

Social discourse concerning pollution and contamination in Spain: Analysis of online comments by digital press readers

Arantza Begueria,¹ Cristina Larrea,^{1*} Araceli Muñoz,¹ Eva Zafra,²
Jaume Mascaró-Pons,³ Miquel Porta^{4,5,6}

¹Department of Cultural Anthropology and the History of America and Africa, University of Barcelona, Barcelona, Catalonia. ²Department of Anthropology, Philosophy and Social Work, Rovira i Virgili University, Tarragona, Catalonia. ³Department of History of Philosophy, Aesthetics and Cultural Philosophy, University of Barcelona, Barcelona, Catalonia. ⁴Hospital del Mar Medical Research Institute (IMIM), Barcelona, Catalonia. ⁵School of Medicine, Autonomous University of Barcelona, Bellaterra, Catalonia. ⁶Ciber for Epidemiology and Public Health (CIBERESP), Madrid, Spain

Correspondence:

Cristina Larrea
Departament d'Antropologia Cultural
i Història d'Amèrica i Àfrica
Universitat de Barcelona
Montalegre, 1-6
08001 Barcelona, Catalonia
Tel. +34-934037755

E-mail: larrea@ub.edu

Summary. This article examines the online comments written by readers of the major Spanish newspapers on the subject of pollution and contamination in Spain. The study offers a comparative analysis of the perceptions, ideas and discourse of those who post comments in the cases of fish contaminated with mercury and atmospheric pollution in the city of Barcelona. The research includes analysis based on some methodological principles of Grounded Theory, and reports differences between perceptions of food contamination —felt as a severe, imminent and global health problem— and of air pollution —perceived as a social and political problem. Readers' comments reveal a significant tendency towards blaming the political and industrial sectors, among others, as well as a profound distrust of the institutions responsible for safeguarding public health.

Introduction

The risks that are faced by citizens of Western countries are present every day in mass media narratives [4,6,54]. In such discourse, the food we eat, the water we drink, the air we breathe and the everyday products we use are often presented with a certain degree of suspicion, in relation to both their possible effects on human health and their environmental impact. Such suspicion and uncertainty appears in a context

in which, almost every week, news are published that are related to workplace or environmental accidents due to toxic substances, to food scares sparked by microbiological or chemical agents, to electromagnetic contamination, tobacco addiction, road accidents and the like. Consequently, citizens gradually gain awareness of the risks that configure what Beck calls "risk society" [6].

According to Beck, current dangers are different from those faced by society in the past, particularly because they

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are invisible. The individual citizen has no way of knowing whether chicken contains high levels of polychlorinated biphenyls; if a vegetable has been treated with potentially toxic pesticides; or how contaminated the sea is, before deciding to take a swim. Some pollutants are difficult to detect: they are colorless, tasteless and odorless. The risks they pose are imperceptible to our primary senses; senses that once served precisely to identify possible health risks. This fact has important consequences for how we structure social knowledge of risk. Nowadays, to gain knowledge of such risks, we have to rely on science and technology; so the citizen is dependent on that knowledge to remain informed about potential health risks. There are those who produce and disseminate scientific and technical knowledge: experts and public administration; and those who receive that knowledge: citizens. Interacting with these two spheres we find the mass media, which transmits knowledge on risks to the lay public.

Without dismissing the role of experience or narratives of everyday life [8,31,52], analysis of what occurs in the mass media is important if we are to examine the ways in which knowledge of risk is incorporated into citizens' social discourse, into their practices and into their everyday experiences [8]. Discourse, knowledge, facts and narratives regarding risk are transmitted to the public, to a great extent, through the mass media; so social experiences and our interpretations of daily life are fundamentally mediated by the relationship between citizens and the mass media [54]. Sources of risk, their possible consequences and the causal links between them are all defined within the field of media narrative [8]. For this reason, the study of the perceptions, ideas and reflections of media audiences is important in the analysis of the construction and representation of risk in social discourse.

The aim of the current work is to analyze qualitatively the comments that readers post on the webpages of the main daily newspapers in Spain. Analysis of comments in the digital press has recently been used to study different subjects [10,11,27,47,50], particularly from the field of communication [3,9,12,14,22,28,29,55,57], as a way to harness the potential of the Internet [23,26] to analyze lay discourse on important social issues. Themes related to public health or the environment that have previously been analysed using readers' comments include climate change [5,25], the system of paying people to take their medicine [38], surrogacy [32] and tobacco [16]. However, to date, the issue of human contamination by chemical products and their toxicity has not been reported in any learned journal.

Given that the personal information related to those who post comments online that can be accessed is minimal or non-existent, from the very outset this analysis suffers from a shortcoming: the absence of social profiles or knowledge of the cultural context of the people whose narrative is being analyzed. The only thing we know about them is that they are readers of the digital press and that they post comments on news related to the environment or health matters. For this reason, the considerations contained in this paper are not intended in any way to be a representative reflection of majority opinions within Spanish society, but rather a description of the tendencies that are expressed in comments: a collection of opinions and feelings. Others have previously explored the concept of public opinion in relation to discourse in the mass media in order to establish a relation between media discourse and social opinion [1,17,33,56], and have encountered various methodological difficulties along the way associated with the aim of presenting a definite image of the opinions of a society as a whole [4].

