



Understanding risks in socially vulnerable contexts: The case of waste burning in cement kilns in Brazil

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Abstract

This article proposes a qualitative approach for understanding occupational and environmental risks in countries with high-social vulnerabilities. We use waste burning in cement kilns as a qualitative case study in order to illustrate how social (population and institutional) vulnerabilities influence the context of risk situations and events in a developing country such as Brazil. The vulnerability analysis was based on the reconstitution of the trajectory of this risk problem in a Brazilian State and its impacts, which mobilised several social and institutional actors. The methodology used interviews with different actors and an analysis of the documents, including mostly technical reports from various participating institutions. One objective of contextualising risk problems and vulnerabilities is to encourage professionals, decision-makers, and other social actors to discuss safety and health promotion in their different dimensions and to develop new strategies for intersectorial and participatory public policies. This point is important not only for developing countries even in more developed countries where legislation, social protection, and labour relations are more organised. We suggest that the need for knowledge integration, participation by all stakeholders, and empowerment of vulnerable groups exposed to risks are important principles to promote safety and health through the reduction of vulnerabilities.

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1. Introduction: the need for understanding the context of risk problems

Understanding the context of an occupational or environmental risk problem is essential for effectively managing the risk (USEPA, 2000). Much effort has been devoted in recent years to comprehending risks within complex socio-technical systems with multiple levels and dimensions (Funtowicz and Ravetz, 1994; Paté-Cornell, 1993; Pidgeon and O’Leary, 2000; Rasmussen, 1997), but most of these theoretical developments are concerned with high-risk or accelerating technologies in industrialized and wealthy societies with a relatively longstanding tradition of risk regulation. Complex systems are not merely complicated: they involve many dimensions which are mutually implicated; problems extend across many scales in space and time; and there are deep uncertainties and a plurality of legitimate perspectives (Funtowicz and Ravetz, 1994). According to Svedung and Rasmussen’s socio-technical framework (apud Kirwan, 2001), technological, organisational, and cultural dimensions are linked at all levels of society, including the workplace, regulators, and government as a whole. Complexity related to safety management can be understood as the need to incorporate multiple dimensions and perspectives, so that to neglect one or more important dimensions of complex socio-technical systems reduces or impedes efficient risk prevention.

Socially vulnerable contexts of industrializing and/or unequal societies in different regions of the world add a new level of complexity to the analysis of occupational and environmental risk problems. Brazil is a good example of this complexity: despite its well-developed industrial and economic systems, Brazil’s development model is characterised by income concentration, incipient democracy in decision-making processes, a large informal market, and weak social support nets. These characteristics not only influence the exposed social groups, but also increase risks, uncertainties, and conflicts in the society. Another dimension of vulnerability in these countries is linked to the fragility of public policies and institutions, which often fail to fulfil their legal and technical roles, particularly related to vulnerable populations and sectors under economic and technological constraints (Porto and Freitas, 2003). Although these social vulnerabilities are more present in industrializing and poor countries, economic and power inequalities in richer societies can also provide challenges in promoting health and safety. Subcontracting, precariousness and rapid urbanization around hazardous industrial sites are not “privileges” specific to developing countries; even in more developed countries where legislation, social protection, and labour relations are more organised, there is a trade-off between job creation and safety, which can produce different types of vulnerabilities.

It is undoubtedly more pragmatic to restrict risk analysis and prevention to local, operational levels and more objective causes, in which the sphere of responsibility is related more to the directly involved groups, e.g. industrial management and workers, and where the changes tend to be faster than at the organisational and cultural levels. However, the application of risk analysis and prevention techniques in vulnerable contexts can overshadow important social, economic, and cultural spheres in a given society that influence the production of risk events. This is even more important for decision-making processes related to public and institutional policies, in which authorities, regulatory agencies, and various stakeholders must jointly discuss the general strategies for promoting health and safety.

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