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# Risk Communication in The Netherlands: The Monitored Introduction of the EC "Post-Seveso" Directive

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Implementation of article 8.1 of the EC-"Seveso" Directive (82/501/EC) is now under way in many countries in Europe. In The Netherlands, the implementation of the Directive started with a carefully monitored introduction of active information provision at two sites (Dordrecht and Elst). This introduction was supported by a multidisciplinary research group. This group helped to develop the risk communication program and also played a role in the evaluation of the program. This paper describes these processes and their evaluation. We will focus on the design of the risk communication programs and the effects of the programs on knowledge and attitudes of the local target groups. This effort and its results clearly started an institutional learning process involving governmental bodies at several organizational levels (local, regional, and national), and industrial organizations (individual firms and organizations of industries). Monitoring the design, the implementation, and the effects of active information provision proves an effective means to gain experience with the implementation of the Seveso Directive and could help to facilitate further implementation.

**KEY WORDS:** Risk communication; monitoring; Seveso Directive; attitude; institutional learning.

## 1. INTRODUCTION

On June 24, 1982, EC- Directive 82/501/EC (Pb. EC 1987, L230), commonly named the Seveso Directive, came into force. The Directive focuses on the exchange of information between governments, industry,

and the public, and requires among other things that the public likely to be affected by an accident must be informed on the nature of the risk and on the best way to act in the event of an accident.<sup>(1)</sup> Article 8 of the Directive laid down obligations for government and industry with respect to public information. However, while those obligations were stated, the question of the actual content of the information to be presented and the procedures for information provision were left open. On November 24, 1988 an addendum was added to the Directive (88/610/EC, Pb. EC 1987, L85). This addendum specified the items people should be informed about and specifically requested the active provision of information to the public. Until then several countries (including the Netherlands) were of the opinion that Article 8 of the Directive had already been implemented since in their country the availability of risk information was already

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to ministries operating in a corporatistic-consensus style and ministries operating in an adversarial style.

The involvement of so many different actors of which have developed their own different ways of dealing with each other adds to the fact that the type of information that will be given tends to be potentially risky from a social point of view. In fact, people are told that they can die as a consequence of a large accident in a factory. Since it is generally supposed that people do not accept risks that are imposed on them (in contrast to risks that they choose for themselves)<sup>(12)</sup> such a message may reinforce a sense of anxiety over the siting and management of industry.

Both the complexity of risk communication and the type of message that has to be communicated make the establishment of risk communication an activity that merits careful preparation.<sup>(13)</sup> A monitored introduction can help reduce the unwanted effects by assessing the effects of each step before starting the next one.

### 3. MONITORED INTRODUCTION IN THE NETHERLANDS

The Dutch risk communication project to implement the Seveso Directive consisted of three phases, respectively aimed at designing, testing and adjusting the communication program. First of all, a general outline for a risk communication process was developed on the basis of several sources of information.<sup>(14)</sup> These included a review of social-psychological literature, of international experience with risk communication, Dutch experience with (risk) communication initiated by industries, together with a review of the existing legal framework of information provision and the way it was used in practice. Much attention was paid to the formulation of goals for the communication activities.

It was concluded that initiatives for risk communication within the framework of the Seveso Directive should have three objectives, if they were to meet the aims of the Seveso Directive and at the same time to conform to the aims of the institutions involved. These objectives were:

- to increase public knowledge about technology and risks related to technology;
- to raise, or not damage, the public's confidence in policy concerning technological risks;
- to provide the public with behavioral guidance in disasters and emergencies.

The first of these three goals was mainly considered

important by central government, the second mainly by local government and industry. The third objective was seen as important by all parties involved.

These three goals were taken as the goals for the communication program to be developed. It should be noted that the participating companies and authorities had the additional goal of formally implementing the Directive by their participation.

#### 3.1. The Design of the Communication Program

The authorities commissioned the project to fulfil the following conditions:

- a. The communication program should take into account information on the *way to behave* in case of an emergency and on the *safety measures* taken to reduce the risk.
- b. The information should be provided to the public in an *active* way. Government and industry should *design the information program together*.

On the basis of the information collected in phase one of the project, an organizational structure was chosen to be tested. This structure linked three parties: the provincial authorities, the municipality, and the local plant management. The provincial authorities were included because most Seveso-sites need licenses from the provincial authorities.<sup>7</sup> The municipality was involved because the local authorities (and especially the Mayor) are responsible for handling emergency situations.