In contrast, the value of the opinions expressed here is to be found precisely in the fact that they are not the result of an ethnographic situation engineered for the purposes of obtaining data. The research method is closer to observation of discourse that arises in a real social situation, as proposed by García: saying something, telling somebody something, "is a social behavior that can be more revealing than that which is actually being explained" [18]. The value of this approach resides precisely in the fact that the comments represent behavior taken directly from a social reality—that of the chat rooms and comment forums of digital newspapers—that arises in the context of collective socializing made possible by communication technologies. This scenario allows honest and forthright opinions to be shared that might not otherwise be expressed in the presence of a researcher [24].

This work therefore distances itself both from the analysis of risk discourse in journalists' texts and images in the mass media—which has been studied by other authors [4,53]—and from attempts to offer a snapshot of Spanish public opinion as a whole. Even so, the reflections contained in this work may provide us with a useful notion of some of the feelings, concerns, ideas and values that form part of Spanish society.

To this end, we consider two themes: the presence of mercury in fish for human consumption and environmental pollution in the city of Barcelona. They are complementary topics, in the sense that each type of contamination involves different sources, and means of exposure and intake of toxic elements by humans: via food and air. Contamination by

toxic substances is a public health issue that raises important concerns within the scientific community, both in Spain [41–43] and internationally [37,44,45]. Atmospheric pollution is a recurring theme in newspapers, which inform the public about, for example, the poor quality of the air in Spain and plans at the local, regional and national levels to reduce environmental pollution, which particularly results from land traffic. During the course of this research, several issues caused controversy in the pages of the Spanish press, including: the strategic location of apparatus to measure contamination; the possibility of offering tax rebates to the owners of environmentally-friendly vehicles; the management of road traffic in large cities; and the reduction of the speed limit to 80 km/h on some roads in Catalonia.

The presence of toxic elements in fish for human consumption is also particularly important in Spain, which is one of Europe's largest producers and exporters of fish [13,36]. Spain is also one of the greatest consumers of fish in Europe, with an average of 45 kg/person/year compared to a European Union average of just 17 kg/person/year [13]. This issue resurfaced in the Spanish press on 30th June 2011, due to certain recommendations made by the Spanish Agency for Food Safety and Nutrition (AESAN)—which in January 2014 merged with the National Consumers Institute and became the Spanish Agency for Consumer Affairs, Food Safety and Nutrition. Due to the high levels of mercury detected in some types of fish, the AESAN recommended that pregnant women or those of child-bearing age, avoid eating swordfish, shark, red tuna and pike; and that children aged 3 to 12 reduce their intake to 50 g/week. The already sizable reaction of newspaper readers to this information increased a day later, when El País [http://elpais.com/diario/2011/07/01/sociedad/1309471203_850215.html] published that the Spanish government had suppressed a report on the presence of mercury in fish for 7 years and had not made it public until it was legally obliged to do so due to legal action taken by the Non Governmental Organisation Oceana.

Methodology

We present a qualitative study of the comments posted by readers of the Spanish digital press during 2010 and 2011 on the webpages of the following newspapers: *ABC*, *Ara*, *Diari de Balears*, *Diari de Tarragona*, *El Mundo*, *El País*, *El Periódico*, *El Punt-Avui*, *El Segre*, *La Razón*, *La Vanguardia*, *Público* and *Última Hora*. The media included in the research are the main national newspapers and those of the regions of Cata-

lonia and Balearic Islands, as one of the themes chosen was centred there. Throughout the text we include quotes from readers, which are referenced by two or three letters that represent the name of the newspaper and the date of the comment. For example, a comment in *El País* on 1st July 2011 is referenced as: “EP1/7/2011”. The codes used are: *El País*=EP, *El Periódico*=EPD, *Público*=PU, *ABC*=ABC, *La Razón*=LR, *La Vanguardia*=LV, *El Punt-Avui*=PA, *El Mundo*=EM, *Última Hora*=UH, *El Segre*=ES, *Diari de Tarragona*=DT, *Diari de Balears*=DB, *Ara*=ARA.

We searched for news using the search engines provided by the digital versions of the newspapers and also via the portal My News Hemeroteca [<http://mynewshemeroteca.es>], an online service to search for news items. The keywords for our searches were the equivalents in Spanish of: “mercury”, “fish”, “tuna”, “toxic”, “toxicity”, “contamination/pollution”, “water”, “sea,” and “river”, for news on mercury in the fish; and “air”, “Barcelona”, “contamination/pollution”, “atmospheric” and “environmental”, for news on environmental pollution. We also included all possible combinations of these words. All the texts containing readers' comments were included (news items, letters to the Editor and interviews). We retrieved a total of 78 hits: 56 on environmental pollution—with 862 readers' comments—and 22 on the presence of mercury in fish—with 566 comments. All the 1428 comments were analyzed. We were not able to gather news on environmental pollution from the newspaper *El País* due to a change in format of the digital edition which led to the omission of readers' comments.

The data were analyzed using some of the main methods of Grounded Theory [21,49], through the identification and classification of emerging concepts and categories in the texts. In our initial analysis we identified categories and concepts that refer to discourse on contamination in Spain. In that analysis, carried out independently by several members of the group, we identified both discourse already present at the heart of Spanish society and also some ideas and values that were specific to the medium in which they were expressed. Based on that initial study, we performed a new codification in terms of thematic units and we then performed successive studies of the material in order to group it according to those units. This classification was examined to compare the ideas that arose in each specific publication and also to interrelate the different categories and thereby produce a broad qualitative description of the comments posted by readers of the Spanish digital press on the two themes studied.

