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Stakeholder Participation In Site Assessment And Management: A Real Case Of Vincennes, France

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1. Summary

Stakeholders' participation is increasingly considered as a plain part of the assessment and the management of a contaminated site. It is also acknowledged to be a difficult and sometimes risky challenge. Beside virtual experiments on "test groups", there is very little feedback on real cases of extensive stakeholders' participation on contaminated sites in Europe. No guideline or support document exist in Europe to help to organize Stakeholders' participation.
We present here the real case of a Southern area of the town of Vincennes near Paris: following a high number of cancers among children in a school in the vicinity of a former industrial site and a hospital incinerator, the Health Ministry set up an independent Scientific Committee in charge of designing the epidemiological and risk assessment studies, of reviewing theirs results and of issuing recommendations. The Prefect directed a Participation Committee gathering all stakeholders in the aim of sharing all information available on the site, of discussing the results of the studies and the conclusions of the Scientific Committee and collecting opinions and expectations of each stakeholder in order to prepare decisions. Numerous studies were conducted. The Scientific Committee reviewed more than 30 protocols and reports.
This experience is discussed here with regard to major questions on stakeholders' participation in site assessment and management, such as the communication between experts and non-experts and between experts of different fields (health scientists vs. environmental engineers), the impact of the media, the psychological impacts, the "crisis *vs.* non-crisis" aspects of participation. The discussion integrates other experience gathered on stakeholders' involvement It leads to the identification of some ingredients for an efficient stakeholders' participation, event if the specificity of each case, and the importance of spontaneity, reactivity, is recognized.

2. Introduction

Stakeholders' participation is increasingly considered as a plain part of the assessment and the management of a contaminated site. It is also acknowledged to be a difficult and sometimes risky challenge. Beside virtual experiments on "test groups" (Petts *et al.*, 2003), there is very little feedback on real cases of extensive stakeholders' participation on contaminated sites in Europe. No guideline or support document exist in Europe to help organize Stakeholders' participation.

We present here the real case of a Southern area of the town of Vincennes near Paris: following a high number of cancers among children in a school in the vicinity of a former industrial site and a hospital incinerator, the Health Ministry set up an independent Scientific Committee in charge of designing the epidemiological and risk assessment studies, of reviewing theirs results and of issuing recommendations concerning management actions. The Prefect directed a Participation Committee gathering all stakeholders in the aim of sharing all information available on the site, of discussing the results of the studies and the conclusions of the Scientific Committee and collecting opinions and expectations of each stakeholder in order to prepare decisions. The whole case was conducted in a constant urgency, which is no exception.

This experience is discussed here with regard to major questions on stakeholders' participation in site assessment and management, such as the communication between experts and non-experts and between experts of different fields (health scientists *vs.* environmental engineers), the impact of the media, the psychological impacts, the "crisis *vs.* non-crisis" aspects of participation. The discussion integrates other experience gathered on stakeholders' involvement. It leads to the identification of some ingredients for an efficient stakeholders' participation.

3. Presentation of the real case of Vincennes

3.1. History and stakeholders

In 1999 and 2001, three cases of cancers among children were reported in the infant school named Franklin Roosevelt in the South of Vincennes. The school had been built between 1987-1990, on a former industrial site (film materials from 1905 until 1987) and immediately downwind of the incinerator of the Bégin military hospital (1970-1994). In 2000-2001, limited environmental investigations and epidemiological assessment concerning the school were conducted. They were reviewed by an *ad hoc* "national expert committee". They concluded: "the information gathered on the environmental quality and the observed cases of cancer does not allow to suspect a link between the frequentation of the infant school and the occurrence of the cancers". Therefore no further investigations were recommended (InVS, 2001).
But the social preoccupation remained high, all the more since a new case of cancer got declared, concerning a child who had not visited the school Franklin Roosevelt but had lived near the former industrial site. All the cases of cancer were geographically situated on the periphery of the former industrial site. Strong demands for complementary epidemiological and environmental investigations were expressed by a local collective.

From June until August 2001, the State Institute INERIS performed some complementary environmental investigations of surface and sub-surface soils and of the indoor air in the Franklin Roosevelt school and in three other schools in the neighborhood, detecting no sign of contamination from the underground.

From mid 2001 until end of 2003, a Participation Committee, directed by the Prefect and later the Sub-Prefect, gathered representatives and experts from the industrial firm which operated on the site, from the army health service, from local collectives, from local authorities (town, "département",…), and from the local and national administration (Health, Environment, Education). The Participation Committee discussed the issues, and the Prefect took the decisions[1] and transmitted them to the industrial firm. As a former operator of a Classified Installation, the industrial firm took in charge the environmental studies on and around its former site[2].