It was decided that case studies would be conducted in Elst and Dordrecht.<sup>(14)</sup> The Province would initiate the formation of a local committee with a representative of the local plant management and the local administration (the Mayor's office). This committee would have to carry out the proposed steps of the communication program<sup>(15)</sup>; that is:

1. a survey of the "need to know" of both the community and the local authorities;
2. formulation of the communication strategy, including tasks and (financial) responsibilities of each of the local committee members;
3. preparation of the information material;
4. carrying out the information campaign;
5. evaluation and adjustment.

<sup>7</sup> The municipality is in principle the licensing authority for Nuisance Act licenses, unless a site is in more than one municipality or needs other environmental licenses besides a Nuisance Act license. For many Seveso sites, this is the case.

as well as the industry itself is involved. Because the site of Du Pont is close to two other municipalities (Papendrecht and Sliedrecht), these two municipalities were added to the study design.

### 3.3. The Communication Activities

Information needs to be tailored to the needs of the target group. Because of the expected variety in information needs among the population addressed, it was decided to divide the written information to be provided into so-called primary and secondary information. The primary information contained a comprehensive description of the situation matching the items in the addendum of the Directive. This information was designed to be understood by people with no more than primary education. The secondary information was more elaborated and was geared at informing the attentive part of the public. Additional communication activities were geared at specific groups. The communication activities in both cases are summarized in Table II.

#### 3.3.1. Primary Information

At both sites it was decided to mail all residents within a specified geographical region around the site a two-page letter signed both by the managing director of the plant and the Mayor. It was expected that the double signature of the letter would enhance the credibility of the message.<sup>(16)</sup> Additionally, a card was included containing instructions on the correct behavior in case of an emergency.

Around Du Pont, the area to be informed was determined on the basis of the existing quantitative risk analysis. Information was provided to all people who lived in an area where the individual risk of a fatality is

calculated to be larger than  $10^{-8}$  per year due to an accident at the industrial site. This area was extended to enclose geographically related regions. Around Du Pont, the sending of a letter signed by the Mayor meant sending three identical letters signed by the respective Mayors. Because only Dordrecht was actually represented in the local committee, this meant additional consultations with representatives of the other two municipalities. The residents around Du Pont also received a laminated card with instructions on the correct procedure in case of a major accident.

Around Luxan, a previous zoning decision was taken as the starting point. Within 500 meters of the site no new housing had been allowed; it was decided that people living in this area were to be informed.

#### 3.3.2. Secondary Information

In addition to the letter and card, the primary information at both sites mentioned secondary information that was available upon request. A public meeting was organized to respond to questions or requests for (additional) information.

In Dordrecht, the secondary information included information by two of the parties involved in the local committee. All secondary information was (like the letter) thoroughly discussed by the parties involved and collectively agreed upon. The function of what eventually became the secondary information at Luxan was completely different. Because almost no external safety information was available in advance, the information prepared by the company served as the basis for the information to be provided to the public at risk. This information was also the *first* information available to inform the municipality of the external risk situation. Therefore, it served a dual purpose. In contrast to the situation in Dordrecht, no detailed agreement had been reached with respect to this information, and it was decided that the plant management would be responsible for the content.

#### 3.3.3. Public Meeting

The public meeting in Dordrecht was restricted to those local residents that expressed their interest on a reply card which was enclosed with the primary information. Both the municipality and industry expected undue interest if this meeting would be widely announced.

In Elst, all residents were invited to attend the meeting, although only a small number did. It must be men-

Table II. Overview of Communication Activities

Activities	Dordrecht	Elst
Primary information		
Letter	Yes	Yes
Card	Yes	Yes
Secondary information		
From company	Upon request	Upon request
From province	Upon request	No
From municipality	No	No
Public meeting	Restricted	Open
Press conference	Yes	Yes

**Table IV. Feelings of Safety Reflecting Residents Appraisals of Major-Accident Hazards in Their Neighborhood Before and After the Campaign**

Degree of safety	Percentage of residents selecting each response alternative	
	Before	After
Completely safe	8%	15%
Very safe	13%	17%
Safe	31%	25%
Fairly safe	33%	29%
Not very safe	12%	10%
Rather unsafe	2%	5%
Don't know	2%	—
	(101%) (N=167)	(101%) (N=159)

**Table V. Perceived Characteristics of the Substances Which Could Be Hazardous to the Neighborhood**

Harmful characteristics of the substances	Before (N=167)	After (N=159)
Flammables <sup>a</sup>		
Yes	54%	42%
No	11%	26%
Do not know	34%	32%
Toxics		
Yes	86%	86%
No	—	3%
Do not know	14%	11%
Explosives <sup>a</sup>		
Yes	46%	41%
No	14%	27%
Do not know	40%	32%

<sup>a</sup> Difference between both measurements is significant ( $p=0.05$ ; two sided).

ferent objectives that had been specified, different conclusions should be drawn:

*4.1.1. Increasing Public Knowledge*

The first test among the population indicated that residents had a fairly good idea about the fact that the DuPont plant constitutes a risk for external safety, and most people seem to realize that the chemicals used in the plant could give rise to a toxic cloud. About half the people believe that the chemicals can explode (contrary to the expert's view), and the number of people believing so was only slightly reduced after the campaign (Table V).

