical Companies – AEQT), the sector's employers' organisation. Each year, these companies process around 20 million tons of different products, basically petroleum derivatives; fuels, plastics and derivatives, water treatment products, dissolvents, detergents, asphalts, adhesives, gases for domestic use, lubricants, textile fibres, etc. 44% of all the plastics made in Spain come from Tarragona's factories (AEQT, 2003). The space used by the chemical companies is distributed into three major differentiated areas: processing plants, storage areas and pipeline racks. According to data from the year 2000, the chemical industries as a whole generate 30,000 jobs, of which approximately 6,000 are direct positions and the others are indirect or related. The accumulated investment is set at more than 6,999 million euros (AEQT, 2003).

Figure 1: Geographical location of Tarragona's chemical industrial zones



Source: AEQT (2003)

In short, these industrial sites generate numerous and important risk factors, both in terms of the possibility of accidents (explosions, gas leaks, etc.) and in terms of diffuse contamination (emission of toxic compounds into the air, watercourses, etc.). Both the companies and public administrations are aware of this and have developed several strategies for reducing and controlling risks, and also for dealing with potential emergency situations. One of the objectives of this research study is to analyse the way that risks are communicated by the companies and public administrations, given, in accordance with our theoretical framework, the importance of their role in understanding the context in which people will perceive these risks.

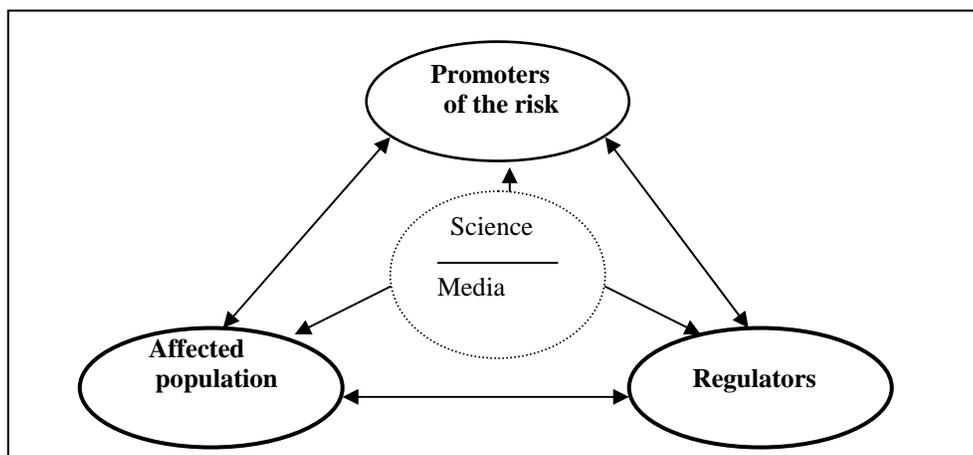
2. Theoretical framework

There are two sides to the concept of risk. First, it is a descriptive concept that identifies the different elements that make up a specific reality, with certain dangers, implied actors and possible damages. But, secondly, it has a normative or prescriptive dimension, as its formulation is never neutral or indifferent, but rather, guides us into action, in other words, it tells us what we should do. In this sense, the identification of a risk to a population leads to the implicit requirement for it to be reduced or eliminated (Renn, 1992). That is why the definition of a risk implies, to a certain extent, defining what is considered normal and what is not, in other words, the risk is the ‘anomaly’ that needs to be modified in order to return to ‘normality’. Therefore, more than providing a mere description, the definition of a risk implies emitting a judgment about what should be done to regain normality. For this reason, it has become a concept that offers enormous potential for intervention in social reality, with an important political dimension, leading the processes of defining it to become a veritable battlefield between the different social agents implied.

Politically, in terms of risk, the organisation of a decision making process involves a minimum of three types of actors: those responsible for the generation of risk, public administrators and the citizens affected. Theoretically, any social conflict related with

technological risks leads to a system of interaction between these three major groups of main actors (Figure 1):

Figure 1: Typical system of interaction for social conflicts related to technological risks



- a) Promoters or generators of the risk: Those individuals or groups interested in or implied in the promotion of a certain technology. These are normally the ones that obtain the main benefits from this promotion. In the present case, these are mainly the chemical and petrochemical companies of Tarragona (or, better put, their owners, managers and directors).
- b) The affected population: Those people that feel disfavoured by the technology in question, whether in terms of finance, health, etc. They can be affected directly or indirectly. They may form organised groups or not. In this case, these are the people that live near to Tarragona's petrochemical industries, although indirectly these could be any other people that feel that they are affected by said risks.
- c) The regulators: These are bodies in charge of guaranteeing a certain level of security, among other matters. These are normally the state public institutions on different hierarchical and organisational levels who have the responsibility of performing these roles and that is, partly, how they gain their legitimacy in the eyes

of the public. In this case, these are public administrations on a national, regional and local level, although the regional ones are the most relevant here because they are the ones with the greatest competence in the area.

