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PUBLIC INFORMATION SYSTEM AND EXCHANGE OF INFORMATION FOLLOWING CHEMICAL ACCIDENTS

by S. Angeletti

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Mass Media Information

Mass media information largely determines the public opinion about the treatment of chemical accident consequences, as well as the opinion of consistent part of local community directly involved. Evidently, this is often the only information on chemical accidents, which reaches the general public. Moreover, part of the local community for various reasons may encounter difficulties in obtaining, understanding and accepting direct information from the rehabilitation team (this aspect needs particular attention from rehabilitation team). In any case, mass media information exerts a consistent influence on population also in presence of direct information.

It should be borne in mind that mass media information may represent the "reality" for most of public, sometimes independently of the effective reality of objective data and monitoring results. On the other hand, scientific-technical information needs to be appropriately diffused to have any effect on population: that is, it needs in general to pass through mass media. Therefore, mass media information has a vital importance.

Some difficulties may be encountered in providing information to general public. First, a chemical accident has evidently a considerable psychological impact, only in part conscious, on general public. A chemical accident may appear as the failure of official science and technology. As a consequence, in particular immediately after the accident, official explanations, provisions and evaluations may be sometimes accepted with a low degree of confidence. Among the goals of rehabilitation team, also the objective of overcoming this possible lack of confidence may be included. Efficiency in rehabilitation management and reliability in information provision may be the best ways in this case too.

Also In the interest of success in the rehabilitation effort *itself*: pressure exerted by the local populace as well as by larger segments of the public can influence the decisions of politicians and public administrators to various degrees, even to some considerable extent (remember that at Seveso any solution involving incineration was rejected as a result of pressure from the local population, who were far from thoroughly informed on the subject).

A considerable effort is necessary, in order to initiate a rational discussion with public, on what happened, what has been done and what has to be done. In other words, the accident consequences should appear to the public opinion as they really are: not as something of incomprehensible and uncontrollable, but as a problem, which has probably difficult but possible solutions. A second difficulty may be encountered: the message diffused by mass media has its own structure and characteristics, generally different from the structure and characteristics of a scientific-technical report or publication. For this reason, the information provided by rehabilitation team may be often analyzed, re-structured and re-written by mass media operators, to carry out a message fitting for mass media diffusion. This aspect has to be appropriately considered in preparing reports and data for mass media, to avoid possible misinterpretations, omissions or over-estimates of insignificant details during this editing step.

In particular, in reports prepared for mass media most relevant information has to be appropriately pointed out, opinions and objective data distinguished, certainties and uncertainties separated and measurement possible errors indicated and discussed.

Whenever possible, provision of uncertain data should be avoided. Sometimes this may be difficult: available data may be temporarily limited and uncertain, and different interpretations possible.

In this case, reasons of uncertainties should be accurately explained, possibly making use of simple examples. Possible alternative hypotheses should be presented and thoroughly analyzed whenever necessary. Eventual changes in rehabilitation planning and management, due to the collection of new data and ideas, should not appear to the public as consequence of errors, but as the lo-

In this context, always prepare articles in advance, summarising the situation preceding the new one and using the formula: "As you will remember..." 3

gical result of an increase of knowledge.

As a rule, the scientific-technical information for mass media should include a large set of comments, examples and references to make it fully comprehensible also by people without a scientific-technical culture. This is a characteristic requirement of mass media information: if experts of rehabilitation team will not indicate the appropriate examples and references useful to completely understand the material provided, someone else probably will do this (maybe in a worse manner). In particular, if evaluations concerning risks and health or environmental effects have to be communicated, a clear reference to well known risks and effects should be made whenever possible. In fact, the simple scientific-technical datum may be sometimes insufficient to appropriately clarify to people without a specific culture in the field the effective meaning of consequences of chemical accidents. For instance, whenever possible, eventual residual risks still remaining after the emergency phase might be compared with known risks, as professional risks in industrial and agricultural work, risks connected with heavy smoking or alcohol abuse, risks connected with road traffic and so on. Comparisons with other previous accident consequences may be also included.