Results

Criticism and denial: readers' discourse. The comments posted by the newspaper readers did not form a homogeneous whole with respect to knowledge and recognition of food and respiratory risks. In the texts studied, two basic types of discourse could be identified, in marked opposition to each other, which ran through the comments on all the news in several forms. The first was critical discourse with respect to the current contamination situation; this was discourse concerned with certain conditions of life that include contamination as an unavoidable component of our current way of life. In contrast, the second type of discourse claimed that the present conditions of life are better than those of the past and that the problems of our current way of life are outweighed by its benefits. According to this discourse of denial, human habitat and life are sufficiently well protected by legislation and, despite that, there are ecologist groups who make exaggerated and alarmist claims.

The critical discourse, which was greatly extended among the readers of the newspapers studied, implies the existence of collective awareness of a social problem and of a need to implement solutions. As one reader commented, "We are letting the planet be pushed around: we poison the air, the subsoil and the water, and nobody will be able to continue living here" (EP1/7/2011). The problems of contamination were seen as being difficult to resolve at the personal level, although it was recognized that everybody should change their individual patterns of consumption. Therefore, responsibility was placed within the political arena. According to this line of thought, it was the responsibility of politics and politicians to deal with the social problem of contamination, whether atmospheric or of food. Specifically, comments characteristic of the critical discourse referred to three types of social actors who interact in the processes of the creation and solution of the problem of contamination. On the one hand, industry was seen as the source of contamination, whether of food or airborne pollution. Industry was perceived as a collection of entities at the service of economic profit, largely unaware of the damage they cause and unconcerned for citizens' welfare. For this reason, the political sphere—the second actor—should apply policies that are more effective to safeguard public health. However, the measures actually adopted were the object of criticism on the part of the newspaper readers, who argued that government and official institutions do not enact effective policies and, in addition, that they hide important information concerning

public health from the citizen. This political sphere was seen to include healthcare institutions, which the readers did not trust due to their lack of independence from both politicians and industry.

A third social actor, "people" or "humanity," was mentioned in order to refer to the practices of human beings: "we are destroying our health with our way of life," "everything is a result of the behavior of people. We are destroying the planet and we are starting to suffer the consequences" (PU30/6/2011). These and other comments were infused with a sensation of distrust, both towards industry and towards political, economic and social interests. They also contained a certain sensation of sadness when faced with a world in decline. "We are a human plague, we devour everything, we destroy everything" (EP1/7/2011).

Precisely that attitude caused some readers, a minority, to take offence from such critical discourse, which they considered to be "discourse of fear" whose result would be to keep people scared and, therefore, easy to control and manipulate: "Enough of all this ecologist nonsense with political undertones. There have always been high levels of pollution when there is high atmospheric pressure in winter" (EM9/2/2011). "What they want to do is keep the public out of it; send us out of our minds becoming hypochondriacs and sick" (LV30/6/2011).

This discourse of denial was more conservative than the critical discourse; it offered a vision in which the present is a coherent consequence of a past that it is not very different from. The readers commented, for example, that we have always eaten all kinds of food without any problems: "Indecent nutritional alarmism with no foundation. Nothing is wrong, and even if we had hundreds of times more mercury there would still be nothing wrong" (PU15/4/2011). In fact, this idea is in sharp contrast to the current scientific evidence on the damage of exposure to pollutants such as mercury [2,51]. These readers also defended climate change as something natural, a phenomenon that has always happened since the start of planet Earth. With respect to climate change, it is interesting to note that while similar studies carried out on the press in the United States [5,25] find that discourse of denial is the most common among newspaper readers, here it is a minority position.

In addition to climate change and nutrition, the discourse of denial argued that life expectancy in the Western world is greater than in the past and that it is still increasing. "Why won't the ecologists get off our backs? Pollution will disappear due to the effects of technological development!"

(EM1/10/2011). This technocentric perspective [5] established a line that ran from the past—an unspecific past—and continued towards the future in a linear and coherent way. In contrast, defenders of the critical discourse expressed their despair at the imminence of large-scale changes caused by the current model of progress. Some judged progress positively; others considered that it was difficult for the positive consequences of progress to compensate against the negative ones. Of course, other readers occupied the middle ground, siding with neither one nor the other point of view consistently.

Although there were comments that staunchly defended one of these positions, particularly those of the denial type, others used the reflections and arguments of both types of discourse in an inclusive and interrelated way; albeit sometimes contradictorily. However, it is particularly notable that both types of argument were found in all the newspapers studied, whatever political leaning they have. The two attitudes towards the problem of contamination were reproduced in all the newspaper, along with the differences of perception between food contamination and atmospheric pollution.