These actors do not always appear as a single structure, but rather, for each empirical case, several interest groups and different configurations can be distinguished. Despite this, the members of each group find themselves taking similar standpoints with respect to the general structure of the conflict.

Two other actors can be added to these three main groups. First, there is *science*, or better put, scientific experts, who can be linked to any of the previous three social agents, and who supply them with knowledge, arguments and legitimacy with respect to the others. Secondly, there is the *media*, which plays an important role as promoters, amplifiers or mitigators of the conflicts thereby helping make the risks more visible, and even defining them. The different media can also be linked to any of the three main groups of social agents highlighted earlier.

The concept of risk relates to the future, to things have not yet happened but that could happen if the course of matters is not changed, for which reason defining it can be a relatively open-ended matter (Beck, 1992). In the case of technological risks, it tends to be science that theoretically provides the best data available, but in numerous cases the scientific evaluation of the risks of certain technologies is no easy or even conclusive matter, and probabilities are calculated with wide margins of error and uncertainty that are difficult to reduce (due to the lack of historical data, the difficulty to analyse adequate samples, the lack of knowledge of the ways in which certain risk factors behave, etc.). This limitation leads in turn to relevant consequences for the decision making process in terms of risk, putting science's traditional role as the provider of certainties in doubt (Funtowicz and Ravetz, 1990; Rescher, 1983; O'Riordan and Cameron, 1994; Wynne, 1992). In other words, doubts are cast on science's ability to generate confidence, for which reason risk management requires something more than good scientific-technical information about the same. And it is here that the communication of risks takes on a preponderant role. As

several authors have warned (López Cerezo and Luján, 2000; NRC, 1996; Renn et al., 1993; Shrader-Frechette, 1991), the process of characterising risks is making increasing demands for effective dialogue between experts and the general public, something which is only possible if the right forums and instruments are in place. In this sense, the latest advances in risk communication methods are becoming essential and unavoidable.

Research into risk communication in the strictest sense began in the late 1970s and early 1980s, when studies of the perception of risk had provided sufficient evidence that perceptions are complex phenomena that depend on many more factors than the mere information received by individuals. Risk communication can be defined in many ways, some put the emphasis on the way information is provided to the public, while others consider that it is a more general and interactive process of interchange between all of the parties implied. In the former, experts are considered the main actors and assume the role of transmitting and elaborating on information for a passive public. In the latter, both the public and other actors play an important (although differentiated) role, along with the experts, in an interdependent process of information, opinions and interests, by strengthening the appropriate channels of consultation, response and dialogue (OECD 2002, 2003). The former point of view implies communication from above to below, in a single direction, while the latter emphasises the greater participation of the general public and the contributions of non-expert (lay) people (Bennett and Calman, 1999). In practice, both perspectives coexist, although one or other may predominate in certain situations depending on decision-making traditions, the existing resources or political and social conditions. We could say that, in practice, the adoption of one or other perspective depends mostly on the objectives of whoever is making the communication. The objectives of risk communication may involve several types and levels of action (Gray *et al.*, 1998):

- Informing the public in order to improve their knowledge of the risks, to circulate information, to educate people, put people's minds at ease or warn them about possible risks.

- To change or reinforce people's behaviour with respect to the risks, either to reduce risky behaviour or to promote the appropriate kind of behaviour in cases of emergency.
- To obtain consensuses or commitments regarding controversial technologies, something which implies the use of a wide range of actions, from consulting the general public to effectively including the general public in the decision-making process.

Communication is present throughout the process of risk management, and varies over time depending on how the interest groups and problems change as the processes develop. The risk communication process involves all those individual or collective actors that have an interest in evaluating the risk. Broadly speaking, the aforementioned general typology distinguishing between *promoters*, *the affected* and *regulators* can be useful for classifying the multiple actors implied in any process of managing and communicating technological risk (companies, local population, workers, ecological associations, trade unions, public administrations on different levels, scientific experts, the media or the general public).

2.1. Risk communication and the chemical industry

The manufacture, handling, transport and storage of chemical substances generate the possibility of serious accidents occurring that can have an adverse effect on human and environmental health (acute risk), as well as the possibility of long-term contamination through contact with such substances as water, the air and the soil (chronic risk) (Horlick-Jones *et al.*, 1998). Public authorities have made major efforts to regulate these risks over the last two decades: the United States of America through the SARA (Superfund Amendments and Reauthorization Act) of 1986, and Europe through Directives 96/82/CE-Seveso II (on acute risk) and 96/61/CE (on chronic risk). These directive guidelines have been adapted to the corresponding legislation of each country, and in Spain the regulations have been adapted on both a national and regional (Catalonia) level. Both the current legislation on a European level (Directives 96/82/CE-Seveso II- and 96/61/CE) and the voluntary programmes produced by the chemical industry itself (such as the *Responsible*

Care programme)² establish two main lines of action to be followed by companies in relation to chemical risk: *management* (development of processes and measures for prevention, control and minimisation of both acute and chronic risk), and *communication* (establishment of mechanisms for communication with the different *stakeholders* implied in chemical risk (Heath, 1997; Renn and Kastenholz, 2000).