In any case, this information on risks, exposures and possible effects of the chemical involved should enable the local community to take rationally, consciously and serenely the personal decisions required by the situation.

Mass media receive information from many sources: evidently, rehabilitation team has to expect its own information to be not the only diffused. This is in general a positive and desirable aspect, essential for freedom of information. In general, it should be expected that scientists, technicians and people with some culture in environmental science, who dis-

On the occasion of each press conference, interview or

even a simple request on the part of a mass media operator, always provide a short summary of the data given the previous time.

Never rely on the memory of mass media journalists; this will

help make their work easier (and better coordinated).

gree with rehabilitation management, would manifest their opinions and criticisms directly to the rehabilitation team or through the common scientific channels before to diffuse them through the mass media (this should be the correct way to provide an useful contribution of ideas). Anyway, some mass media diffusion of contrasting opinions and ideas about rehabilitation management, neither discussed in advance at the appropriate scientific-technical level nor communicated in advance to rehabilitation team, is sometimes unavoidable. The characteristics of mass media and the continuous request of data and opinions, often arising after chemical accidents, may be the causes of this fact, as well as an inadequate information exchange system (in particular from and to rehabilitation team).

In any case, it is vital to maintain an appropriate scientific level and style in the discussion and to avoid its transformation in a rough debate, aimed to stimulate emotions rather than logical thinking. Often, this may be obtained by setting up an adequate communication network with the scientific-technical community interested to the problem and with the opinion leaders of the directly involved population. In fact, the local population may sometimes select its own experts, not necessarily coinciding with the experts designated by public authorities and the official institutions. This aspect (well known in sociological studies) requires a particular attention. A continuous information exchange should guaranteed whenever possible with local experts, who enjoy the confidence of directly involved community.

In conclusion, when criticism and disagreement are manifested, in particular by mass media, the rehabilitation team should be in condition to immediately accept the discussion through a suitable communication network, whose characteristics (adequate scientific level and style) would guarantee an appropriate and useful approach, aimed to solve problems (and not to raise the reputation of some expert or to assert the power of a faction).

For instance, scientific meetings or round tables might be quickly organized, open to a wide number of scientists and technicians, as well as to people representative of local community opinions and needs. Press conferences, reporting the conclusions of these meetings, might be the way to provide information to mass media, about aspects on which opinions diverge. In some cases, experts from other countries might be interviewed on the debated points.

From the organizational and practical point of view, some aspects need to be stressed.

First, only a well determined person in the organization dealing with rehabilitation should be charged with information provision for the public and in particular for mass media. This is essential to avoid lacks of consistency and solutions of continuity in information provision. Moreover, due to the importance of the matter, the expert dealing with information for mass media should not be charged with other tasks. Whenever possible, he should get in direct touch and establish a positive co-operation with most of journalist following rehabilitation progress: whenever possible, new questions and problems should be first submitted to him; in any case, he should be consulted when new data are required.

In particular cases, a well experienced journalist may be included in the rehabilitation team to prepare communiques and material for diffusion.

Evidently, the information to be provided not only consists of written paper: photographs, graphics, diagrams and drawings are in general necessary. This material is essential to give a synthetic idea of the problems under study, as well as to facilitate the comprehension of diffused material. Moreover, this kind of information fits very well for mass media structure (this is obvious in the case of television). Furthermore, graphic information is rarely altered and misinterpreted in transmission.

On general principles, do not hold too many press conferences, but issue frequent news bulletins, even if short, to be circulated among press agencies.

Lastly, as well known, graphic information attracts people attention more than written information.

On the other hand, most of data carried out in treating chemical accident consequences intrinsically need a graphic representation (for instance, maps, time trends, diffusion patterns and so on). Evidently, a reliable service able to immediately produce graphic information is necessary.

In conclusion, information for mass media has to be reliable, consistent, easily intelligible and whenever possible complete. In particular, this information should represent a help for involved population and general public to overcome the difficulties caused by the accident.

