The National Incident Management System: a multi-agency approach to emergency response in the United States of America

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Summary
This paper outlines the development of a universal incident management system across all of government in the United States of America called the National Incident Management System. The system has been incorporated into the National Response Plan and the procedures of United States Department of Agriculture (USDA) agencies, using the United States Forest Service's National Interagency Incident Management System as a model. This model has enhanced USDA's effectiveness in a wide range of emergencies that might affect American agriculture, including natural disasters (e.g. earthquakes, floods, hurricanes, pest and disease outbreaks, and wilderness and other types of fires), nuclear and conventional events, or the accidental or deliberate introduction of a biological, chemical or radiological agent threatening the United States food supply, critical infrastructure or economy.

Keywords
All-hazard – Incident command system – National Incident Management System – National Interagency Incident Management System – National Response Plan.

Introduction

As the 17th Century English author John Donne once said, 'no man is an island', and the same is true of a country's animal health officials. This axiom is brought home to us time and time again when emergency animal disease eradication efforts affect not just agriculture, but the environment, public health, trade, tourism, and even confidence in the government itself. In the United States of America (USA), the events of 11 September 2001, the subsequent deliberate dissemination of anthrax, and the United Kingdom's foot and mouth disease epidemic in the same year dramatically highlighted the importance of governmental preparedness and response capabilities in a large-scale national or regional emergency as well as in smaller-scale incidents (6). In an emergency situation, governments must act quickly to:

a) determine the nature of the event

b) initiate an appropriate response

c) cope with the event

d) facilitate recovery.

The tragic events of 2001 demonstrate the need for the United States Department of Agriculture (USDA) and other governmental departments to 'think big' as they plan for the mobilisation of large-scale resources to address potentially large-scale disasters. In addition to natural catastrophes, USDA must plan for worst-case scenarios such as deliberate attempts to interrupt or undermine

confidence in the food supply of the USA or to disrupt critical infrastructures (e.g. rural utilities). Although each USDA agency's existing cadre of agricultural professionals is sufficient to cope with 'ordinary' emergencies, the agricultural community could easily be overwhelmed by the logistical, operational and administrative demands of a sizable regional or national crisis. To cope with such events, the agricultural community must expand its ties with the emergency management community and other organisations so as to be prepared for a major agricultural emergency. In recognition of this the National Incident Management System (NIMS) was established (3), adopting many of the features of the United States Forest Service's National Interagency Incident Management System (NIIMS).

The National Interagency Incident Management System model

The NIIMS is a successful incident response management strategy that is widely used in the emergency management community. This model provides a structure for making a coordinated response in an emergency situation and for gaining access to the resources necessary for successful recovery. The approach is used widely in events or conditions that pose a potential or actual threat to the public and the environment, such as potential violence at the Olympic Games, natural disasters, domestic terrorism, major hunts for people, airplane crashes, and law enforcement activities – including border incidents involving drugs.

Organisationally speaking, the NIIMS model and similar universal incident management approaches have been used by most governmental emergency management organisations in the USA, including those in areas such as the military, law enforcement, health care and public works. It is the model that the armed forces use in combat situations and that the US Coast Guard uses for emergency response and management on location during and after a major disaster. The US Department of Energy is adopting the model for use in responding to nuclear emergencies.

The NIIMS model is also used by all Federal agencies involved in wildland fires and by state and county wildland fire agencies in the continental United States.

The incident command system (ICS) – the cornerstone of the NIIMS model – was developed as a result of the devastating 1970 forest fires in California. This incident demonstrated a need to develop a common system for use by all fire service organisations.

The NIIMS model features the ICS as the process by which best to manage emergencies through objectives and direction provided by executives and line officers. The NIIMS also features components such as training programmes, individual qualification criteria and publications management. The model and its various adaptations have proven to be the best emergency management systems available. The major components of NIIMS include the following:

– National Multi-Agency Coordination (MAC) Group

– emergency operations centre(s)

– geographical MAC groups

– area commands

– incident management team (IMT).

The NIIMS, adopted by several federal, state and local agencies in 1982, served as the basis for today's NIMS. On 28 February 2003, the President of the USA issued Homeland Security Presidential Directive (HSPD)-5 (8), which directs the Secretary of Homeland Security to develop and administer a NIMS. According to HSPD-5:

'This system will provide a consistent nationwide approach for Federal State, and local governments to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity. To provide for interoperability and compatibility among Federal, State, and local capabilities, the NIMS will include a core set of concepts, principles, terminology, and technologies covering the incident command system; multi-agency coordination systems; unified command; training; identification and management of resources (including systems for classifying types of resources); qualifications and certification; and the collection, tracking, and reporting of incident information and incident resources.'

Many similarities exist between the NIIMS and the NIMS; however the latter incorporates new, additional components. The NIIMS was designed to meet the challenges of wildland fire, whereas the NIMS aims to address the challenges of all hazards or terrorist events. In addition, NIMS puts greater emphasis on prevention and preparedness measures. With the exception of the way the intelligence function is handled, the principles and concepts of the NIMS ICS are the same as the NIIMS ICS. Under the NIMS ICS, the incident commander has flexibility about where to assign the intelligence and information function, e.g. command staff or operations. Table I gives an outline of the five components of the NIIMS and the six components of NIMS (5).