It could be said that, in recent times, the concept of ‘risk communication’ has come to replace, to a large extent, the concept of ‘crisis communication’. Basically, this new theoretical approach responds to a specific objective: to predict the appearance of problems and create business and communication policies that, should these problems arise, can help resolve them with the minimum possible damage being caused to the organisation. Some authors (Chess, 2001), place the origin of risk communication in the need for companies to respond to a threatening environment that is increasingly more suspicious and hostile following certain major industrial catastrophes (Chernobyl, Bhopal, etc.). Risk communication has therefore become a ‘mechanism for company survival’ against such collective pressures as ecologists and the attribution of culpability by the media.

It is precisely in the case of the petrochemical industry that public attitudes tend, from the outset, to involve at least suspicion, and if not outright condemnation (Regeister and Larkin, 2005; Renn and Kastenholz, 2000; Wright, 1997). In this same sense, Swoden and Sinha (2005) consider that the chemical industry, if it fails to comply with its commitments to society, runs the risk of losing the faith of its *stakeholders*, which could lead to several consequences, such as consumer boycotts, drops in the value of shares, public demonstrations or even the closing-down of plants. Therefore, companies in the sector have for several years been identifying these adverse perceptions as a threat to the continuity of their businesses and are therefore working on the development of the kind of communication that stresses all of the progress that has been made in terms of safety and the protection of the environment and health.

² It is defined as “the global chemical industry’s own unique initiative which helps the worldwide chemical industry to drive continual improvement in all aspects of health, safety and environmental performance and to be open in communication about its activities and achievements” (CEFIC, 2005:3).

As stated by Beck (1992), the socialisation of risk directly affects business management: what in the late 20th century were considered strictly *economic* decisions have come to be *political* decisions (certain industrial processes, secondary effects of production, waste management, location of manufacturing plants, etc.). This new context has led the actions of companies in general, and those companies perceived as being generators of risk in particular, to be considered public matters rather than private affairs. We are therefore talking about *social* decisions, in which several interest groups are directly or indirectly implied, each with their own objectives.

In this sense, we will attempt to explore how Tarragona's public administrations and companies communicate risk, in order to evaluate the repercussions for risk management and the public perception of these risks.

3. Methodology

In accordance with the objectives of the proposed research, the methodological strategy followed was addressed at seeking information and generating the discourses of the actors implied, especially the chemical and petrochemical companies in the Tarragona area, as well as the public administrations in charge of regulating the risks generated by those companies. To do this, we analysed the content of a large amount of documental information and *websites* published by these companies and institutions, while a series of in-depth interviews was also conducted with the people in charge of these companies and institutions.

In terms of the companies, apart from consulting the electronic documentation they have generated and the annual reports of their activities,³ we conducted several in-depth

³ We mainly analysed the corporate websites of the *Associació d'Empreses Químiques de Tarragona* (Association of Chemical Companies of Tarragona – AEQT), a body that groups all of the chemical and petrochemical companies in the region, as well as the 4 major companies that operate in the Tarragona chemical complex (Repsol-YPF, Basf, Bayer and Dow Chemical). The reason for choosing these 4 companies was that they are the only ones that have a person in charge of communication in the Tarragona complex, which implies recognition of the importance of the need for communication on a local level in Tarragona.

interviews with the managers of chemical and petrochemical companies with responsibility in terms of risk communication in the Camp de Tarragona industrial estates. Specifically, interviews were held with managers at Bayer, at Dow Chemical, another at Repsol-YPF and one from the *Associació d'Empreses Químiques de Tarragona* (AEQT).⁴ The interviews focused on: 1) how they define risks, 2) what role they attributed to communication in the field of risk management, 3) what communicative strategies they used, and what their potentialities and limitations were, and 4) what role they attributed to the other social actors implied in risk processes (public administrations, civilian society and the media).

In the case of the chemical and petrochemical industrial estates of Tarragona, responsibilities for the guarantee of safety are distributed between different public administrations, although, by virtue of the political and administrative decentralisation of the Spanish state, this is mainly the responsibility of the autonomous regional government (the *Generalitat de Catalunya*). In relation to the risk of accidents, the main administration is the *Direcció General d'Emergències i Seguretat Civil* (General Direction of Emergencies and Civilian Security - DGESC), which forms part of the *Generalitat de Catalunya*'s Ministry of the Interior. Meanwhile, the risks of diffuse contamination are mainly monitored and controlled by the Department of the Environment (also pertaining to the regional government), a body that has responsibilities regarding environmental risks and which deals with air and water quality, waste management, etc. Meanwhile, monitoring of the effects of contamination on health mainly corresponds to the Health Department (regional government), as part of its responsibilities regarding public health. We should also note the responsibilities of the Department of Employment and Industry in guaranteeing compliance with security and labour health regulations within companies. All of these Departments also have their respective mechanisms for information and communication, although without the specialisation involved in the communication of

Moreover, these are the companies with the highest turnover, and also the best known to local people due to their size and their social and economical impact on the region.