OPERATIVE PLAN FOR THE CONSTITUTION OF AN INFORMATION CENTRE

FOLLOWING CHEMICAL ACCIDENTS

1) THE BASIC OBJECTIVES OF THE CENTRE

The main purpose of the Centre's activities bears reference to the three following objectives, to be stated in the decree instituting the Centre:

1) To provide the population, in the most appropriate form and by the most suitable means, with clear, punctual, precise and thorough information on whatever steps the Region is taking to solve the problems faced by the population of the stricken area, on the short and long-term implications of the problem, and on the content and state of progress of rehabilitation and medical programmes.

2) To create a readily available point of reference for constant communication with the representatives of the local, national and foreign press, in order to provide them with complete information and news in the interest, also, of preventing the interested parties, for lack of such a service, from seeking information from other sources which may be ill-informed or tendentious and in any case not in a position to satisfy the need for information completely and comprehensively.

3) To indirectly place itself at the disposal of the citizens, to help them gain an understanding of the methods proposed for rehabilitation, and also to advise, guide and assist them, with particular concern for the means and procedures re-

lating to medical care and the provisions for social and economic assistance stipulated in the programmes.

2) In particular, the Centre must immediately be in a position to answer questions concerning:

1) Assessment and verification of the state of pollution of the land, water and vegetation, and steps to decontaminate and rehabilitate land and buildings in an effort, also, to prevent further contamination.

2) Medical tests and ascertainments, medical care and, in general, defence of public health in the stricken areas; tests, controls and steps in the field of medical and veterinary prophylaxis and veterinary care.

3) Social work.

4) The rehabilitation or reconstruction of public structures and irrecoverable dwellings, and the conducting of operations necessary for the re-establishment of living conditions satisfactory in relation to the particular circumstances of the stricken area, as well as the restoration of the productive capacity of the agricultural terrain involved.

5) Steps in favour of single or associated agricultural, artisan, tourist and hotel businesses, both industrial and commercial, which have suffered damage as a result of contamination by toxic substances.

3) OPERATIVE STRUCTURE

The functioning of the Centre is to be ensured by the

following personnel:

- Functionary with the task of coordinating the activity of the Centre in close collaboration with the two consulting journalists and particular emphasis on the work of the personnel employed in the Centre.

- 2 persons responsible for relations with the Press and other local and national channels of information.

- 1 social worker.

- 2 shorthand-typists.

- 1 clerk

- 1 driver

The above personnel will work jointly and in synchrony with the government offices operating in the area and especially with:

- the Coordinating Provincial Physician

- the person in charge of rehabilitation projects

- political authorities, local administrators and their collaborators, in matters concerning social and scholastic aid, the rehabilitation and reconstruction of public buildings and dwellings, as well as concerning measures in favour of single or associated agricultural, artisan, tourist and hotel businesses.

Special care shall be taken in the choice of this personnel, who must be selected not only on the basis of their prior experience and specific knowledge, but with particular regard

to their aptitude for relations with the public.

A special training course and constant updating will be necessary, and can be accomplished by means of an initial series of meetings and successive periodical updating sessions during which the personnel will be made to feel personally committed to and responsible for their work.

The above obviously in relation to all aspects of DOCUMENTATION AND INFORMATION benefiting, first and foremost, the inhabitants of the stricken area.

4) THE CONTENT OF THE INFORMATION

The informative and documentary activities undertaken by the Centre make it essential for the Centre to have at its fingertips, on its own premises, all the documentation produced and available in regard to the points stated in the instituting decree.

During the first stage of its activity, therefore, the operative structures of the Centre will undertake the COLLECTION, ANALYSIS and CLASSIFICATION of all information available from the various public organizations and scientific institutes, national or local. In order to function correctly the Centre must begin by coordinating information from all the public authorities involved (State, regional, provincial, municipal, scientific, military, etc.) and by studying procedures designed to absolutely prevent the dissemination of any news from official sources that might leave room for contradictory interpre-

tation. Although this is a difficult goal to accomplish, this point is fundamental and prerequisite to those that follow.