The Participation Committee was technically supported by an independent Scientific Committee set up by the Health Ministry. The Scientific Committee gathered experts from mainly public organisms. No specific budget was made available for its works, except for the epidemiological studies. It was divided in two subgroups, respectively for epidemiological and environmental studies. The Scientific Committee was presided by an expert of the State Institute InVS, the environmental subgroup was coordinated by an expert of the INERIS. Those two experts are the authors of the present article.

3.2. Epidemiological studies

The Scientific Committee designed two epidemiological studies, concerning two populations:

- the children who had visited the school Franklin Roosevelt;
- the children living in the surrounding town area.

These were conducted by Inserm (National Institute for Medical Research) and InVS.
In 2004, the provisory results of the epidemiological studies (INSERM, 2004) did not confirm, statistically, an excess of cancer in the two populations considered: the local aggregation of infant cancers may have occurred purely by chance. The epidemiological studies were planned to go on for a longer period of time.

[1] or recommendations to the army health service, which is not under the authority of the Prefect.
[2] The Industrial Firm had achieved a site remediation in 1986-1989, but this did not suppress its responsibility on a residual pollution. In 2001-2003, it actually accepted to take in charge more than legally required, *e.g.* the measurement of exposure levels at places and for analytical parameters not related to its former activities on the site.

3.3. Environmental studies

For the environmental studies, the Scientific Committee issued proposals for the scopes of works and further recommendations, received all protocols and reports (more than 30) and issued its opinion[3] (more than 20) and further recommendations. This work was done after concerting with the different stakeholders, especially the local collective, the industrial firm, and the local health and environment authorities.

The environmental studies proposed by the Scientific Committee (2001) had two objectives:

- To estimate risk differences between the town area and a usual situation taken as a reference;
- To try to attribute those differences to specific pollutant sources.

For that, the environmental studies combined two approaches:

- Comparative study of the concentrations in exposure media (soil, air, water,…), following a random selection of exposure points within in the town area and reference areas in similar conditions in the neighborhood;
- Source-to-receptor approach, starting from the documentary studies of the former industrial site and of the Bégin hospital: history, hydrogeology...

Beside this set of coordinated studies, the Scientific Committee accompanied exploratory investigations in cellars and gardens and in the groundwater which had been demanded by the local collective and the Ministry of the Environment.

Following the demands of the Scientific Committee, an environmental consultant firm was appointed by the industrial firm to review the work of the other contracting party in charge of the studies around the former industrial site (hereafter "environmental contractant"). Its review finally did not correspond to the needs of the Scientific Committee (CS, 2003a).

In 2003, the results of the environmental studies (CS, 2003a) showed a concentrated but apparently punctual pollution of the groundwater (10 m deep) and sometimes of the soil and the soil air, inclusive by vinyl chloride and trichloroethen, two volatile and cancerogenous substances. Nevertheless, no excess of exposure in the town area linked to the former industrial site was found. This indication was not definitive, given the fact that the investigation of the exposure media was punctual in time and space, and given some metrological questions concerning the soil air measures. Outside the areas potentially concerned by the underground pollution, such an indication seemed sufficient. Within those areas, a more exhaustive control and monitoring of possible transfer pathways had to be implemented, in order to confirm that no transfer susceptible of causing a significant excess exposure would occur.
The control and monitoring program for the former industrial site was decided by the Sub-Prefect at the beginning of 2004, after concerting with the stakeholders (*e.g.* CS, 2003b). The participation structure deflated progressively back to the current usual system: the technical service of the Prefect in charge of the industrial sites would control the studies and prepare the prescriptions; it would receive the comments of the local collective, to which the reports of the control and monitoring were still addressed.
The control and monitoring campaigns realized so far have not shown significant transfer towards the receptors.

Besides, the environmental exploratory studies conducted in 2002 in the investigated town area and in a nearby reference area showed a significant pollution of the superficial soil in some places with lead and (to a lesser extent) zinc, baryum, copper. Those results can not be related to the former industrial site. The local health administration handled the question according to existing procedures for lead contamination.

The impact assessment study for the Bégin hospital, conducted in 2003, got rejected by the Scientific Committee due to its insufficient quality in regard to the state of the art (CS, 2003 c).