⁴ The interviews were conducted between November 2005 and February 2006, in the interviewees' workplaces, face to face, and all but one was recorded in audio. They were then literally transcribed for analysis.

emergencies. On other levels, several national ministerial administrations also have certain functions (Ministry of the Interior, of Industry, of Health, of the Environment, of Employment), as well as the local administrations of the municipalities in which the chemical and petrochemical industries are located (they have responsibilities in terms of urban planning, environmental licences, etc.).

As for public administration, we consulted the information available and *websites* corresponding to the different administrations related with the field on a national, regional and local level.⁵ We also conducted different in-depth interviews with selected managers of public administrations with responsibilities for matters of security and emergencies in the chemical industry. Here it was considered opportune to conduct in-depth interviews with two experts working for the General Management of Emergencies of the *Generalitat de Catalunya*'s Department of the Interior, one at the Tarragona emergency centre (CENCAT), one with a manager of the General Subdirection of Industry of the *Generalitat de Catalunya*, and another with a manager of the Government Delegation of the *Generalitat de Catalunya* in Tarragona.⁶

The basic pattern of the interviews dealt with the following issues: 1) what risks do you believe are generated by the chemical and petrochemical companies in Tarragona; 2) how do you evaluate the role of risk communication within the field of risk management; 3) what mutual interrelationships are maintained between companies and public administrations in terms of risk management and communication; 4) what is the media's

⁵ On a national level, we consulted the websites of the Ministry for Industry, Tourism and Commerce (<http://www.mityc.es>), the Ministry for the Environment (<http://www.mma.es>), the Ministry for Health and Consumption (<http://www.msc.es>) and the Ministry of the Interior (<http://www.mir.es>). In terms of regional government, we visited the sites of the *Generalitat de Catalunya* (<http://www.gencat.net>), the Department of the Interior (<http://www.gencat.net/interior/>), the Department for the Environment (<http://mediambient.gencat.net/>), the Health Department (<http://www.gencat.net/salut/>) and the Department of Employment and Industry (<http://www.gencat.net/treballiindustria/>). Finally, in terms of local administration, we accessed the council websites of Tarragona (<http://www.ajtarragona.es>), Constantí (<http://www.constanti.altanet.org>), La Pobla de Mafumet (<http://www.poblamafumet.altanet.org>), Vila-Seca (<http://www.vila-seca.info>), and El Morell (<http://www.tarragones.org/elmorell>). We also consulted information about chemical and petrochemical risk provided in the Civil Protection website (<http://www.proteccioncivil.org>). In all of these sites, we searched to find what information was given about Tarragona's petrochemical industrial sites and chemical and petrochemical risks in general.

⁶ The interviews were conducted between November 2005 and February 2006, at the interviewees' workplaces, face to face, and were recorded in audio. They were then literally transcribed for analysis.

role in risk management and communication, and 5) what kind of relationships do you have with the general public (individuals and organisations) in terms of risk management and communication. The analysis of the documentation was made through an analysis of content, while the interviews were analysed in terms of the procedures of grounded theory (Strauss, 1987).

4. Results

4.1. Definitions of risk

a) Companies:

In general, in the documentation generated by companies, references to risks only appear to make it clear that they are under control. In other words, the analysed business reports and websites basically describe the efforts and means destined for the control of risks (preventative, safety, protective measures, etc.), both in terms of acute risks and chronic risks, and only very rarely is any mention made of the possible damage that could be generated or of cases of accidents, contamination or catastrophes that may have happened in the past. It is observed that in these publications, companies tend to highlight the actions taken to guarantee better control of risks, such as a *Progress Agreement*, or Agreements with administrations or other sectors, in which a commitment is made to make certain investments in safety.

The only indications of references to possible damages caused by the risks generated by the companies are to be found in the information they provide about the chemical products they handle during their production processes, products which are classified depending on their capacity to harm the health or environment (i.e. indicating whether they are inflammable, explosive, toxic, irritant, etc.). Even so, this is technical and relatively abstract information. Finally, it should be added that in their publications and reports, the companies reiterate the multitude of positive things that the chemical industry contributes to our society.

b) Public administrations:

We observed that the public administration that provides the most information about the risks of Tarragona's chemical and petrochemical sites is the *Generalitat de Catalunya* (the autonomous government), through the General Management of Emergencies and Civilian Security (Department of the Interior), which is logical enough considering that it is this body which has the most responsibilities in this area. However, neither the State's general administration (the ministries) nor local administration offer much information about the specific risks of these chemical and petrochemical industrial sites. Analysis of the documentation leads to the observation that administrations generally tend to relate chemical risk to acute risks or the risk of accidents (due to explosions, fires, spillage or leaks). In other words, the existing data only contemplates the production of damage and immediate losses, while there are only minimal references to other possible forms of damage to human or environmental health that could arise in the medium or long term, such as those derived from accumulated exposure to small doses of contamination generated by the continued operation of production centres. Moreover, many definitions of risks tend to be accompanied by positive comments about the importance of the chemical industry in contemporary society and its role as a vital element for achieving quality modern-day standards of living. This is particularly noticeable in the case of local administrations, which tend to emphasise the economic richness and jobs generated by the chemical industry, but rarely (if ever) make reference to the possible risks that they involve.

4.2.Evaluation of risk communication

a) Companies:

The managers interviewed have very few doubts about the importance of communication in risk management, and tend to emphatically stress that it is a vital duty. However, in their discourses we observed that there is still a predominance of the tendency to mainly understand it as a form of generating a good company image, and also a useful tool for transmitting information (about a company incident, for example) without the obstacles and misunderstandings that are generated when the information comes from other sources (the media, press, radio, television, etc.).

In this sense, one of the most highly valued functions of risk communication by companies is that it enables them to present an image of 'informative transparency', something that the interviewed managers consider to be an increasingly more essential element for facilitating risk management. This 'transparency' is understood to be a disposition towards demonstrating both the positive aspects of the company's activities (the benefits that chemical products contribute to the quality of life of our society) and the potentially negative ones (waste, emissions of contaminants, incidents, accidents, etc.), in order to show that companies are making an effort to reduce them and guarantee that they are under control. Along these lines, the interviewees consider it counterproductive to attempt to deny that chemical industries produce risks, and claim that what they should do is recognise them while showing society that company managers know what to do to minimise them and keep them under control. And they believe that this transparency can serve to show the general public that they know how to control risks, and therefore win over their trust.

Meanwhile, they also insist that the fact that chemical industries make a profit out of their activities should be interpreted as a guarantee that they will be able to adequately manage these risks, and therefore companies feel no reason to be ashamed of using risk communication as a means of making their company more competitive.

Companies' risk communications mainly consist of mass, unidirectional strategies, through publicity campaigns, information published in the media or information sheets, and other more participative and bidirectional methods such as open days, citizen assessment panels, company visits and informative meetings with groups. Moreover, these tend to be combined with specific training programmes on all educational levels at which the problems and methods of protection of chemical risks are explained. With these objectives in mind, companies strive to be represented in different forums and to maintain contact with the other actors involved in risk processes. They are generally aware that risk communication should be adapted to the different types of publics.

b) Public administrations:

The managers interviewed consider that, unlike in the past, public administrations nowadays no longer only play the role of guaranteeing the control of risks, but also have to ensure that the general public perceives that this control is being performed adequately. They are therefore aware that risk communication strategies need to be developed.

However, they perceive certain obstacles to doing so, such a lack of training in risk communication, the inertias of administrations that do not always make it possible for these matters to be dealt with in an appropriate manner, or the somewhat non-neutral image that the general public tends to attribute to the administration in matters of technological risks. The obstacle caused by excessive compartmentalisation into different administrative departments or sections is also commented (something which leads to problems of coordination and coherence in their actions).

Within administrations, despite recognising their key role as regulators of the use of technologies and safety guarantees, there is an emphasis the responsibilities of the other actors implied in risk processes. To a certain extent, one interpretation could be that the managers of administrations feel that they form part of an intense network of interdependencies, within which they are aware that they cannot act unilaterally, and they therefore tend to demand the collaboration of the other actors, and particularly the companies and the media (these perceptions justify our theoretical framework).

The risk communication carried out by administrations mainly consists of:

- Routine communications designed to raise public awareness and familiarise people with the risks and ways of preventing them. These are relatively periodical publicity campaigns, in the form of pamphlets, talks with neighbourhood associations, in schools, etc. It is generally considered that these communications serve their purposes relatively well, but could still reach the general public better.
- Communications in emergency situations, designed to provide instructions to the general public about what to do or what individual or collective behaviours should be adopted. In these cases, it is considered that use should be made of every kind of media that technology can provide (radio, television, mobile phones, Internet,

sirens, etc.), in order to reach as many people as possible, although even today, sirens are still the fastest way of warning a large number of people.

- Periodically carrying out alarm drills and simulations, something which generates ambivalent reactions among the managers of administrations. On the one hand, they believe they are necessary and serve to remind the public of how they should act in the case of an emergency. But on the other, they are seen as complex large-scale operations of very limited use, and which may even contribute to an increase in the perception of risk.

4.3. Interrelations between companies and public administrations

a) Companies:

According to the company managers interviewed, their relationships with public administrations are ambivalent. On the one hand, they maintain cordial relations and consider that they do a good job of complying with their role as guarantors of security. But, on the other, they state that they would like more enthusiastic support in favour of the chemical industry's activities.

