

Stakeholder Input for a Common, Global, Comprehensive Risk Management Framework for Industrial Parks to Manage Risks from Natural Hazards

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ABSTRACT

Within the development of a comprehensive risk management framework for industrial parks to assess and manage risk from natural hazards, meetings and industry visits were arranged in Colombia. The main aim of the visits was to obtain expert feedback on the proposed framework in addition to collect data and understand the current situation concerning Natech risk and risk management in Colombia. Expert feedback was positive indicating the need and usefulness of the proposed framework. Results from the discussions will contribute to improve the methodologies and strengthen the proposed framework.

INTRODUCTION Natural hazard triggered technological accidents (Natech) have been on the increase [1, 2]. In particular, severe hydro meteorological and weather related Natechs have raised interest of researchers, governments, industry and community, on the need to better understand and manage Natech risk. As a consequence, research, tools and methodologies are being developed in order to propose prevention and mitigation measures that can help to counteract Natech consequences. However, there are currently no methodologies proposed for area-wide risk assessment and management of Natechs. Nor are there available tools to evaluate the level of performance of industrial sites when faced with Natech scenarios. Taking into consideration the above gaps, we propose a comprehensive risk management framework and a performance rating system based on the framework as shown in Figure 1.

To support the development of the framework and rating system, we conducted field visits and meetings in Colombia. The main aim of the visits was to obtain

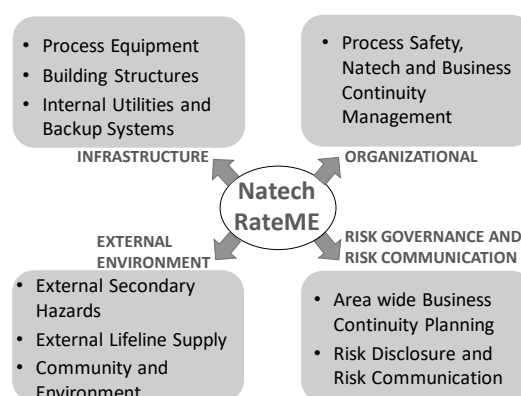


Figure 1. Elements of the comprehensive risk management framework which is the basis for the Natech-RateME

expert feedback on the proposed framework in addition to collect data and understand the current situation concerning Natech risk and risk management in Colombia. Thus, this paper shows the results of expert input from industry, government organizations and researchers, in addition to the main findings from the discussions.

NATECH-RATE ME PERFORMANCE RATING SYSTEM

In an effort to contribute to a more comprehensive approach to Natech risk management, we are currently developing the “Natech-RateMe” rating system for evaluating the performance of industrial sites when faced with Natech hazards. Natech-RateMe uses the elements of the framework (Figure 1) which considers four main elements that together assess the performance of industrial establishments within an industrial park including: a)Infrastructure; b)Organization and management; c)Risk communication and risk governance issues; and d)External environment.

Thus, the performance evaluation of industrial

facilities in terms of, for example, Infrastructure will consider design, structural integrity, spatial distribution, soil and other physical characteristics which determine vulnerability of the buildings and equipment to the possible impact of a natural hazard and consequence release of hazardous materials of: a)Process Equipment, b)Building Structures and, c)Internal Utilities and Backup Systems. The level of performance expected depends on their criticality to insure that they remain in operation during or following an event. The performance evaluation will be done in terms of expected: 1) casualties; 2) downtime; and 3) financial losses. At the end, results will be translated into an award for the industrial facility and/ or the industrial park (platinum, gold, silver, and bronze).

INDUSTRIAL VISITS AND MEETINGS IN COLOMBIA We conducted a field trip in Colombia in order to present and obtain input concerning the proposed framework and methodologies to stakeholders from industry, local and national government organizations, civil protection, and researchers. Colombia has been selected as a case study because it is currently introducing legislation for chemical and Natech risk management which has raised awareness and led to active participation of diverse stakeholders. For this purpose, meetings and industry visits were arranged in Bogota, Medellin and Cartagena. Eight multi-stakeholder meetings were held, as well as three industrial visits, including more than 80 experts from more than 20 public and private organizations.

During the meetings and industrial visits experiences were shared regarding past Natech accidents, understanding and learning the current circumstances of the country in terms of disaster risk management. The meeting discussions showed that there is high concern regarding Natech risk at industrial parks in the country due to various types of natural hazards. Landslides, flooding, storm surge and lightning were identified as the major hazards to fixed industrial facilities and oil and gas pipelines. Nevertheless, it was found that there is no reporting system nor a database for collecting information

regarding chemical and Natech accidents.

Gaps in the Disaster Risk Management System were also found, as Natechs are not being considered in the analysis of possible scenarios. There was interest among the participants to the meetings to include Natech scenarios in the Risk Management policies at the national and private levels and having guidelines for this process.

EXPERT INPUT During the meetings, the proposed framework and associated methodologies were introduced in an effort to raise awareness about Natech risks and their characteristics, as well as to show the relevancy of the proposed framework for Colombia. Expert feedback was positive indicating the need and usefulness of the proposed framework. It was concluded that the framework could help close existing gaps in risk management processes in Colombia. In addition, collaborative networks were established and the possibility of having a case study in the country was confirmed.

By and large, the field trip and meetings were a good input for the Risk Governance and Risk Communication element of the proposed framework. Although the discussions were focused on the importance of identifying the main stakeholders for the Natech risk management context, we found that the attention needs to be focused on another aspect. Establishing the functions needed to be performed for having a comprehensive disaster risk management framework, rather than determining who are the main stakeholders, will give the framework a flexibility that will allow it to have a global approach. Future tasks include the distribution of a questionnaire in January 2018 to industry and government officials in order to obtain more detailed information on good practices, lessons learnt and their roles and interaction with other stakeholders. These will provide further input for the improvement of the framework and rating system.

REFERENCES

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