Food and air. Comparison of the comments regarding air and food contamination revealed a much more pressing concern in the case of mercury in fish than in that of environmental pollution. “I don’t know what to eat anymore”, “We are poisoning ourselves”, “We are digging our own graves, this is the beginning of the end for the human race” (EP30/6/2011). Food contamination was seen as more dangerous than atmospheric pollution, as if it had a more important effect on health, was more immediate and affected the entire population. In this case, the public’s perception coincides with the scientific evidence [19,40]. The readers’ comments showed open concern with respect to the news they discussed, while they also expressed considerable indignation at the way the government had acted or suppressed the report mentioned above. “It is terrible the way we are getting used to our food being poisoned” (ABC1/7/11). This mention of poisoning, which was repeated very often by readers, attests to their concern.

That concern also became apparent in the type of comparisons that people drew between risk associated with food and other types of hazard. In the comments on mercury in fish, the readers employed a wide range of arguments that included, among others, reflections on the nuclear accident at Fukushima—which occurred during our field work—and

industrial spills in general, pesticides, mass urbanization, tobacco, climate change, food additives, the pharmaceutical industry, genetically modified food, electromagnetic pollution, terrorism, economic recession, overpopulation of the planet, “mad cows” and chemical products. In the readers’ discourse, especially in the critical discourse, the presence of certain levels of mercury in fish seemed to form part of a situation of global hazard, which would fit in with Beck’s description of a “risk society” [6]. The concern expressed in the comments regarding food was extended to issues concerning energy, politics, economics and demographics.

In the comments that the news of atmospheric pollution prompted, in contrast, the danger for human health was mentioned to a lesser degree, while most space was taken up by arguments concerning political responsibility to solve the problem of contamination caused by vehicles in cities: “Ordinary people keep being terrorized at every turn with a new danger. But people aren’t babies and the majority of us know that this is no more than another manoeuvre to distract our attention from the only danger that is really threatening us: politicians” (ABC1/7/2011). “What we need are brave politicians who are prepared to penalize those who pollute” (PA12/10/2010). These comments also mentioned dangers associated with environmental pollution, such as tobacco, traffic accidents, climate change and chemtrails; that is, danger associated with the air and cars. These types of comparison were made through their similarity with the subject referred to and were much more limited than those made in the case of food hazards.

The differences in perception in terms of severity between one type of contamination and the other were considerable. While the question of toxic substances in fish was conceived as very serious, intolerable and extremely dangerous for health, atmospheric pollution was seen as a more social and political problem that was awaiting resolution. However, and although food contamination was perceived as very serious, some readers also considered that it could be managed by the individual in a more straightforward way than atmospheric pollution could. If provided with the appropriate information, the citizen could avoid food contamination through not consuming certain food. In the case of environmental pollution, individuals have no capacity to act and control what enters their bodies by breathing. So, the comments on the news referring to fish included many references to the possibilities that individuals have to control and manage their own health; while the comments on environmental pollution called on politicians to find solutions. This dialectic be-

tween personal decisions and collective measures is also central to many debates on public health. In this case, the idea that food contamination is more easily managed than air pollution is in contrast with current scientific evidence, which brings to light the need for effective health policies in the case of food as well [19,39].

Readers and mass media. It is commonly believed that the mass media is aligned with certain economic powers, political parties and ideologies. For that reason, the similarity of the discourse encountered in the comments of the readers of all the different newspapers is relevant to our analysis which, once this had been established, was carried out as if we were dealing with just one single text, in the semiotic sense.

The two positions adopted with regard to the problem of contamination were present in all the newspapers studied, as too were the differences between the cases of food and atmospheric contamination. In the same way, comments that criticized or praised political parties were spread equally among all the newspapers. A newspaper such as *ABC*, for example, traditionally conservative and aligned with the major party in Spain, the Partido Popular (PP), received both comments praising that party and comments criticizing it. Readers of *La Vanguardia* criticized both the ousted left-wing coalition that had governed Catalonia and also, on occasions, the new coalition of *Convergència* and *Unió*. Although it is true that some of the comments in each newspaper matched the ideology that the paper is supposed to have, it is also the case that such comments were not unanimous. In this way, they reflected attitudes and public opinion that cut across conventional political ideological divides.

However, the way in which the information was presented and placed in context, and the subjects dealt with in the news did influence the readers' comments, in the sense that they laid out the route for the comments to follow. In news that presented the recommendations of the AESAN, the general tendency in the comments was to show alarm and to reflect on the situation in terms of human food consumption. In contrast, in news on how this information had been suppressed by the Spanish government, the readers criticized this fact, which led to surprise and indignation. When another news item treated the effects of toxic substances on human health in a general way, the readers' comments tended to propose solutions. In this way, although the information contained in the news "does not have the power to tell people how to think, it does manage to impose an agenda of what the public is to think about" [46].

Some journalist texts, a minority, attempted to explain the process of the formation of atmospheric pollution. In such cases, we found readers' comments that examined the data contained in the news and provided new information or cited scientific studies. This generated debate and reflection which led to discussion of the adequateness of the data provided by the newspapers and the different scientific theories regarding the formation of pollution, the hole in the ozone layer or climate change.

It is true that readers entered into dialogue and negotiation over the information that was offered to them, they contested it, they supported it or they refuted it; that is, they did not simply accept the information passively [35,48]. Nevertheless, the themes of the discussion were set beforehand by the subjects presented in the news items, the selection—and ruling out—of certain themes and the way in which they were presented; all of which influenced the comments in one way or another [46]. The content of news items influences the comments that they provoke, so that the social relevance of risk and of the dangers associated with contamination are constantly constructed and reinforced in this way [54]. This is how a complex interrelation is established between the emitter of a message and those who receive it, which contributes to the construction and representation of social reality.

