

Policy and practice

COMMUNICATION PLANS IN CONTAMINATED AREAS AS PREVENTION TOOLS FOR INFORMED POLICY

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ABSTRACT

Introduction: Communicating about environmental health is an important commitment for the scientific community involved in studying contaminated sites. In the last decade, international and national organizations in the WHO European Region have proposed theoretical approaches and practices for adopting effective communication strategies in contaminated areas.

Methods: The aim of this paper is to propose communication plans as a tool for fostering mid- and long-term prevention actions in local contexts affected by natural and man-made contamination from industrial and agricultural production and waste management. Sharing responsibilities for strengthening social capacity building requires the effective commitment of relevant stakeholders in the communication process: experiences in two

contaminated areas in Italy are presented here as examples.

Conclusion: Lessons learnt from experiences with contaminated areas in Italy and elsewhere in Europe emphasize the need to adopt effective communication plans for engaging different stakeholders in the decision-making process, defining roles, and sharing responsibilities to foster informed policy and prevention initiatives.

Keywords: COMMUNICATION, CONTAMINATED AREAS, ENVIRONMENT AND PUBLIC HEALTH, PREVENTION, INFORMED POLICY

BACKGROUND

Scientific progress in understanding the health effects of exposure to hazardous environmental contamination in the WHO European Region is well documented. However, differences exist in the levels of scientific evidence as well as in the adopted regulation for environmental remediation among countries. These scientific outcomes and related public health recommendations are essential for developing and adopting prevention initiatives that rely on epidemiological studies and risk assessment procedures, at the national and regional levels. Epidemiological studies on health impacts – caused by natural and man-made contamination from industrial and agricultural production and waste management, as well as from a combination of contamination sources in different areas of the WHO European Region – have been increasing public awareness about the necessity to undertake related communication

initiatives. This applies directly to affected communities, as well as to society in general, to ensure an environmental justice-driven approach (1).

Communication on environmental risks and health impacts is recognized as an important commitment for the scientific community involved in studying contaminated sites. In particular, this communication can play an essential role in favoring the development of a network of relations among the scientific community, local decision-makers and representatives from civil society, thus fostering the adoption of environmental health prevention at the local level. Perceiving environmental and health risks in contaminated sites helps to increase the effectiveness of health prevention and environmental remediation actions. Communication should rely on the adoption of ethical principles (2), the recognition of the different roles and responsibilities between scientists and local stakeholders, transparency, and shared engagement

strategies. In this context, particular attention should be given to social vulnerability including issues of environmental justice and inequities: disadvantaged people often live in polluted areas near industrial and waste dumping sites, with poor quality housing, limited access to green space, and a higher prevalence of lifestyle and occupational risk factors (3).

Communication about the health impacts of exposure to hazardous substances on vulnerable population groups – especially children, pregnant women, the elderly and socioeconomically disadvantaged groups most likely affected by environmental contamination in the areas where they reside (4, 5) – must be associated with communication about exposure routes and an understanding about how the entire community perceives and reacts to environmental health risks (6-8).

In the last decade, international organizations, such as the WHO, Agency for Toxic Substances and Disease Registry (ATSDR), International Society for Environmental Epidemiology (ISEE), and Environmental Protection Agency (EPA), have proposed theoretical and practical approaches for adopting communication strategies in contaminated areas (2, 9, 10; see also EPA website: <https://www.epa.gov/children/what-you-can-do-protect-children-environmental-risks>). A particular role in this framework was played by the National Institute of Environmental Health Sciences (NIEHS), an institution that soon realized the importance of community-based research for understanding and mitigating health impacts. A core concept was that most communities affected by chemical accidents have the inherent capacity to be resilient and these latent capacities can be activated through social support (11).