To a certain extent, it seems there is an perception among the companies that the chemical sector is one that produces certain problematic connotations for political agents, who are showing an increasing tendency to favour other economic sections in the region that are, apparently, more socially accepted (such as tourism).

It is observed that the main conflicts with public administrations are related to territorial planning, as the companies feel that their continuity is under threat because municipal land-use regulations appear to be increasingly more favourable of other financial sectors (especially tourism and the construction of housing). It is therefore said that, although they do maintain cordial relations, there is still a need for more mutual trust to be generated between companies and administrations.

Among the companies there is an assumption that risk communication is one of their main responsibilities, but they feel that to do this they require the support of the administrations. It is said that the companies have a vested interest, which makes them appear unconvincing in the eyes of the general public, who do not find the messages they receive to be particularly credible. And so there is a feeling among the companies that they need the support of the administration in order to become more credible. But, at the same time, they express their doubts as to whether the social image of the administrations is really neutral in terms of issues of risk. In fact, there is a debate about whether, in order to improve credibility and generate more trust among the general public, it would be better to turn to a third body (one with a more neutral image, such as the University, for example), or whether it is the administration itself that should improve its role in order to be able to perform this function. In whatever case, there are demands from the companies for administrations to play a more proactive role, with risk communication strategies planned for the long-term, to avoid the confusion and lack of coordination resulting from their excessive organisational fragmentation.

Meanwhile, companies perceive that the administrations are imposing increasingly more obligations in terms of risk communication, such as the following:

- Financing different types of activities; such as promotional activities, the funding of studies and research, etc. Companies consider this excessive but recognise that their mutual interdependencies prevent them from refusing to do this.
- Communicative measures derived from emergency and evacuation plans (such as Plaseqta), which are working well, but it is said that improvements need to be made to such aspects as drills, simulations, etc.
- The communication of minor incidents (there is an agreement and a protocol for reporting these to the public authorities), which is considered highly opportune and useful, but it is also said that the concept of a minor incident needs to be redefined, as the obligation to report numerous unimportant incidents tends to generate public alarmism and misunderstandings (as they often end up appearing in the local media).

b) Public administrations:

Public administrations consider that the companies comply with safety measures properly and know all about prevention and dealing with emergencies (in fact, they have extensive experience, possibly more than any other industrial sector). Moreover, the administrations observe that company managers are increasingly more aware that they should not only take care over prevention, but that they also have to explain the security they have achieved, in other words, risk communication.

However, there are claims among the administrations that, occasionally, some companies are hesitant to offer clear information about the incidents that they have suffered, and that this worries political authorities because they are aware than sooner or later that information will be leaked to the press and then both the companies and the public administrations will lose credibility in the public's eyes. In this sense, administrations have commented on the need to imply companies in the processes of risk communication in a more systematic and coordinated fashion.

4.5. Relationships with the media

a) Companies:

Companies' relationships with the media are relatively ambivalent. Although they strive to maintain cordial relations and offer them information, they admit that they do sometimes have to hold back certain confidential information. This means that the media are obliged to seek out other sources. Companies also complain that their messages do not always reach the public as they are originally intended, but often appear transformed, due to the media's tendency to seek out the most sensational images and to highlight the most dramatic items in their headlines. To a certain extent, companies perceive that the media tends to report on the chemical sector in terms of more negative than positive connotations, and it is also said that this balance can depend on the amount of money that companies spend on advertising in the media. In this sense, it has been proposed that there is a need to agree on some kind of protocol between companies and the media that can determine how risks should be reported.

b) Public administrations

Among public administrations there is the perception that there are certain difficulties when dealing with the media. On the one hand, the oversimplification of messages does not make it possible to cover the full complexity of risk situations. On the other, the media make a priority of the most sensational images, which can often distort the content of the news. All of this often leads those in charge of administrations to sense that there is a tendency to present risks as being much greater than they feel they really are.

Administrations would like to be able to select the type of information that the media can present in the case of accidents or situations of risk, as this would make emergency plans more efficient. Moreover, administrations have said that if their experts provided the most relevant information, there would be no need for journalists to be specialists in technological risks and they would be able to offer each media the type of information it needs. However, they are aware that this measure would not go down particularly well with the media, who might interpret this as an attempt to manipulate information. In whatever case, administrations consider that this is a debate that needs to be opened and tackled in a clear fashion.

4.6. Relationships with the general public

a) Companies:

As for the general public, there is a feeling among companies that they already have enough information about what chemical industries are like, what they are involved in, what they do, what risks they involve, what preventative and safety measures they possess and what the population should do in cases of emergency. It is said that there is plenty of information; it is just that it needs promoting better. In other words, it is said that people know *what* they have to do but do not know *why* they have to do it.