Risk and blame. A large number of comments on news that referred to contamination, whether of food or air, dealt with the causes and who was to blame for the situation. The news on the presence of mercury in fish and on the suppressed report generated a flood of comments that were seething with indignation, calling for resignations within the government and denouncing how unfair it was not to inform the public in addition to the politicians being responsible not having adopted more effective measures to resolve the issue of contaminated fish. Industries that contaminate the seas and rivers were also criticized, together with the food industry, whose economic motivation prevented it from correctly informing consumers of the contents of products.

Western societies are "almost ready to treat each death as chargeable to someone's account, every accident as caused by someone's criminal negligence, and every sickness a threatened prosecution. Whose fault? Is the first question" [15:15-16]. The comments posted on atmospheric pollution in Barcelona criticized the authorities for allowing cities to become polluted. Those who were politically responsible were criticized for not having developed plans to reduce the city's traffic. They were criticized for implementing projects

whose sole aim was to generate more income for the city's coffers but which did not solve the problem of poor air quality. The search for who was to blame monopolized these comments, which focused indignation on the political arena more than on the other actors involved.

According to some readers' comments, the different public administrations are responsible for adopting measures to mitigate the problems caused by pollution. Although it was recognized that individuals should change their transport and consumption habits, it was also mentioned that these changes could not be carried out without a series of political measures to accompany and promote them. In the case of food contamination, the main thing standing in the way of such changes was the actions of the industry, whose polluting practices were not sufficiently pursued or sanctioned by the administration. In the case of atmospheric pollution, in contrast, the car industry was hardly criticized at all; in contrast, emphasis was placed on the ineffectiveness of the political management of the issue. Mary Douglas argued in *Risk and Blame* [15] that the issue of contamination is particularly useful when it comes to assigning social responsibilities and establishing blame. Although Douglas was referring to external contamination and specifically from the point of view of American society, our analysis of comments on two specific themes showed that the controversy regarding risk is also a political and cultural issue in our context; it prompted a hunt for where to place responsibility and blame, wherever that might be. We were surprised by the scarcity of comments that referred to the possibility of social organization and political mobilization of citizens; those that were concerned with the search for solutions left them up to the actions of politicians and industry, with no call for civil action to force those sectors to change their ways. So we can see that society looks for somebody to blame for every phenomenon, as a way to organize and protect itself.

The current meaning of "risk" is not neutral; it has a cultural, moral and political meaning, since it serves to proportion responsibility to certain social groups and positions, while denying other sources of responsibility. Through the specific election of what is dangerous and what is not, the concept of "risk" helps to create and maintain a certain vision of the world and in this way establish what is morally acceptable and what is not [15]; just as could be seen from the comments posted by newspaper readers. The texts on the contamination of fish expressed resounding disapproval of the situation, which was deemed unthinkable and morally unacceptable. Readers showed their moral condemnation of the fact that

food for human consumption could contain substances that are potential health risks. Meanwhile, they reiterated their place within a system in which political and healthcare institutions are responsible for ensuring compliance with these moral values. In this way, the question of contamination serves to uphold a specific vision of the world; a moral community that legitimates or condemns certain policies [15].

Some of the comments within the discourse of denial dealt with the interests of ecologist groups: "My humble opinion is that behind this there is no other explanation than to decrease national demand for these products so that in this way a much more lucrative export market can be consolidated, as is the case of the Japanese market" (ABC1/7/2011). And even: "These catastrophe hunters are devoted to scaring us in order to justify biased publicity in favor of other products. Who is paying them?" (ABC1/7/2011) Although these accusations were not backed up by facts, the comments suggested that the so-called environmentalist lobby was masking other objectives that were related to the political or economic interests of the environmentalist groups. In this way, the discourse of denial also used the notion of risk to construct a certain moral vision of the environmentalist movement.

The notion of contamination and its different meanings can also serve certain groups in their fight against institutions, abuses of power and political fraud. In addition, given that the notion of "individual" is central to our society, certain concepts of risk also serve to protect it [15]. In this way, the comments of readers aligned with the critical discourse expressed indignation at the violation of individual and collective rights to healthcare and information, and also at the way in which responsibility is deposited in the hands of the citizen: "We live in a country in which no politician or public body takes any responsibility. It is better to comment on it, delegate the decision to the consumer and if anyone becomes ill after consuming it [...], to say that they had been warned. It is intolerable" (EP30/6/2011). The notion of contamination serves to call for a social order in which the individual is at the center of the system and is the focus of social and moral priorities. Thus, the notions of risk deal with the relation between the individual and "otherness"; that is, with how the relationship between the individual and the surrounding world is established [30].

Some readers' comments, particularly those dealing with food, went further than to lay blame in the political arena and referred to "humanity" as being responsible for the problem of contamination. They referred to "we", to "hu-

mans”, who, through our way of life, are poisoning the planet and destroying the life forms on it. Referring to humanity as this generic being in who risk is constructed and unfolds would respond to an integral vision of a globalized world which no longer pays much attention to local contexts of risk, but which centers its attention on global and transnational phenomena, just as Anthony Giddens also noticed [30]. These comments would, in part, be along the argumentative line followed by those who think that progress is bringing about the destruction of the planet; that modern life destabilizes the social system on which it is based; and that scientific development has outstripped the limits of nature in the wrong direction [7]. This type of argument reinforces the idea that the notion of risk is associated with moral defects and that it can be used to denounce and criticize them [15]. In some comments that adopted critical discourse, scorn was directed at progress and its moral implications.