[3] which implied a deep work of critical analysis of the received documents. Given the lack of means (time and financing), the opinions did not have the status of exhaustive third expertises.

4. Discussion of the stakeholders' involvement

4.1. Each party its part

In the usual studies of contaminated sites in France, the industrial firm can choose alone its environmental contractant in charge of the studies. But a third expert must be chosen in mutual agreement between the industrial firm and the local authorities. The environmental contractant and its reviewer were appointed by the industrial firm without concerting with the stakeholders or the Scientific Committee. This may have resulted from the moral and judiciary urgency to start (and then complete) the studies. During the whole process, the local collective expressed some suspicion that the environmental contractant and its reviewer would not be impartial, even if the environmental contractant's investigation proposals and studies got reviewed by the Scientific Committee.

The Scientific Committee thoroughly maintained its visibility as "independent": a balanced relationship with the main two opposite parties, the local collective and the industrial firm, was cultivated: as much as relevant, a meeting with one side was followed by a meeting with the other side. The world of the experts in contaminated sites is small. Experts over different parties were former colleagues. Significantly, the French casual form of "you", usual between two such acquaintances, was not used in the meetings. For the expertise of the environmental studies, the appointment and the financing of one expert of the Scientific Committee by the industrial firm were excluded, even if the decision were taken in the Participation Committee. Only a public hand would have been considered as possible (even if the money could come from the industrial firm).

An expert of the local collective was first incorporated in the Scientific Committee. He resigned after one year.

This general attention to avoid any confusion of roles implies that the different points of view are maintained, and that a consensus should not be expected: in Vincennes, the control and monitoring program which ended the environmental studies got very much discussed from September 2003 until February or March 2004, when the prescriptions of the local authorities were issued. No consensus was reached on one general conceptual point (was the net of monitoring points from the environmental studies sufficient or should it be extended?) and on many details (positioning of some points). But given the preceding discussion, this fact, and the corollary that the prescription would not be fully satisfactory for oneself, was somehow accepted by the participants. Hubert (2004) drew a similar conclusion after the experience of the Working Group "Nord-Cotentin" on the impacts of the nuclear site of La Hague in France. More essential than the consensus is the feeling that the different points of view are honestly taken into account. Which should not at all be confused with an empty communication or a "social treatment" of the crisis, and manipulation: taking into account the views of the different stakeholders had very concrete consequences on each part of the studies eventually performed.

All the proposals and recommendations of the Scientific Committee got accepted by the Participation Committee –or sometimes integrated in anticipation by the industrial firm in it proposals-, and then implemented. The Scientific Committee acquired thus a major role in the preparation of the decisions. But it voluntarily strictly limited its role to the technical aspects, as opposed to management: for instance, it refused to answer the question whether the school Franklin Roosevelt should be closed or not, which was a management question, but produced the technical part of an answer (CS, 2003a). This technical part eventually proved not determining in the final decision (see § 4.3.4).

4.2. Experts and experts

A particularity of the Scientific Committee was to gather experts of very different fields. Within the subgroup for environmental studies, a shift could be observed. It led to passionate technical debating at the beginning of the works of the Scientific Committee. As usually on technical questions (not to confuse with decision making: see § 4.1), an expert consensus could be reached.

The original debate is still visible in the two approaches ("exposure measurement" *vs*. "source-to-receptor") which could eventually be combined in the final recommendations of the Scientific Committee. On that occasion, some experts on each side learned something about the relativity of their own supposedly established approach and on multicultural work among experts.

4.3. Experts and non experts: establishing and maintaining the relationship

An especially highly confident relationship was established between the future INERIS expert in the Scientific Committee and the local collective at the favor of the complementary environmental investigations of June 2001 in the school Franklin Roosevelt. The INERIS expert made the documentary study and the soil and soil air sampling himself. A thirty-minutes presentation-discussion of the study, the sampling program and the sampling tools, with explanation of the difficulties and limits of the method, and with some tool-handling by the persons, was organized on-site prior to the investigation between the INERIS expert and the local collective. The local collective watched the sampling, and some discussion took place again between the samplings.

This first contact determined the whole further relationship between the INERIS expert and the local collective. The same type of relationship could be established by other members of the Scientific Committee, and with other stakeholders. The ingredients to an efficient stakeholders' involvement as appear in the first contact described above are further illustrated and discussed here under. These ingredients amount to the respect to the other party: the other party must be considered as a legitimate partner with legitimate preoccupations and the capacity to understand the case. A key should be to imagine oneself at the place of the other.