At the same time, all the appropriate links with the abovementioned bodies must be activated in order to ensure the steady flow of all subsequent information and documents to the Centre.

For this purpose, a functionary will be appointed from each of the interested organizations, responsible for sending such information to the Centre. This functionary will act as the point of reference for the Centre, responsible for answering any request for information or clarification that the Centre may be called upon to supply on request primarily of journalists but also of individual citizens, committees, associations and public opinion groups. As for the towns and other bodies active in the area, contacts will be maintained with the persons directly in charge.

The Centre will also have other objectives in addition to its documentary and informative activity, the fulfilment of which, in practical terms, will come as the result of the operations conducted on the premises by the Centre as a whole.

In effect it will be possible:

- 1) to convey information of an immediate or urgent character about new facts or developments that may arise during the application of the abovementioned programmes.

- 2) to work towards the creation in the public mind of a

positive image of the work being done by the various other organizations involved.

3) to encourage the resumption of productivity on a psychological plane as well as through concrete initiatives and promotional activities.

4) to collaborate, upon request of the health authorities, in the promotion of mass health education programmes in the schools, factories and among the populace in general.

In order to implement these objectives, in terms appropriate to the demands of the population and the local administrators, the Centre must not act (nor must it be understood to do so) as a bureaucratic, authoritarian structure imposed from above, but as an element reflecting and expressed through local reality, one which looks upon its function as instrumental for the public good. Consequently the information it conveys will be simple, clear and timely, and will not be denied to anyone who requests it.

Only on this premise can a relationship of trust be built between the Centre and the area it serves.

5. THE RECIPIENT POPULATION

While the collection, analysis and classification of the documentary material is proceeding, the recipients of the information are being identified on a concrete level.

Information will be communicated on three different levels, each requiring the individuation of different methods and

the use of different means of communicating the information, while the content of the information will remain the same.

In substance, the Centre must avoid making the mistake of trying to use undifferentiated ways and means, and must take account of differences in cultural and social echelon that result in linguistic differences and in different levels of comprehension of the elements comprising the communication, be they written, spoken or visual.

The three levels may be specified as follows:

1) On the first level is the world of communications and the press. The Centre, and this is the very reason of its existence, will become the point of reference for all interested journalists, but beyond such contacts the Centre must build a series of direct relations with local information operators, be they correspondents of local newspapers or magazines, editors of periodicals and publications published in the involved area, or local radio or television broadcasters operating in the area.

2) The second level comprises all public opinion groups working within the Centre's radius of operations, with direct responsibility for the formation of public opinion. We refer to local political party committees, neighborhood groups, parents' associations, local union groups, school and religious associations, teachers, and so forth, who must be informed about the activities of the Centre and must be able to turn to the Centre

whenever they need information of any kind.

3) The third level is that of the general public. The information they receive must be more carefully screened, in the interest of getting them to cooperate in the fundamental rehabilitation effort. Here we are dealing with information in popularized form; the general public, once aware of the existence of the Centre, must be able to turn freely to it for complete information on the programmes mentioned in point 2 as well as on the work of the Centre itself.

In addition, there is yet another ^{sector} consisting of a very particular segment of the public: this includes all the local administrators and all the local authorities in charge of officially coordinated activities and programmes. The Centre must immediately supply them with clear, complete information as soon as it is available.

Bear in mind, also, that the communication of information is never a one-way street. Through contact with local administrators, public opinion groups and the general populace, the Centre can become aware of the various needs, aspirations and attitudes that should be conveyed to those technically (and politically) responsible for the area.

Having defined these levels of operation, the interlocutors themselves must be identified and lists of names prepared, divided according to the levels mentioned above, with the obvious exception of the general public. Such lists, insofar as

concerns the second level and the sphere of mass media, should include the home addresses of the individuals listed, complete with telephone numbers for the communication of urgent information.

Once the Centre has been set up, the start of its activities and the definition of its objectives will be communicated to all interested parties (mass media, administrators, scientists) by a letter of presentation signed by the highest representatives of the public body responsible for its constitution.