In the past there was also fear of the destruction of nature and humanity, but its origin was placed in entities such as God or fate. At present, these fears are related to the perception that human activity has made catastrophe imminent [30]. The readers’ comments were clear: “The only solution involves radically changing human beings and our way of life and that is really very difficult” (EM10/11/2010). The comments often criticized the Western system of social life, which was seen as being based on mistaken moral values, and whose institutions are not worthy of trust. In that way, humanity would be to blame for its own self-destruction: “The year is 2020: after several decades of consumerist rampage, capitalism explodes and takes with it an extremely beautiful planet that had been carved with infinite patience for millions of years. Up until the very last minute, one species (the most intelligent, it presumed) reveled in its own magnificent achievements” (EP30/6/2011).

Uncertainty and mistrust. Both those who favored critical discourse and those who aligned themselves with the discourse of denial demonstrated open mistrust not only of the institutions whose job it is to manage the problem of contamination, but also towards the narrative that surrounded that management.

Readers’ comments identified four basic areas on which they centered their criticism: industry, politics, communications and science. Contaminating industries—and sometimes by extension, all industrial activity—were seen as the main obstacle to overcome in order to effectively protect the environment and public health. Readers perceived that economic

profit is the top priority of these companies and that this is valued above all else. “We are trapped between mafias that get rich at the expense of our ignorance. What matters is the lowest cost and greatest presence of the product, not the quality or the nutritional value; and the last on the list is the health of those who eat it” (EP30/6/2011). The criticism was extended to the entire food industry: “We have had enough of them toying with our health in relation to what we eat, you cannot trust anyone. For years I have been watching what I eat because I don’t trust what I am sold; it is rotten to the core, business is more important than our health!” (EP30/6/2011).

Along similar lines, some of those who made comments considered that politicians, who should take responsibility for the regulation of business activity, are as a whole corrupt and inefficient; at the service of the interests of industry and of their own profits. “In this country, nothing that affects businessmen can be touched. The businessman is sacred” (PU15/4/2011), one reader said. “Do we need any further evidence to make it absolutely clear that governments do not serve the people but businesses; the multinationals that devour everything, including the planet?” (EP30/6/2011). Readers expressed the opinion that politicians take decisions in accordance with the benefits they stood to make, whether monetary profit or political gain, without taking into account the consequences for the environment. The readers asked questions related to justice and social equality when they argued that politicians are major contaminators of the environment while at the same time they pass laws in favor of the environment. According to those readers, politicians are protected by an economic situation that allows them to pay the fines that they themselves are imposing: “It is totally clear that the political classes are deeply conditioned by capital, given that many politicians end up on some board of directors once their political career is over” (EP1/7/2011).

Among the political institutions criticized we also find those that are specifically in charge of public health. In addition to the AESAN, those who posted comments also criticized supranational organizations such as the World Health Organization or the European Union, whose roles in the swine flu crisis some readers reflected on as decisive in causing social alarm which ended up benefiting the pharmaceutical industries. The feeling of mistrust was patent: “The only thing I had not yet seen in this life! That the institutions which are trusted to safeguard public health recommend moderate consumption of a toxic product!” (PU1/7/2011).

The concept of trust is central to the work of Giddens on

risk [20]. In a situation in which citizens must trust scientific knowledge and institutional risk management, trust becomes a vital requirement [30]. However, that trust is tainted with uncertainty, partly due to the contradictions expressed within the scientific community and within the political field. In this sense, readers' comments expressed profound suspicion towards the institutions that govern society.

Skepticism also affected areas devoted to science and communication. Faced with the contradictory data and information that frequently appears in the mass media, readers commented that scientific studies can be politically manipulated and, therefore, they are not worthy of much confidence. In fact, some readers offered external studies that showed mistakes in the information offered by the newspapers. It was also said that the mass media is at the service of both its own interests and other people's, and that in this way it fails in its duty to inform the citizens impartially. Those who adopted a more critical discourse expressed the opinion that the mass media provides little information on the problems of contamination, and that it does so too late: "And by the way, dear journalists, could you inform the public of this, as it is your job to do so?!" (ABC10/2/2011). Those who leaned towards the discourse of denial also criticized the newspapers for publishing alarmist news with the supposed intention of selling more papers: "Watch out for the mass media and their terrible responsibility in handling this type of information, ... They almost always let themselves be dragged into sensationalism" (EP30/6/2011). According to these voices, the scientific discourse, mediated through the newspapers, offered the perfect arguments for alarming the public, manipulating them and feeding them the government line.