4.3.1. Personal engagement

The dialog with the other stakeholders is not delegated, and a strong personal availability is achieved to allow an almost permanent direct contact: a discussion between the local collective or the industrial firm for instance and the president or the two coordinators of the Scientific Committee was always possible on a very short term. In the whole, the experts of the Scientific Committee spent together several hundred working days on the case, much on their personal time. Holidays were interrupted for one meeting, week-ends were spent on the case. The similar financial and personal engagement of the industrial firm and its environmental contractant got acknowledgment by all parties the local collective included, and this certainly help smoothen their relationship in the curse of time. For example, the communication director and the environmental manager of the industrial firm, the Prefect, participated themselves to the meetings.

4.3.2. Honesty on the limits of the work

The scientific Committee in its documents and more directly its members in the personal did not fear to expose the limits and uncertainties in their proposals, for example concerning the classification of some cancers in the epidemiological study, the ability to model vapor transfer (natural degradation included) in the soil air and through the concrete floor (SC, 2003a), or the proportionality of some measurements proposed (Hazebrouck *et al.*, 2003).
On the contrary, the main reproach of the local collective towards the environmental contractant, which in its view confirmed its original suspicion and prevented a full collaboration between the two, besides some local punctual asymmetries in the detail of some data presentation, concerned the non disclosure of the remaining unknown and the resulting doubts[4].
The expert must be able to say: "I do not know". Defining the limits of the knowledge, and thus of the role of technique and experts *vs.* management, should precisely be the main role of the expert: outside those limits, the experts are not more legitimate than non experts to make decisions (Testart, 2000).
The way this honesty is translated should nevertheless carefully be chosen taking account of the audience, so as not to end up with more anxiety (see § 4.3.4).

4.3.3. Breaking the distance between non experts and the field of expertise: demystifying the expertise

It should first be reminded that site investigation and risk assessment, and the associated uncertainties, are no far-fetched concepts: they are primarily based on common sense, and can be encountered in everyday's life. Therefore a demystified communication should allow a good general comprehension between experts and non experts.

[4] In fact, many uncertainties were discussed and taken into account in the study. But the Scientific Committee often had to signal other major uncertainties and limits of the study which would induce a need for further investigations. Given the generally poor discussion and integration of the uncertainties in site assessments in France, this should not suggest any dishonesty from the environmental contractant: its environmental study was much over the average on that point.

As a first step, the access to the case should be made as concrete as possible, through attendance at investigations, site visits, graphs, pictures,.... For example, an extensive work of mapping and map superposition by the environmental contractant in the historical study and in the proposals for the investigations, certainly allowed much of the understanding of the approach and of the site itself. Such an approach is recognized to break the distance between the field of the expertise and the non experts.
As a second step, the INERIS expert, in long discussions with his correspondent of the local collective, and in a lesser extent in the Participation Committee meetings, always displayed as extensively as relevant supposedly complicated themes such as:

- limits, uncertainties, lack of validation, of the metrological and modeling tools used in the study in particular and in contaminated site assessment in general,
- then the impossibility to get rid of all uncertainties, and finally the subsequent concept of proportionality which is so difficult to accept at first in its concrete applications.

The comprehension by the non-experts seemed good. More detailed technical discussion of the concepts of the Johnson and Ettinger model for vapor transfer from soil air into indoor air, or of the use of active carbon for the measure of a multiple pollution in soil air, did not seem out of reach at all for the person of the local collective. After three years, having consulted several sources of technical information on the models, that person had become an expert on vapor measurement and transfer. A Key ingredient for a good understanding seemed to be time and good will: on the contrary, one actor, apparently not so motivated by the technical accuracy of the decisions, would not understand a more simple issue: the difference between the absence of detection of vapor transfer on a few points, and a comprehensive control of vapor transfer through a net of sampling points selected based on the site history, the current (partial) knowledge on the pollution sources, and the configuration of the buildings. Bonano *et al.* (2000), in an experiment of virtual stakeholders' involvement with a test group, came to the same conclusion, identifying time and motivation as major ingredients for an efficient stakeholders' involvement. The case of Vincennes brings a confirmation on a real case.

4.3.4. Proactive, non-stressful communication

In the way they formulate their results and conclusion, or in their silence itself, given the expectation of the population and their status, experts and managers of the expertise have a dramatic influence on the anxiety of the population.