6. THE ORGANIZATION OF THE CENTRE

The Centre must have particular characteristics, including those pertaining to its physical premises, that will make it possible for it to accomplish its objectives. The work areas must be separate from those designated for the reception of the public and as assembly rooms. The offices must be fully equipped so as to be able to operate quickly and efficiently.

They must have:

- Card catalogues with the collection of the complete documentation concerning the measures taken by the various operative bodies;
- Card catalogues with copies of all the articles that have appeared in the press, both national and international, at the time of starting work, as well as those that appear while the work is proceeding, classified by topic.
- Card catalogues with the addresses classified by level of information, as defined above.

- a machine for making address plates
- blank forms and letterhead stationery
- a high-capacity photocopying machine (Xerox 4500);
- a mimeograph equipped for making type moulds;
- an addressing machine
- two tape recorders (one reel-to-reel and one cassette)
- recording equipment for transcribing tapes and cassettes
- stationary and movable bulletin boards for posting notices
- an automatic telephone answering machine
- video-recording equipment for the recording of discussions, speeches by specialists, scientists and public authorities and their presentation to the public. Copies of such videotapes will also be made available to national and local television channels, free of charge.

One particular problem is that of the hours at which the Centre will be open to the public. Opening times will have to include holidays or non-working days, as well as some hours in the late afternoon or evening, to allow journalists on evening duty as well as every other citizen access to the Centre.

The documentary materials will have to be catalogued and filed according to precise criteria, for easy consulting and identification.

The mailing list will have to be transcribed on supports suitable for use with a rapid address-reproduction system. Such a system must permit the selection of addresses by category.

From the moment of printing the letterhead stationery, an artist will be responsible for the coordination of the visual image of the material issued by the Centre.

Concerning the blank forms: repetitive-type problems must be identified. And the graphic design of the blank forms will also be entrusted to the artist.

Concerning point 7, the immediate preparation of "cards" on the following subjects is proposed:

- what is the toxin in question, and what risks does it entail?
- results of activities undertaken in previous emergencies
- health precautions to be taken on a personal basis
- summary of the operative reclamation plan
- summary of the operative health plan
- summary of the operative social work plan
- summary of the economic assistance plan
- summary of the restoration or reconstruction programme

Accessory equipment will include: /a collector/dispenser for the publications issued by the Centre so that journalists and any other interested parties can pick them up easily and informally.

- large bulletin boards for the display of posters, notices of meetings to be held, press cuttings, etc.

- a book and periodical library containing the most recent publications on chemical pollution (including those voicing critical views).

A rapport of constant communication with the local public, especially in the absence of a locally operating press, can be created through the agency of a bi- or tri-weekly publication issued directly by the Centre.

In order to interest the population in a direct dialogue, such a publication should not only be informative in nature, but should also raise questions and propose outside contributions, to the point of becoming a true journal of local life. This naturally implies the constitution of an editorial staff including some local people, under the supervision of the two journalist press consultants.

Personality, duties and aptitudes of the journalists in charge

The plan calls for two journalists to work with the Centre, because it would be difficult for a single one to embody all the essential requisites of experience and professional qualification.

There must be:

One journalist specializing in scientific reporting, preferably in the fields of biology and medicine, accustomed to elaborating scientific data in articles accessible to the layman. A journalist accustomed to attending scientific congresses and capable of directly preparing from them articles accessible to the general public and at the same time not open to criticism by specialists - on the contrary, approved and appreciated by them. It will be well to ensure the services of a

journalist of national renown from whose articles the public know they can rely on getting clear, correct information, and who enjoys the respect of his colleagues. His reputation alone should be a guarantee of the accuracy of the information he reports on the subject of the chemical accident. Such a journalist, all other considerations aside, will probably already know and be known by more than one of the scientists involved in the environmental reclamation and medical programmes and be used to dealing with such people, as well as having up-to-date experience on the subject matter in hand.