The case of tobacco—the laws regulating which were made more restrictive in Spain during this research (Act 42/2010)—exemplifies the way in which the scientific discourse was questioned by a large section of the readership, who highlighted the paradox between implementing bans on the consumption of tobacco, but failing to implement effective measures against the contamination generated by private vehicles. In this way they denounced the use of scientific reports to legitimize measures in accordance with political aims: "It is an axiom these days that when somebody backed up by the false image of being scientific issues a judgment sanctioning something, we have to discover the other side of things and find out where the money is going. Who are they trying to benefit?" (EP30/6/2011), one reader commented. Others, along similar lines, indicated the political and economic use of scientific studies: "A politician, whose name I

can't remember right now, once said: never trust any survey or any study that you have not manipulated yourself" (EPD15/10/2010), "What criterion do they follow? There was a time when olive oil was bad for you, now it's the best there is. Nobody can understand that" (EP30/6/2011).

In today's society, citizens are obliged to trust science when making choices and assessing the risks they are faced with. "People now cannot simply rely on local knowledge, tradition, religious precepts, habits or observation of others' practices to conduct their everyday lives, as they did in pre-modern and early modern times. Rather, they must look principally to experts they do not personally know and are unlikely ever to meet to supply them with guidelines" [30:75]. However, this scientific knowledge is also subject to doubt and criticism. "The fact that experts frequently disagree becomes familiar terrain for almost everyone" [20]. Thus, modernity creates a universe in which knowledge is constantly shifting and the individual adapts to this by choosing between an ever increasing series of options. This situation, as can be seen from the opinions studied for this research, seems to contribute to creating a collective feeling of mistrust, insecurity and anxiety. The readers expressed their skepticism towards the institutions that govern them, towards the information offered by newspapers and towards the scientific data that all of them rely on. The vision of science expressed by the readers is similar to that presented by Beck in Ecological politics in an age of risk [7]. According to Beck's perspective, modern science has a monopoly on the definition of danger, that is, not only is it the cause of danger but it is also responsible for concealing it. Central components of modern scientific discourse contribute to legitimizing and, on occasions, minimizing the risks that the public are subjected to [7,34]. One reader commented: "It seems that these days science has to be devoted to resolving the problems that science itself has caused. You mustn't eat spinach because it contains too much of what they give to it to produce lots of it. Fascinating!" (EP30/6/2011).

One of the concerns of readers was related to the openness and the truthfulness of the information that they receive via the newspapers. Frequently, those posting comments expressed the conviction that both those who are politically responsible and industry suppress information that would be valuable to safeguard public health. In the texts on food, readers commented: "They tell us now because the risk is real but how long have they known? What are they hiding from us?", "They don't want to tell us the truth and they release the news to us one snippet at a time and all dressed up"

and “economic and political interests are hiding the truth with deceptive measures” (EP30/6/2011). Many comments suggested that the real cause of the recommendations not to consume fish was to be found in the (then) recent Fukushima nuclear accident; the effect of the resultant radiation on the fish would be the real reason to recommend that the public do not consume much of it: “They are not telling us the truth, just as they didn’t tell us the truth about Chernobyl, since the nuclear lobby made sure the truth was hidden” (PU15/4/2011). In this way, institutions would be devoted to covering up the real consequences of the Fukushima accident in order to protect the interests of the energy industry and of the political groups that fund and protect it. These comments do not take into account the fact that the report on mercury in fish was already in the government’s hands 7 years before the Fukushima accident, as the information was only published in *El País*. According to the comments, people were being deceived, just as they were over the swine flu crisis, depriving people of the real information about the risks they faced.

Those who posted comments on the newspaper stories displayed an important sensation of vulnerability and anxiety, particularly regarding the news on the presence of mercury in fish. Without vital information or the necessary tools to fight the danger they faced, they could not trust the institutions that govern society either. So they expressed the impossibility of taking action personally to control what they were exposed to. “From vegetables to the air we breathe, where will all this lead? We cannot be sure about anything” (EP30/6/2011), “My God, how I worry for my daughter!” (PA12/10/2010), “Is there anything left in this world of greed that is not contaminated??? Can we be sure about what we are eating???” (EP30/6/2011).

Past and future. Reflection on the risks society faces is, in part, implicit reflection on what the future will be like. However, the readers’ comments focused more on the past and on considering the differences between the past and the present.

Comments within the critical discourse established a dichotomy between an idealized past and a future that is undesirable for human welfare. This dichotomy was related, in addition, to two further dichotomies: rural–urban duality, which came up in relation to the news on environmental pollution; and the natural–artificial division, which was evoked in the news about food. The countryside was seen

as a less polluted place than the city and as a healthier place to live; although some news items explained how contamination also builds in the outskirts of cities. The readers considered that living in the city brought with it the acceptance of a lower quality of life than living in the countryside; understanding by countryside everything outside the metropolitan limits. So, this countryside was related with the natural, healthy and less polluted. Paradoxically, some city resident complained that those who live in the countryside pollute the cities when they drive into them by car to work, without taking into account that they surely also pollute the places they come from.

The countryside was also related with the past; a past that was linked to a simpler and slower way of life than the present, and that used local resources. So it was said that the fish that people ate in the past was fish that they caught themselves or that their neighbors caught. Individuals exercised control over their immediate surroundings and they were not mediated by today’s technology: “Years ago, everything our grandparents ate was from their fields or their farm, they drank freshly collected milk, ... And they were healthy!” (PU4/7/2011). The most natural food, linked with the countryside and with the past, was fresh food; that is, food that has not been processed by the food industry: “People used to eat meat from their livestock, vegetables from their land, milk, cheese, bread, ... did not undergo chemical treatments, it was more natural, ... and it still had all its vitamins and nutrients” (EP1/7/2011). In contrast, packaged food was seen as artificial, potentially manipulated and possibly containing additives. This association is particularly interesting because of the paradox it throws up in the case of fish, given that fish is fresh food that has not been processed by the food industry but which, nonetheless, is suspected of being toxic.