Moreover, it is also suggested that much of the information does not appear credible (as it comes from companies), or people do not believe it simply because they are reticent to have

to tolerate the risks and disturbances involved in industries. To resolve this situation, it is suggested that the amount of purely technical information being supplied should be reduced and the public should be provided with the kind of information that they consider relevant. Nevertheless, there are some who consider that people are not interested in receiving more information, or learning more about the risks, and that they would rather simply receive compensations from companies for having to put up with them.

A less unilateral and more participative mechanism for risk communication is the 'public assessment panel', by which a certain amount of feedback can be obtained about the points of view of members of the general public from a wide range of social backgrounds. The companies that use this mechanism value it very positively, although the formula has yet to be found for fully integrating it in risk management (i.e. the information obtained does not always end up being considered in the way the company is managed). Nevertheless, it is considered an important mechanism for the future.

Finally, it is observed that companies do their best to maintain contact with different types of public associations, especially neighbourhood associations (and not so much ecological groups). It is said that pressure from these associations sometimes justifies to directors and shareholders that there is a need to improve certain investments and actions in relation to risks. Therefore, it is a form of communication that can directly influence risk management.

b) Public administration:

Among administrations, it is considered that the general public's perceptions of risk cannot be ignored, as they are related to their behaviour regarding emergency situations, and moreover, could also have repercussions in the political terrain (elections). But when it comes to what the general public's perceptions of risk are, a double line of argument is observed. On the one hand, those in charge of administration get the sensation that the general public has an increasingly greater perception of risk, something which is reflected in their increasing rejection of certain activities and technologies in the territory. But, on the other hand, it is often observed that the population seems to show very little concern about risks, as shown by the way that people appear to be increasingly less interested in finding

out about the risks to which they are exposed. This paradox introduces a certain ambiguity in the way that administrations deal with the population in terms of risk management. This could be why the managers interviewed conclude that what they need to do is promote transparency and collaboration with companies and the media, always striving to take neighbourhood associations into account.

5. Conclusions

Our analysis has enabled us to detect that business managers and public authorities share a very similar concern for the general public's attitudes with respect to petrochemical risks. Broadly speaking, they tend to consider that *the population's perception of risk is progressively increasing but, at the same time, their desire to find out about risks and ways of preventing them is decreasing*. In other words, in their point of view, not only does concern coexist with people's disinterest regarding risks, but both of these aspects are increasing simultaneously. Something, if nothing else, disconcerting, and which could explain many of the contradictions detected in the discourses of these different social agents. Contradictions that could provide us with several clues to the institutional context in which decisions should be made regarding risk management and its communication (and, evidently, by which the population will perceive these risks).

- First contradiction:

It is observed that both business managers and politicians agree that it cannot be denied that the petrochemical industry involves risks to the health and the environment and it could even be said that trying to hide that would be counterproductive in terms of risk management because it could generate public mistrust. Curiously, this willingness not to deny risks appears contradicted by the clear tendency not to name them (or, if they do, only indirectly). Renn and Kastenholz (2000:19) recommend that the communication of chemical risk should basically include three types of content: 1) information about the risks (probabilities, consequences, etc.); 2) information about prevention and protection of the

health and environment (management policies, preventative measures, etc.); and 3) information about values and principles related to risk management, health and the environment (business commitments, corporate policies, declarations of principles, etc.).

In the present case, the first type, information about risks, is almost inexistent, and rather than speaking about risks what occurs is that information is provided about control, prevention and security measures. This would explain why the vast majority of references (in the websites and interviews) are about ‘acute’ risks, as they are considerably more ‘controllable’ than ‘chronic’ risks (which by definition are more diffuse and complex, and require substantial transformations to the production process in order to be controlled). In a way, it seems that very little emphasis is put on ‘chronic’ risks and in all discourses these seem to be treated as more of an afterthought, as if they were a lost battle that is not worth starting (tackling this problem would probably imply too great a change to the status quo, and perhaps there is no social or political pressure making public demands for it).

Moreover, it is interesting to observe that both companies and public administrations tend to accompany their information about risks with comments about the importance of the chemical industry in contemporary society and its positive role in achieving modern standards of living, as well as the richness it generates in terms of economics and the generation of jobs. In doing so, they are attempting to link risks to the generation of benefits for the society suffering from them. To a certain extent, this idea ties in with Starr’s proposal in his pioneering studies of the perception of risk (Starr, 1969), where he considers that the perception of risk is compensated by the perception of the possible benefits that the technology or activity can provide. Although this idea has been profusely rejected in numerous later studies (Otway, Slovic, etc.), it seems that in the business and political environments it is still considered useful for presenting arguments about risks, or at least fits in perfectly with attempts to conceal risks.