It can be concluded that at a general level people already had a fairly good idea about the risk, whereas they did not have very specific knowledge about the characteristics of the hazard. The campaign had only a slight effect on this knowledge.

*4.1.2. Raising Confidence*

The test before the campaign showed that the population was quite confident about the safety policy of DuPont and its employees. It was, however, slightly less confident that DuPont would inform the municipality in time in case of an accident. The confidence in the municipality was clearly lower. The information campaign had no significant effect on these data.

*4.1.3. Providing Behavioral Guidance*

The initial measurement showed that previous to the information campaign the population had almost no information about the emergency scenario (14% knew the correct meaning of the siren signal). After the campaign, a clear effect could be measured (76% knew the siren signal). The measurement 6 months after the campaign showed that this effect quickly decreased. Only 44% of the people who had not been interviewed before knew the meaning of the signal. (See also Table VI.)

An interesting additional observation is that people who feel either very safe or very unsafe are less prepared to follow the safety instructions than people in the middle of the scale.

The above observations led to the general conclusion that emergency instructions do work in a campaign as in Dordrecht, although the information seems to need repetition to stick. To influence trust in a positive sense, such an activity is only marginally useful. It is clear that an activity like this is not fit to improve damaged relationships. Still, it was worthwhile to measure the effect of the campaign in this respect, since the activity could also have led to an increase in distrust.

The effect on the measure of knowledge of the pop-

**Table VI. Effect of Emergency Instructions**

		Knew the correct meaning of alarm	Would stay inside after alarm
Before	(N=167)	17%	18%
After	(N=159)	76%	67%
Follow-up	(N=73)	44%	38%

A monitored process can lead to a social process of learning by the institutions involved in the activities. This was clearly borne out by our experience.

The organizational *structure* that had been originally proposed for the implementation, involved the licensing authority as the initiator of the information activities. Experience showed that a leading role for the provincial authorities was felt not to be in accordance with the usual division of responsibilities between local and regional authorities and that the municipality (the Mayor) should be the prime actor. This new procedure now will become part of Dutch legislation.

The information *materials* that were prepared in both experimental situations have become exemplary material for new information activities. Both obvious and less obvious ineffectivities are being corrected. In Bergen op Zoom (General Electric Plastics), the letter from Dordrecht was copied as much as possible, as was the laminated card. But some improvements were made: the card did mention how people would be informed about the end of the alarm, and did not show the logo of the company. The logo of the company led people to think that the activity of the company was the main risk in the neighborhood (which was not necessarily the case).

Finally, the obtained effects of the communication activities support that information provision should be a *recurring activity* to reach the purpose of the activities in case of an accident, whereas the measurable effect of a one-time operation on the relationship of trust is likely to be very limited. As earlier experience has shown, (re)gaining trust is an activity that asks for a sustained effort over a number of years.

By choosing two case studies, the process and the effects of the implementation were carefully documented. Operating in this way, the proposed structure of implementation could be tested, and eventually changed into a more optimal structure. Furthermore, the interaction processes that are part of a risk communication process could be tested and adapted. The effects of the operation as it was carried out could be monitored, and finally exemplary materials were developed.

The main advantage of monitoring such a complex process is that decisions can be corrected relatively early on. Secondly, parts of the process will be more predictable and therefore this socially important process will start with more confidence of the involved parties in the final results.

It might be asked whether activities like those described in this paper merit the term communication, since goals and set-up of the activities are only very slightly influenced by active cooperation with members of the public. The whole process is largely a one-way process.<sup>(18)</sup>

There are two reasons why we think that such essentially one-way processes as described here are a step forward in building a relationship between authorities, companies, and residents at the local level. The first is that the activities that have been started up have lowered the threshold of talking to the public about risk. Both government and industry were fearful about the issue, but the research showed their fears were premature. The second reason is that the activities reported here are part of a larger social process of decision-making about potentially risky activities. Since no immediate decisions were at stake in the cases discussed, not much of a dialog was seen as necessary by active members of the public. But the availability of risk information will help to keep this issue firmly on the agenda in future debates about industrial development.

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