The second journalist should be a reporter with a fairly long career to his credit on the staffs of newspapers operating in the region involved in the chemical accident, accustomed to reporting his news in the manner most appealing to the man in the street. Such a professional, given his lengthy career, will also have built up cordial relations over the years with many colleagues on the staffs of the various newspapers and radio and television stations. Such personal relations, based on trust and good faith, will be very useful in making sure that the news is issued by these media in the form desired by the Centre.

While the first journalist, thanks also to his possible (and desirable) role as a correspondent attending the most important scientific meetings, can act primarily as a part-time consultant, with his attendance guaranteed, however, at deci-

sional meetings and in supervising the writing of scientific texts, the second should be in full-time attendance at the Centre; an agreement between the two will make it possible for them to be in constant contact, even if one or the other is away from the Centre.

Activities of the Journalists working for the Centre

In addition to the obvious task of collecting the news coming from the various medical and rehabilitation sectors and possibly turning it into press communications and/or articles in the informative bulletins issued by the Centre, the preparation of which will come under their supervision, the two journalists will have to organize periodical press conferences (at least once every three months), preferably in the form of seminars, to bring the mass media up to date. During these conference/seminars, not only the specialist speakers but all the other journalists as well will have the chance to speak and comment and ask questions; this makes for much greater participation and compliance on the part of the mass media.

As we have said and reiterated, it is very important that the information be coherent and unambiguous, and for this reason, not only on the occasion of the press-conference/seminars, but also prior to personal interviews by public administrators, politicians or scientists operating in the fields of rehabilitation and public health, the two journalists of the Centre, or at least one of them depending on the topic in question,

will meet with the interviewee and agree with him on the terms of the interview. This will serve also to identify any words or phrases that may be difficult to understand or subject to misinterpretation (accidental or otherwise) in the interviewee's speech, and to choose clearer and more definite ones.

To systematically obtain news and data from the various departments concerned with environmental reclamation and health organizations, the two journalists will have to both make and receive regular telephone calls to and from the people in charge of the various sectors, at regular, almost weekly, intervals.

For the internal written transfer of information from the various sectors to the Centre, a standard form should be prepared, stating clearly the person referring the item, the statistic data related to the item, the reason the sender feels it to be important, and whether the sender is available to be interviewed on the subject.

An important consideration to remember is that in such cases the two journalists working with the Centre must be looked at as if they were defence lawyers. They must always be told the whole truth, so that they and their sources can agree on the best way in which to acceptably feed it to the public, even when a reserved item leaks out. Nothing will make the two Centre journalists lose credibility in the eyes of their mass media colleagues like not allowing them to always

be in a position to answer questions on reserved news that has leaked: an "official version" must be prepared in advance, so that they will not be caught unawares in the case of indiscretions and so that they will be able, at any time, to clear up embarrassing situations. In other words, there is nothing stupider than to conceal information from the consultants who are supposed to help communicate it in the most desirable form, even items which it would be preferable not to broadcast but which one may be forced to reveal nonetheless.

Information and experience transfer

The creation of a Centre such as the one mentioned here is essential, moreover, for the dissemination of information not only on the activities having to do with environmental rehabilitation, health programmes and economic aid, but also for the possible prevention of further chemical accidents.

Both during the years of rehabilitation and at its conclusion, the spirit of the information given must always be that of striving to create greater awareness in both the public at large and in the public and private administrators, in the interest of greater caution in handling chemicals.

In this context, the organization of the abovementioned periodical seminars for journalists is to be advocated, as is the participation in national and international congresses, with appropriate reports, of specialists working on the rehabilitation programmes.

Important, too, is the distribution of explanatory dosiers on how the accident happened and what broader-reaching consequences might have come about than the ones that actually did occur.

For the environmental reclamation sector, the filming and videotaping of all the salient stages of the work, in addition to the written technical descriptions, is important, so that it can be shown to others.

In the health sector, the organization of concise debates and interviews among the specialists involved, to be distributed abroad as well as at home, would be useful.