- Second contradiction:

The initial paradox can also be related to another contradiction detected in the discourses of these social agents. It is observed that the company managers and politicians interviewed put a lot of importance on 'risk communication', as they are all extremely convinced that they are obliged not only to manage the risk well and guarantee safety, but also to know how to portray this to the population. And this is something both companies and public administrations are making major efforts to do (publicity in the media, information campaigns, talks at schools and with neighbourhood associations, open days, citizen panels, thematic websites, etc.). But they go on to recognise that their messages are not always relevant or useful to the general public (because this can often be highly technical information, that does not answer the people's concerns, or can be poorly contextualised information that leads 'people to know what they have to do, but not why they have to do it'). There is a patent need to do something about this contradiction, from a communicative point of view, in order to prevent the social perception of risk from increasing, but what is actually being done tends to be innocuous and leaves the general public feeling indifferent (according to the perceptions of company managers and politicians).

- Third contradiction

Although businesspeople and politicians claim to understand the latest trends in risk communication, which are increasingly more addressed towards multidirectional and participative methods, this vision does not correspond to the results expected of risk communication: basically the generation of a good company image and the portrayal of information to the general public in the most direct way possible. As can be seen, they have a clear preference for a seemingly more unidirectional model of communication. Even in the cases where attempts have been made to develop more participative communication strategies, such as the companies that have implanted *citizen assessment panels*, the managers themselves recognise that their dynamics and results are hard to integrate in the way the company is managed (and, in fact, they express their frustration at not having been able to achieve that until now). In fact, the people interviewed in public administration also recognise that there are obstacles to being able to improve risk communication, mainly the lack of trained personnel and the excessive compartmentalisation of their institutions. In

other words, just as occurs with companies, there are obstacles of a structural nature that hinder risk communication. In this sense, everything seems to indicate that the desire to be more open and make risk communication more multidirectional is clashing with the inertia of institutional structures, which are not yet able to introduce much participation of their stakeholders to decision making processes. This situation coincides with that described by Renn and Kastenholtz (2000), who maintain that the mere intention of initiating a process of communicative dialogue and the willingness to listen to the public is not enough, but rather there is a need to develop a structure that can guarantee the integration of technical knowledge, legal requirements and public interests.

- Fourth contradiction:

Companies and public administrations maintain intense and frequent relations, which both parties describe as ‘cordial’, but a more detailed analysis shows that these tend to be ambivalent and relatively conflictive. It should first be said that both the chemical companies and public administrations feel they are mutually competent at doing their respective jobs. The companies claim that the administrations comply well with their role as guarantors of security (developing regulations and ensuring they are complied with), while public administrations state that the companies know how to manage their risks well and that, in fact, they have extensive experience of doing just that.

However, a series of mutual failings appear in the interviews. On the one hand, when it comes to communicating risks, company managers perceive that, due to their corporate interests, the general public does not find their messages particularly credible. In order to overcome this handicap, companies seek the support of the supposedly more neutral public administrations. Nevertheless, there are doubts as to whether public administrations enjoy a neutral image in terms of chemical risk, and in fact, interviewees from the administrations suggest that one of the obstacles they have come across is that the people do not see them as being neutral, but, more than anything, closer to the interests of the chemical industries. On the other hand, complaints are heard from public administrations that companies do not always collaborate when it comes to offering clear information about the incidents and

accidents they have suffered. This concerns politicians because when the media discover information that has been hidden, this has a negative effect not only on the credibility of the companies, but on that of public administrations too.

As can be seen, both types of institution (companies and administrations) express that they have problems with public credibility.

- Fifth contradiction

Both chemical companies and public administrations consider that the media plays an essential role in risk communication, but their evaluations suggest a paradox that is hard to resolve. On the one hand, they agree that their messages informing about risks are often distorted by the time they reach the general public because the media tends to make a priority of the most striking images or to go for the most dramatic headlines they can (something which generates a greater perception of risk). For this reason, they claim that they prefer, when providing information about a situation of chemical risk, for the information that journalists are able to use to come from their own sources (from the companies communications department, or from the administration's experts on emergencies, respectively). But at the same time, they also perceive that journalists are not content with this information alone and often turn to alternative sources, which means they feel it difficult to put an end to the confusion that, according to them, the media can generate. So, in order to limit (what they consider) the common confusion in terms of information, they agree on the need to propose some form of protocol about how risks are presented in the media (something which would imply the selection of information and ways of offering it). However, they feel that the media would interpret this as an attempt at censorship and that this measure would probably contravene the rules of the freedom of the press. To a certain extent, these difficulties are a good illustration of the dilemmas faced by chemical companies and public authorities when it comes to managing and communicating petrochemical risk, and they also reflect the problems of making their messages credible and the fears of losing the trust of the media and the general public.

Consequently, it is observed that both companies and public administrations tend to consider that no single group is responsible, but rather that risk communication is a shared responsibility, and one in which all of the agents implied need to play their role (especially companies, administrations and the media). In other words, they all perceive a network of mutual interdependencies that removes autonomy and creates an obstacle to unilateral actions. Which is in perfect keeping with our initial theoretical framework.

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