In Vincennes, the formal structure of the Participation Committee did not allow a proactive information especially towards the media: contacts to the media were limited to a few persons and occasions, the messages were previously extensively reviewed. Each public communication to the general population also got through an extensive review by different stakeholders and/or the Scientific Committee. Yet supplementary information was available for the public, in an indirect way[5], through the local collective and its direct contacts with the Participation and Scientific Committees.
The school Franklin Roosevelt got closed, based not on the conclusions of the site investigations, but on the need to protect the children and their families from the media: TV cameras and journalists were at the school's door, worst-case rumors were circulating.... The level of psychological stress upon the children, and its anxiogenous impact, became obvious through the following story: a child fell on its nose in the school yard, bled a little, and immediately asked: "Am I going to die?". This story largely contributed convincing the Participation Committee of the need to close the school.
Other real-case experience (Colas, 2004; Hazebrouck *et al.*, 2005) shows that proactive information towards the media and the population can strongly help to avoid an excessive psychological impact: the absence of information lets rumors and even phantasms spread out. Making the information available (if necessary taking time to explain the situation to a journalist) will fill this void.

Concerning the formulation of the results, discussions with the epidemiologists on first drafts from the environmental subgroup of the Scientific Committee showed that the same results can be formulated in a stressful way (and will often be so in a first version) or a non stressful way. Review by a non expert person remains a good way to heave this risk. The population should not be left by the experts with a problem without solutions: at least outlines of a realistic solution, and preferably also a timetable, should be produced. Thus, as the lead contamination of some superficial soils was discovered, a response was immediately implemented by the local health administration.

[5] with the possible bias. In 2003, a second local collective appeared, with views opposite to those of the first local collective.

In Vincennes, the population was well educated, which may have make the communication, and specially the open communication towards the local collective, easier. A non stressfull communication on the uncertainties could be much more difficult in less educated populations.

Other aspects of the context must also be taken into account: the first public meeting in Vincennes turned violent and had to be interrupted and the room had to be evacuated. Another one a little later, organized by the local collective, could go to the end. For the meeting, was the population not ready suspicious that the authorities would bury the affair, were the solutions presented at that time not precise and concrete enough? Was the mediation of the local collective necessary? A general explanation would be that the dialog came a little too late: all phantasms and rumors had been breading for too long. Other real-case experience (Colas, 2004; Hazebrouck *et al.*, 2005) shows that an anticipated dialog makes things much easier.

5. Conclusion

The presentation of the real case of Vincennes and its discussion in the light of other experiences underline that an efficient stakeholders' participation is possible, provided there is personal engagement (including time) and good will on all sides. The following positive ingredients were identified:

- clear repartition of the roles, with no fusion nor obligatory final consensus;
- respect for the other party and its preoccupations;
- personal engagement (time, no delegation);
- honesty on the limits of the work and hence of the field of experts;
- concrete access to the case (attendance at investigations, site visits, graphs, pictures,....
- Proactive, non-stressful communication, including towards the media, which implies not to let problems "open" and to anticipate the wish for dialog.

The participation process may help remind experts that decisions are not based on technical criteria only, and do not have to: given the many limits in site assessment, the technique does not answer to all questions, and an adequate decision process integrates the opinions and wishes of stakeholders such as the population.

A large and formal Participation Committee with a Scientific Committee like in Vincennes would certainly not be recommended for all types of stakeholders' participation. In Vincennes, it responded to a state of crisis, to the gravity of the effect (observed lethal cancers on children) and to the ignorance of a clear source. In its final evaluation, the Scientific Committee itself recommended to limit the use of Scientific Committees to situations that can not be solved by the existing ways. For other situations, such an organization would generally prove counter-productive, due to lack of directness, spontaneity and reactivity. A direct organization of stakeholders' participation by the entity in charge of the site, under the control of local authorities and/or a third-expert (selected in a mutual agreement), should be in most cases sufficient and more efficient.

Even if directness and spontaneity are wished, organizational and operational tools for the stakeholders' participation would be useful. Such tools are not available in Europe[6], as well as the knowledge on risk perception for contaminated sites necessary for the development of such tools. The French Institutes on risks INERIS (industrial risk) and IRSN (nuclear risk) are currently working on the development of support documents and guidelines for stakeholders' participation in the management of health impacts of contaminated sites. This R&D project is financed by the ADEME (Agence de l'Environnement et de la Maîtrise de l'Energie). A steering committee gathers the points of view of the local sanitary administration (including the InVS), of the Ministry of the Environment, of industrial firms and of environmental consultants.

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