Special reports

Special reports may be needed to inform the involved community, the involved authorities, agencies and institutions, as well as central and national organizations connected with the problems under study. Moreover, special reports may be needed to adequately describe and analyze relevant techniques, methods, findings and inferences. These latter reports are generally addressed to field qualified experts. Evidently, completeness is vital: all details have to be included, necessary to transfer a ^{developed} developed "know-how".

As a rule, special reports are aimed to meet specific information needs rather than to give general information. Moreover, they in general deal with a matter to which particular and defined kinds of people are interested. In conclusion, a special report should be prepared taking appropriately into account the characteristics of the information receiver, as well as the purpose of the information exchange. An suitable structure and language should be therefore used.

Publications

As already mentioned, the rehabilitation of chemical accidents generally represents a matter of high interest, not only for the field experts, but for the general public too.

This means that what has been done and what is being done in rehabilitation management has to be appropriately published as soon as possible. Publication in scientific reviews will stimulate a fruitful discussion and a possible contribution of new ideas. Evidently, publication is also essential for transfer of experiences. Clearly, a correct and efficient scientific-technical activity automatically implies the publication of data, procedures, results achieved and difficulties encountered. It should be pointed out that a lack of publication of data and results will possibly give rise to a negative attitude in people requesting information. In any case, it should be borne in mind that also temporary and limited results and preliminary data may be of interest and fit for publication. Evidently, it is not necessary to have achieved final goals before publishing what has been done. Details may be often of interest.

Scientific information, concerning rehabilitation progresses, should also be published in newspapers and non-specialized reviews, as well as appropriately diffused by mass-media. Scientific columns in newspapers and scientific surveys in reviews, as well as specific radio-television transmissions, may represent the channels suitable for a qualified popularized diffusion and publication of results. The same information, provided through scientific publications, should be given through these media, making use of a clear and easily intelligible language. In any case, as already mentioned, consistency, reliability and completeness of the information published at various levels and through different channels is a vital point.

Manuals and training aids

As already mentioned, two basic aspects can be identified in transfer of experiences for training purposes.

The analysis can be addressed to a "case study" or to a "technique study" or a "procedure study".

Monographies reporting the whole hystory of the particular accident and of the consequent rehabilitation activities should be always prepared. A complete description of all aspects is needed, (including organizational aspects, resources employed, equipment and apparatus used and so on). Drawings, fotografhies, tables and arrays of data have to be reported. In other words, a publication of this kind should represent the appropriate answer to the question: "what is necessary to do in an analogous case ?".

On the other hand, techniques and procedures successful in a previous experience, nedde to be widely diffused. Manuals and handbooks could be prepared to the purpose. A national or international organization should be chraged with this task. Evidently, such manuals should be easily intelligible and should include all necessary practical details. The reader should be enabled to easily master the matter reported.

In particular, safety measures and precautions should be accurately described: personnel involved in emergencies and rehabilitation may have a limited experience in this field (in particular in the case of new chemicals). A proper manual can provide basic help in limiting or avoiding risks. Various subjects could be indicated, to be examined in a manual: i.e., general safety measures ^{to be adopted} in a contaminated area, toxic material removal and storage, soil scarification, monitoring strategies, simple statistical methods for environmental data analysis and so on.

Other didactic aids can be used: scale models, series of fotografhies and drawings, films, computer displays, tape recordings and so on.

.. Information for public participation

Adequate information must be continuously provided to public authorities, to the local community and to the whole public. Evidently, new relevant data need to be immediately communicated to involved authorities. The public and the mass-media may be informed afterwards.

A chemical accident has in general a remarkable social-psychological impact on the community. A social demand for information generally arises, about the effects and the causes of the accident, the rehabilitation resources and efficiency and the possibility to avoid future similar cases. A rehabilitation information system needs to be able to provide such information. It is vital to establish a collaborative atmosphere, in particular with the local community. Local community has to be clearly informed about protective measures required to minimize the residual risks, and about rehabilitation goals and daily progress. Maps, diagrams, drawings, pictures and other iconographical material can be of help. Information system should be able to quickly provide them.