The promotion of public health in contaminated areas is a central theme in the long-standing, collaborative work between the Istituto Superiore di Sanità (ISS, the National Institute of Health in Italy) and WHO (9, 12, 13). Building on these experiences, the European Cooperation in Science and Technology (COST) Action on an Industrially Contaminated Sites and Health Network (ICSHNet) was launched in 2015 (http://www.cost.eu/COST_Actions/isch/Actions/IS1408 and <http://www.icshnet.eu>). Its primary goal is to establish and consolidate an international network of experts and institutions, and to develop a common framework for research and response on environmental health

issues related to industrially contaminated sites. Communication is regarded by the COST Action as a major component of this strategy, together with a dissemination plan of the Action's outcomes targeted at all relevant stakeholders, including resident populations. The ICSHNet, currently involving WHO, EU and EC bodies, as well as many public health institutions from 33 countries belonging to the WHO European Region, is expected to: identify research needs and priorities across Europe; produce guidelines on how to characterize and manage health issues in industrially contaminated sites; and contribute to better understanding how scientific findings can be transferred to the policy-making process.

In Italy, the ongoing SENTIERI Project (Studio Epidemiologico Nazionale dei Territori e degli Insediamenti Esposti a Rischio) is aimed at the epidemiological surveillance of populations residing in Italian national priority contaminated sites (14), as well as at fostering scientific investigations including ad hoc communication and dissemination activities (15, 16).

The aim of this paper is to propose communication plans as a tool for the effective transfer of scientific evidence to local stakeholders in contaminated areas, and to foster prevention actions by reducing vulnerability and increasing social capacity building. The goal is to propose recommendations to national and local policy-makers for adopting communication plans in areas affected by natural and man-made contamination.

LOCAL CONTEXT

Populations living in areas affected by environmental stressors, related to natural or man-made contamination, suffer health impacts that are also associated with vulnerability and poor social capacity building. In this context, it is particularly important for the researchers to acquire essential knowledge about the physical, socioeconomic and cultural aspects of environmental risk and health impacts (17). This allows for the implementation of integrated approaches that can address the multi-dimensionality of vulnerability including: residence in hazardous areas, the socioeconomic condition of populations living and working in contaminated areas, and the risk

perception and preparedness of residents to address health impacts characterized by environmental hazards.

Supporting local stakeholders and the general population in the process of interpreting their own risk perception, and their awareness of environmental stressors in their local context, allows for the creation of a participatory process and the strengthening of mutual relationships aimed at reducing threats to environmental health (6). Their effective engagement contributes to increasing social capacity building as an indispensable factor for improving community resilience. In this perspective, effective communication plans play an important role in improving the awareness, preparedness and responsibility of all local stakeholders.

An example of this is the municipality of Biancavilla, located on the slopes of Etna volcano in Sicily, where an excess of mesothelioma mortality and incidence was reported in several studies, and it was consistently shown that the disease occurred in the absence of asbestos exposure. The causal agent was then identified in a previously unknown asbestiform fibre that was eventually named "fluoro-edenite", present in soils and in a quarry from which building materials were produced (18). The first communication plan was concurrent with the detection of the fibre – although it had not yet been characterized in mineralogical terms, its health impact was clear. Emphasis was given to the need to realize a major environmental clean-up and, in the meantime, to recommend a set of behaviours aimed at minimizing outdoor and indoor exposure to the fibre. These recommendations were presented by the mayor of Biancavilla, together with ISS, in 2001 (19). In 2002, a major environmental clean-up process was implemented after Biancavilla was declared a National Priority Contaminated Site, and clean-up operations continued in the subsequent years. In 2014, fluoro-edenite was classified by the International Agency for Research on Cancer (IARC) as a human carcinogen – an evaluation which prompted a set of prevention and health promotion activities. A new communication plan was produced in this frame, with specific sections devoted to local health authorities, local administrations, media and the school system (20).

Another example is an area in the Campania Region, near Naples, characterized by the widespread presence

of uncontrolled and illegal urban and industrial waste dumping sites, recently known at the national and international level as the "Land of Fires" because of the practice of burning toxic waste (21).

The environmental emergency connected to waste management in this Italian region has been ongoing since the mid- to late-1990s, when the national government identified the area – including 77 municipalities within the Naples and Caserta provinces – as a National Priority Contaminated Site. The local context was characterized by some issues that the communication process had to take into consideration: (i) the large extent of the territory; (ii) the high number of residents (about two million); (iii) the uncertainties concerning the causal relationship between hazardous waste and adverse health effects; (iv) the inconsistency of the messages delivered by scientific experts on the above-mentioned causal relationship; (v) the illegal practices adopted for decades that led the population to distrust public institutions.

