The Development of an Emergency Response Management Information System by the Environmental Protection Agency

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Introduction

Ireland has a National Emergency Plan for Nuclear Accidents (NEPNA) that provides a framework for managing, through a National Emergency Coordination Group (NECG), the national response to a nuclear or radiological emergency (for example, a major accident at a nuclear installation abroad) resulting in widespread radioactive contamination in Ireland. The Environmental Protection Agency (EPA) has been assigned a major role under NEPNA to assess the potential radiological consequences of such an emergency and to provide advice on the protective measures that may be required. The EPA has produced its own NEPNA sub-plan that describes the EPA's response plan under the NEPNA.

Effective communication between response agencies, the Government and the public during a radiation emergency contributes towards the effective implementation of these protective measures and a reduction in stress/anxiety among the population. Effective communication within a response organisation is also important so that the status of the emergency is clearly understood by all staff members. To this end, the EPA has developed a secure web-based **Emergency Response Management Information System (ERMIS)** as a communications tool to facilitate the efficient sharing of critical information within the organisation during radiation emergencies (**Figure 1**). This can be expanded in the future to include other environmental emergencies.

Background

ERMIS was developed by the EPA's Office of Radiation Protection and Environmental Monitoring (ORM) in 2014 to replace an older system that was difficult to maintain. It is hosted within the EPA's intranet portal using Microsoft SharePoint.

SharePoint provides a collaborative system for the EPA to manage its internal communications and information. Creating ERMIS using SharePoint was a straightforward process as no previous experience with software coding was required. With some introductory training it was possible for staff within the EPA's ORM to use SharePoint's in-built features to generate a navigation menu, insert calendars and links to other websites, enable content to be added to assigned reporting sections and create document libraries.

This latter feature is particularly useful for the EPA's emergency response teams, including the NEPNA sub-plan teams (Technical Assessment, Media & Information, Laboratory, IT Support and Logistical Support).
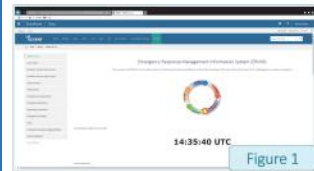
It means that team members can manually upload status update documents in a variety of formats for subsequent viewing by a wider audience within the EPA and also by the EPA's representative on the NECG in the event of an emergency.

Configuration

As a communications tool, it is important that ERMIS can handle static and dynamic information from various sources. In practice, this means that ERMIS can store static information such as guidance documents, emergency contacts and Duty Officer reports in designated sections (**Figure 2**), while dynamic information can be displayed in real-time without having to leave ERMIS. The presentation of live information is possible through SharePoint's ability to 'pull' data from other websites and display it as mini versions of the original websites.

At present, ERMIS has been configured to display the outputs from the 15 permanent gamma radiation dose rate monitoring stations in Ireland operated by the EPA (**Figure 3**), the corresponding outputs obtained via EURDEP from across Europe (**Figure 4**), radar maps of rainfall over Ireland provided by Met Éireann (**Figure 5**) and forecasted atmospheric dispersion of radioactive plumes from selected UK nuclear power plants via the ARGOS decision support system (**Figure 6**).

The advantage of being able to display dynamic information on ERMIS is that users are provided with a single source of relevant information instead of having to access multiple websites. The dynamic content on ERMIS can be modified as required to address various environmental emergencies. ERMIS is not available to the public as access is restricted to EPA staff.

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Conclusion

The EPA has developed an Emergency Response Management Information System as its primary communications tool within the organisation in the event of a nuclear or radiological emergency.

The management of internal communications and information using ERMIS facilitates the EPA's response and enables EPA staff to be kept informed about the evolving status of such emergencies.

ERMIS uses the collaborative features provided by SharePoint to aid the sharing of critical information between response teams so that relevant decisions on response actions can be made within the EPA and presented to the National Emergency Coordination Group. It has been configured to display both static and dynamic information in a structured manner that is readily accessible.