The future was generally mentioned in a negative way, with references to a contaminated planet with sick inhabitants: “If the human race survives in the future, historians will be horrified by our contamination and poisoning of ourselves” (PU15/4/2011). The critical discourse tended to consider that the future would see major changes compared to the present. Food, for example, would be artificial food: energy pills or cocktails of synthetic products. In contrast, adherents to the discourse of denial saw a much greater degree of continuity over time and did not establish a dichotomy between past and future, but rather continuity through scientific and social progress. That progress, according to them, would allow an ever better quality of life,

greater life expectancy and increased availability of food products.

Nevertheless, there were more opinions within the critical discourse. Their notions regarding the past referred to a simpler way of life than our current system, one in which local resources were managed by the individual. In contrast, packaged food and the use of cars forms part of a complex system in which individuals do not control the important things in their lives or their health, and in which technology acts as a mediator of many of the processes that individuals performed themselves in the past. In this sense, those who posted comments were aware that the problem of contamination forms part of the political system and that this issue is related to the complex social and economic discourse of the state and of Western capitalism.

The feelings of mistrust and vulnerability expressed by readers could be related, in part, to this perception of a lack of control, as well as to the notion of a complex structure of social institutions to which the citizen has no direct access. However, such a basic idea of the individual caught up in an overly complex social system was complemented with the belief that the real solutions to the problem of contamination will involve global and public measures; that is, collective management of social life. Although citizens can and must adopt environmentally-friendly individual practices, such as getting around by bicycle or eating organic food, the real solutions to pollution require public and collective management from the political arena, which is responsible for implementing systems of regulation and eradicating contaminating practices. So, the social community structure and its institutions, which some readers seem to mistrust, are also seen as absolutely necessary for social change to tackle the problems of contamination.

Conclusions

This study deals with the ideas, values and concerns of part of the Spanish public with respect to the subject of contamination. Our findings unveiled some issues that are relevant for reflection and for proposing public and private policies that will safeguard public health and the environment.

Our analysis of the comments in this study shows that atmospheric pollution and food contamination are perceived symbolically in very different ways. Two thematic axes thus emerge.

On the one hand, environmental pollution is perceived as a social and political problem, not as serious for health as

food contamination, but more difficult to solve. The rural–urban dichotomy emerges as a paradigm of the ambiguities in this field. Our analysis indicates the existence of a paradox that forms part of the dialectics between the individual and the collective. Although readers appeal to the need for changes in individuals' conduct, they display a clear conviction that the only efficient solutions and ultimate responsibility for safeguarding public health must come from collective public institutions. However, those institutions—together with industry, science and the mass media—are criticized for their lack of effective action in safeguarding public health. The study shows, in addition, a scarcity of comments that call for the use of collective political action or public pressure to be brought on the institutions. In short, these convictions highlight the central role of the welfare state in the values of Spanish society; as well as a significant distrust of the current model of public management and of the possibility of collective action by citizens to change that model. Trapped in this paradox between the individual and the collective, we find a citizen who feels vulnerable, sceptical and disenchanting.

On the other hand, the critical discourse seems to be more focused on food contamination, which is perceived as more serious, more imminent, more global and, paradoxically, more easily managed by the citizen than atmospheric pollution is. The dichotomy natural–artificial emerges in the collective thinking and it is also related with the idea of poisoning, which those who posted comments allude to both in terms of the individual and with reference to the planet. The finding that the concept of poisoning is adopted as a metaphor for food contamination is important for our understanding of the collective perception of the issue of human contamination. This notion within popular thought—historically associated with the opposite idea, that of an antidote—once again appeals to the possibilities of personal management of one's own contamination which, as we have seen, is related in a highly complex way with the idea of collective management of the problem. In addition, this finding opens up new lines of research that could examine in greater depth the modes in which the idea of human contamination is perceived in citizens' discourse and how scientific knowledge can be related to this lay discourse in our society. ■

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Resum. Aquest article analitza els comentaris *en línia* que escriuen els lectors dels principals diaris espanyols sobre la contaminació a Espanya. L'estudi realitza una anàlisi comparativa de les percepcions, idees i discurs dels comentaristes en el cas de peix contaminat amb mercuri i en el de contaminació atmosfèrica a la ciutat de Barcelona. A partir d'una anàlisi basada en principis metodològics de la Teoria Fonamentada, es descriuen les diferències entre la percepció de la contaminació alimentària —sentida com un problema de salut pública greu, imminent i global— i la contaminació atmosfèrica —percebuda com un problema social i polític. Els comentaris dels lectors revelen una tendència significativa cap a la culpabilització del camp polític i industrial, entre d'altres, així com una profunda desconfiança cap a les institucions encarregades de vetllar per la salut pública.

Paraules clau: contaminació atmosfèrica · contaminació alimentària · contaminació interna · premsa digital · comentaris dels lectors · percepció social del risc
