

Mineral wealth and environmental and health risks

A riqueza mineral e os riscos ao meio ambiente e à saúde

“How many tons of iron

Do we export?

How many tears do we hide

Without any yowl?...”¹

(Carlos Drummond de Andrade)

The integrated approach to the relationship between production (labor), consumption, environment and health gained visibility together with the recent environmental disasters — more properly called major work accidents — at mining sites in Minas Gerais, namely, that of Samarco, in Mariana, in November 2015, and Vale’s, in Brumadinho, on 25 January 2019. The news widely reported in the media along the past months depict the enormous risk posed by mine tailings dams in Brazil. For example, an article posted on the BBC website on 31 January 2019 pointed to the large number of dams with high potential to cause disasters².

Attuned to the resulting social commotion and the results of technical analysis, RBMT invited reputed experts in this field to contribute with opinion articles and studies on these incidents to thus expand information and enhance the debates aiming at preventing their recurrence.

Therefore, we have the honor of providing our readers up-to-date and technically excellent reflections which seek to answer questions and analyze the tragedy at Brumadinho. These three articles address conceptual, methodological and explanatory aspects to identify and estimate the consequences of these disasters for the health of workers and the overall population, as well as for the environment. A further aim of these articles is to contribute to the prevention of future incidents and to the organization of healthcare delivery to the involved individuals.

In the article entitled “Brumadinho: between prudence and probability, tragedy,” Laerte Idal Sznelwar, Mauro Zilbovicius, Cláudio Marcelo Brunoro, Bernardo Luiz Rodrigues de Andrade and José Roberto Castilho Piqueira, from Polytechnic School, Universidade de São Paulo, analyze the sequence of events which culminated in the dam failure and reflect on its possible reasons from the perspective of the state of the art in tailings dam engineering in Brazil and worldwide. In addition to identifying the set of related events that led to the dam failure, they call “absolute certainties” and the ability of engineering to plan, manage and avoid deleterious incidents into question. These issues are currently more serious as a function of the neoliberal ideas and managerialism prevalent in public and private organizations, according to which the quickest possible return on investments is the first priority, at the expense of any interest other than financial ones. The focus is shifted away from production as such, but managers are required to administrate any type of production, provided their focus remains on quick returns.

In their analysis of the work accident and its environmental aspects, these authors call the attention to the obsolescence of the traditional practice of blaming workers, especially those who died and can no longer defend themselves. They emphasize the contributions of the sciences of work, of activity-centered ergonomics in particular. Within the context of this discipline, particular value is attributed to the actors’ voices to construct a narrative likely to point to

problems in production, serial disagreement and malfunctioning previous to the occurrence of an incident. This perspective is believed to provide accurate descriptions of actual production and thus to contribute to the development of more adequate approaches to risks and their prevention, by disclosing power and domination relations reinforced by the weakening of workers' representation.

In "Historical and organizational origins of the Corrego do Feijao disaster," Ildeberto Muniz de Almeida — Department of Public Health, Medical School of Botucatu (Universidade Estadual Paulista "Júlio de Mesquita Filho"), José Marçal Jackson Filho — head researcher at Fundacentro, and Rodolfo Andrade Gouveia Vilela — senior professor, Department of Environmental Health, School of Public Health, Universidade de São Paulo), had recourse to the Accident Analysis and Prevention Model (AAPM) to analyze this incident and raise criticisms to the technical approach, which they consider to be substantially restricted.

AAPM includes four axes of analysis: normal operation, barriers and changes from a broadened perspective including notions borrowed from many different fields of knowledge, particularly those used in studies of accidents and/or disasters. Its overall goal is to arrive to an understanding of the human, technological and organizational dimensions of disasters. According to the authors, this method elucidates decision making at the various levels of organizations which lead to the so-called normalization of deviance and migration toward accidents, in which context crisis management or conflicting goals are a part of the daily routine of managers. The authors constructed a narrative and provide explanations for the disaster based on a network of multiple factors which interact with each other and also with their physical, organizational, political and economic environment, and which has its roots in the history of the analyzed system. In addition, they call the attention to the weaknesses of the Brazilian disaster prevention system, derived from the submission of public control and overseeing agencies to the influence of companies.

The last article, "Work accidents which become disasters: mine tailings dam failures in Brazil," by Carlos Machado de Freitas and Mariano Andrade Silva — Health Emergencies and Disasters Study and Research Center, National Public Health School, Oswaldo Cruz Foundation, Rio de Janeiro — discusses the hard-to-manage intensive and direct impacts of incidents on workers and communities and their extensive impacts in space and time.

The authors emphasize the severity of the work accident in Brumadinho, rated the most serious ever in Brazil, and call the attention to the possibility for it to become a milestone for mining risk management systems in the country. Upon shedding light on a universe of abnormalities which become the normal state of affairs in the everyday routine of corporations, this incident undermined the trust in the entire mine tailings dam failure risk prevention and control system, but lessons might be learned to change the ideas and methods in vigor in an intersectoral and participatory manner.

Furthermore, the authors observe that this type of incidents are work accidents combined with impacts which extend in space, i.e. over hundreds of kilometers away from the event site, and time, by causing ecological changes and contaminations which effects might last years and even decades. For these reasons they might be described as major work accidents. The authors also call the attention to the disruption of everyday life they cause in the affected areas, resulting in considerable material, economic and environmental damage and losses, as well as in impacts on the health of the local populations inasmuch as they surpass the response capacity of the directly involved communities, municipalities and regions.

Some characteristics of companies and the government favor the transformation of abnormalities into the normal state of affairs: although the government establishes regulations, very little or nothing is actually regulated, but companies perform, or hire third parties under their rigorous control, to perform risk assessments to ensure the safety of their operations. This artificial management of risk, as described by the authors, is meant to persuade that effective accident control and prevention are assured, at the same time it blurs the view of reality and silences the dissonant voices of workers and trade unions who stubbornly insist that something is wrong. A universe in which everything that seemed to be under control and safe vanishes into thin air...

After bereavement is over, the occurrence of this type of incidents may expectably promote changes in the extractivism-based model of development for environmental and human costs to be effectively taken into account rather than externalized, so that environmental injustice and violations of the workers and communities' rights are no longer tolerated, conflict

of interest is denounced and faced with effective transparency and the participation of society at large. This process will change the approach to the understanding and governance of risks, through the due strengthening of government agencies and effective participation of society through its representatives to find solutions for the civilization crisis we are currently undergoing and that threatens the lives of the directly involved workers, close populations and ecosystems.

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