ISS performed the first epidemiological study, in collaboration with a local environmental association, that revealed, for the first time, the illegal waste dumping practices carried out by the crime organization, "Camorra". An ability to listen and respect each other's respective roles characterized this collaboration: the association gave information about the location of illegal waste sites, and the researchers provided the results of the health status of the population in a peer-reviewed Italian journal, which helped the association to advocate for a science-based policy. The study findings were presented to the population in an ad hoc public meeting in the investigated area. Since then, the awareness of the threat and risk perception of the environmental and health impact of hazardous waste dumping have increased. This was further supported through the availability of judiciary documents revealing the economic interests involved in the illegal trafficking and dumping of toxic wastes from industries in Italy's northern regions.

In 2014, the Italian Parliament adopted an ad hoc Act (Law n. 6, 6 February 2014) that dealt mainly with environmental monitoring and a food chain safety assessment in the "Land of Fires". The Act also required ISS to update, in collaboration with local health authorities, the assessment of the population health status and to foster prevention

and health promotion initiatives (the report is freely accessible on the ISS website: <http://www.iss.it/publ/index.php?lang=1&id=2897&tipo=5>). Currently, most stakeholders, including national and local environmental associations and local church representatives, have improved relationships with public health institutions. Important steps in this process have been:

1. Meetings with local health operators during the different phases of the studies.
2. Publication of the resulting reports in Italian language on free, accessible websites, followed by publications in national and international, scientific, peer-reviewed journals.
3. Communication of the research results, including discussions of their strengths and limitations, during public meetings with the population organized by local stakeholders.
4. Understanding the perception of risk among residents, making explicit the differences between self-reported case documentation and formal epidemiological studies; and respecting and recognizing their different roles.

APPROACH

A conceptual framework for building and implementing an effective communication plan includes the commitment of the scientific community involved in studying the affected area, and the engagement of decision-makers and civil society actors through the recognition of their different roles and responsibilities. Based on this conceptual framework, guidance for communication plans includes a methodological step-by-step process. Here, the proposed process consists of:

1. Identification of specific objectives of the communication plan.

The objective of a communication plan is to increase the awareness and preparedness of local stakeholders in the affected areas, to enable them to contribute to health risk prevention and environmental risk management in their living and

working environments. The communication plan must account for the specificities of environmental stressors and health impacts, as well as for characteristics of the socioeconomic context. Communication plans have a more general objective to contribute to social capacity building in a local context – meeting needs and channeling efforts for the well-being of the population and healthy environments.

2. Identification and involvement of local stakeholders.

In order to design a communication plan in a local context, a multi-disciplinary research group – including socioeconomic, health and environmental sciences – must acquire knowledge about the local context. This is done in order to identify the different roles and responsibilities of existing local actors, both institutional and expressed by civil society, as stakeholders in the affected area, including: local authorities, such as governmental authorities and health and environment local authorities; local environmental and health professionals and/or local research groups involved in environmental, health and social studies in the affected area; local associations and residents of the affected area; the school system; and local media.

3. Identification and development of communications tools for implementation in local contexts.

On the basis of international scientific literature on the social and environmental health aspects of communication in areas affected by environmental contamination, selected communication tools for information and dissemination activities must account for local social context and for the environmental health literacy of the different stakeholders in the affected area. Potential instruments to be used in communications plans include informative publications; technical reports for decision-makers; training and ad hoc technical documentation for health and environmental operators; video, oral or printed presentations of the findings of studies performed in the affected area; and interviews and questionnaires for evaluation activities. Events, such as ad hoc meetings, seminars, public meetings and video programs in the local media, can also be considered with regard

to their appropriateness to the local context, the various stakeholders and the objective.

4. Impact assessment of communication plans (methodology, tools and performed activities).

Communication plans have to envisage the impact assessment of the methodology, tools and activities performed in order to verify adaptability to, and effectiveness for, the local context. Appropriate qualitative and quantitative indicators collect local feedback to verify the: use of new knowledge; increase of awareness and responsibility; impact of actions by local authorities responsible for prevention interventions; and actions for ensuring the right to information and involvement of social actors. The impact assessment of a communication plan is also important for assessing how the effectiveness of activities justifies the plan's economic costs.