In any case, information has to be clear, complete, reliable and consistent. A simple language should be used, intelligible also by people without a specific scientific-technical culture. To this purpose, the advice and the help of an expert in communication should be available.

Whenever possible, uncertainties should be avoided in data provision.

Sometimes this may be difficult: available data can be temporarily limited and uncertain and different interpretations can be possible. Particular care has to be taken, if information has to be provided before the elimination of uncertainties. In such a case, reasons of uncertainty and of possible variations in rehabilitation plans and execution, should be accurately explained in order to avoid a decrease in confidence in rehabilitation management (people in general expect certainties and definite choices from official science and technology; it can be necessary sometimes to recall that absolute certainty may be non-scientific).

have the best interests of the population at heart. What the personnel working on-site may regard as trivial alterations, the public may take in a completely different spirit, since they are not privy to the day-to-day management of operations from the inside.

A simple solution to the spread of suspicion is the flooding of the area with information. This can be quite deliberately done: at the outset of an emergency, many of the impacted population will want all the information they can acquire; but, as time passes, if they know that a lot of information on every aspect of the situation is freely available, much of the public will stop bothering to enquire.

The best way to disseminate this information and to stop rumours is to set up a "rumour centre" as part of a general media centre. Here again, the balance must be kept between putting out as much information as possible, and ensuring that none of it is contradictory. At the beginning of an emergency, it is obvious that this will be a more than full-time job, and a Media Officer will be required. As longer term remedial actions begin, some liaison with the media should be maintained, to explain what is being undertaken, and to anticipate future concerns. It is vital to have someone who is continually prepared to say, "How will this action look, be understood, or be misapprehended by the public?".

At some point, decisions may have to be made about the extent of public participation in the remedial process. Typically, the public is seen as an uncontrollable force or a marginal concern, with the

Public information and relations

Relationships with other agencies can have a direct impact on relationships with the public. Seveso and Three Mile Island are examples of incidents where confusion among the constituted authorities translated itself into public uncertainty about the nature of the risk (Whiteside, 1979). Public information is the cornerstone of the agency - public relationship, especially in a remedial activity that may take years to be completed. Confidence, once lost, may be impossible to recover.

For this reason, a single source of information to the public is preferable to any other kind of information dissemination. This requires, in turn, control over rumours, leaks of information, and a commitment to presentation of believable truth by spokesmen. In many incidents, disputes over technical questions are inevitable, but the damage caused to the image of certainty can be minimized in a number of ways. Firstly, it can be stated at the outset that there is no absolute certainty posited by the responding agencies. Secondly, the disputes can be contained within the larger management scheme overseeing the operation. Thirdly, a large number of technical disputes can be anticipated, and the public can be warned to expect some disagreement.

Experience has shown that the public near an impacted site is very quick to spot anomalies and sloppiness in remedial actions. This can undermine both faith in the process and faith that the authorities

result that organizations are reluctant to consider a long-term involvement of the public in the process. While there are valid reasons for this reluctance (e.g. intermittent interest, lack of expertise), a lot can be lost of value through excluding the public. Most importantly, the public is an inexpensive source of information. For example, in determining the boundaries of a chemical spill in an area, local residents may be able to give a good account of the flow of groundwater through an area, which can serve as a check on professional hydrogeologic surveys. Further, local residents can be used as monitors of deterioration in an ecosystem: they are always on-scene, and they have a vested interest.

Management of this kind of information is, of course, fundamentally a question of separating out the wheat from the chaff, but there is no doubt that traditional knowledge may have substantial value. There is a secondary benefit: local people feel themselves to be part of the remedial process, and are therefore less likely to polarize into "us" versus "them". A tertiary benefit, though more complex, is the mutual interaction of agencies and public, resulting in a less abstract and more concrete set of rehabilitation goals.

One last benefit can be noted. In a long-term operation, people will move in and out of a community. A community-based information system naturally educates newcomers into the ground-rules of the operation (e.g. zones of access, prophylactic measures) as they join the community. This eliminates the necessity of re-education on the part of the authorities over and over again.