RELEVANT CHANGES

Following the above-mentioned methodological, step-by-step process, this section describes the actors involved in a communication plan. It focuses on the roles and contributions required to promote effective changes in creating a participatory approach for increasing community resilience to environmental risks and health impacts in contaminated areas.

- **Local authorities:** Increasing their awareness is a key element for empowerment and increased responsibility, and for promoting informed decision-making and policy-making related to both health prevention actions and environmental remediation actions. Their engagement also concerns the strengthening of a network with other local stakeholders, with particular attention and efforts aimed at addressing local social vulnerability.
- **Local environment and health operators:** A communication plan involves environmental and health professionals through ad hoc training in order to increase and update their knowledge about the: specificity of the environmental contamination; prevention of hazardous exposures in the living and working environments; and diagnostic and therapeutic interventions. Their required

engagement in a communication plan also takes into consideration their specific responsibility towards patients and residents of the affected area.

- **National or local research groups involved in environment, health, and social studies focused on the affected contaminated area:** Their involvement is required for the effective transfer of scientific evidence related to the environmental risks and health impacts of contamination. They have the role and responsibility to communicate both scientific evidence and uncertainty in lay language, accounting for the environmental health literacy of the local stakeholders. Their engagement in the network of local stakeholders is fundamental for fostering mutual trust.
- **Associations and residents:** A communication plan should envisage their engagement through a participative approach characterized by mutual listening and the exchange of information and experience between institutional and social actors. Their participation and involvement is aimed at improving awareness about collective health risks from environmental contamination, and appropriate, individual behaviours to reduce hazardous exposures.
- **School (teachers, students and parents):** A communication plan should also focus on the educational system according to the preparedness for environmental health of society in the affected area. Environmental health issues and risks, and the health impacts from specific contamination affecting the local context, should be included in annual educational programs, to improve the acquisition of new scientific knowledge by teachers and students. Communication activities may be extended from students to families, depending on their environmental health literacy.
- **Local media:** A communication plan envisages the involvement of radio, newspapers and local TV. Such media can play a role in disseminating information related to environmental health, in synergy with other stakeholders.

LESSONS LEARNT

The importance of a bi-directional communication plan, involving public health authorities and affected communities, is a key lesson learnt from scientific international literature and tested communication approaches in contaminated areas in Italy and elsewhere in Europe. Accordingly, we propose some recommendations aimed at strengthening the decision-making chain for adopting effective communication plans in contaminated areas as prevention tools for informed policy. The WHO Regional Office for Europe, WHO Collaborating Centre for Environmental Health in Contaminated Sites (http://apps.who.int/whocc/Detail.aspx?cc_ref=ITA-97&cc_ref=ita-97&), and national environmental and health authorities all have the authoritative role to foster this undertaking. Recommendations for different levels include:

- **International:** Consolidate interactions among the above-mentioned international and national organizations in the WHO European Region in order to collect and make available information on practices for communicating environmental risk and health impact in contaminated sites. Contribute to WHO efforts in identifying priorities on how to assess environmental health risks for fostering primary prevention interventions, to protect and promote public health in contaminated areas.
- **National:** Plan national initiatives to foster the adoption of communication plans in areas affected by major environmental contamination by sharing a communication plan prototype.
- **Local:** Promote the adoption of the communication plan prototype and its implementation, taking into account the specificity of the local context. In this perspective, the involvement of different stakeholders is important to build confidence in public institutions and awareness of the true magnitude of the threat. This process may thus contribute to identifying priorities for addressing environmental remediation actions and health prevention and promotion initiatives.

The impact and effectiveness of communication plans must be assessed in terms of their contribution to the adoption of informed policy for improving mid- and

long-term prevention and environmental remediation actions. The impact of an effective communication plan in a contaminated area can be measured by the increased resilience of the affected community and the reduction of its social vulnerability through the improvement of social capacity building.

The rationale inherent in the recommendations includes the notions of: both process and product communications; transparency; accountability; and dealing with uncertainty in order to avoid the generation of fear and indifference. These notions are currently being implemented at a few contaminated sites within the national epidemiological surveillance "SENTIERI" project (14) and may subsequently be transferred to a large number of additional sites. Assessment in the frame of European collaborative efforts may then be warranted.

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