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Table I
Components of the National Interagency Incident Management System (NIIMS) and the National Incident Management System (NIMS) in the United States of America

NIIMS	NIMS
1) Incident command system (ICS)	1) Command and management, including ICS
2) Training	2) Preparedness
3) Qualification and certification	3) Resource management
4) Publication management	4) Communications and information management
5) Supporting technologies	5) Supporting technologies
	6) NIMS management and maintenance

The National Incident Management System

To provide this framework for interoperability and compatibility, the NIMS is based on an appropriate balance of flexibility and standardisation. The NIMS provides a consistent, flexible, and adjustable national framework within which government and private entities at all levels can work together to manage domestic incidents, regardless of their cause, size, location or complexity. This flexibility applies across all phases of incident management: prevention, preparedness, response, recovery and mitigation. The NIMS provides a set of standardised organisational structures – such as the ICS, MAC and public information systems – as well as requirements for processes, procedures and systems designed to improve interoperability among jurisdictions and disciplines in various areas, including: training, resource management, personnel qualification and certification, equipment certification, communications and information management, technology support and continuous system improvement.

The NIMS integrates existing best practices into a consistent, nationwide approach to domestic incident management that is applicable at all jurisdictional levels and across functional disciplines in an all-hazards context. Six major components make up this systems approach. Each is addressed in a separate chapter of the NIMS document (3). Of these components, the concepts and practices for command and management (Chapter II) and preparedness (Chapter III) are the most fully developed, reflecting their regular use by many jurisdictional levels and agencies responsible for incident management across the USA. Chapters IV to VII, which cover resource management, communications and information

management, supporting technologies, and ongoing management and maintenance, introduce many concepts and requirements that are also integral to the NIMS but that will require further collaborative development and refinement over time.

National Incident Management System components

The following discussion is taken from the NIMS document and provides a synopsis of each major component of the model, as well as how these components work together as a system to provide the national framework for preparing for, preventing, responding to and recovering from domestic incidents, regardless of cause, size or complexity. A more detailed discussion of each component is included in the relevant chapters of the NIMS document.

Command and management

The NIMS standard incident command structures are based on three key organisational systems.

The incident command system

The ICS defines the operating characteristics, interactive management components and structure of incident management and emergency response organisations engaged throughout the life cycle of an incident (Fig. 1).

Multi-agency coordination systems

These define the operating characteristics, interactive management components and organisational structures of entities that support incident management, operating at the Federal, State, local, tribal, and regional levels through mutual-aid agreements and other assistance arrangements.

Public information systems

These refer to processes, procedures and systems for communicating timely and accurate information to the public during crisis or emergency situations.
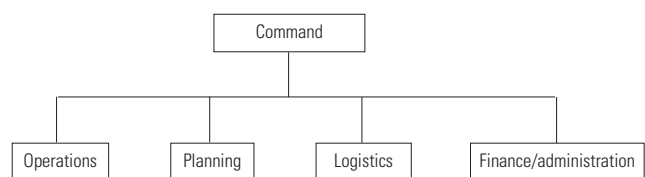

Fig. 1
Incident command system: one of the organisational structures of the National Incident Management System (NIMS) in the United States of America (command staff and general staff)

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Preparedness

Effective incident management begins with a host of preparedness activities conducted on a 'steady-state' basis, well in advance of any potential incident.

Preparedness involves an integrated combination of planning, training, exercises, personnel qualification and certification standards, equipment acquisition and certification standards, and publication management processes and activities.

Most countries have some form of planning process in which 'response plans' are prepared. Training and exercises must be given a high priority; it is all too easy to allow 'regular' work to take precedence over the preparedness phase. One way to overcome this is to have an ongoing training plan for responders. Something unique to NIMS is the emphasis on personnel qualification and certification standards. This provides that ongoing training plan. Most countries focus on what needs to be done but not who needs to do it. In the USA we are developing an extensive credentialing system so that when a plan calls for a specific task to be performed we have a pre-trained cadre of people to choose from who can perform that function.

Planning

It has been said that it is the planning, not the plan, that matters. Developing outstanding response plans without the input and commitment of the people who will implement those plans is a waste of time. Response plans describe how personnel, equipment and other resources will be used to support incident management and emergency response activities. Plans provide mechanisms and systems for setting priorities, integrating multiple entities and functions, and ensuring that communications and other systems are available and integrated in support of a full spectrum of incident management requirements. The USA has developed a 'suite' of plans called the National Animal Health Emergency Management System (NAHEMS) guidelines (7), the key to which is the response to highly contagious disease, rather than disease specific plans. Since we may not know the name of the next disease outbreak (as was the case with Nipha virus), a general response plan that can be applied to any large contagious disease outbreak or epidemic seems more appropriate. The NAHEMS guidelines include:

a) field investigations of animal health emergencies

b) disease control and eradication strategies and policies

c) operational procedures for disease control and eradication

d) site-specific emergency management strategies for various types of facilities

e) administrative and resource management

f) educational resources.

Training

Training includes standard courses on multi-agency incident command and management, organisational structure and operational procedures, discipline-specific and agency-specific incident management courses, and courses on the integration and use of supporting technologies. Currently these courses are focusing on the administrative aspects of the response such as the roles of the finance section chief or documentation specialist. Courses based on the sections of the NAHEMS guidelines are also being developed for such positions as disposal team leader.

Exercises

Incident management organisations and personnel must participate in realistic exercises – including multidisciplinary, multijurisdictional and multisector interaction – to improve integration and interoperability and optimise resource utilisation during incident operations. An exercise plan should be designed to ensure that each area of the response plan is practised. A well-thought out and planned scheme should include orientation and a table-top exercise before ever attempting a functional exercise.

Qualification and certification

Qualification and certification activities are undertaken to identify and publish national-level standards, and to measure performance against these standards in order to ensure that incident management and emergency response personnel are officially certified as appropriately qualified to perform NIMS-related functions.

Equipment acquisition and certification

Incident management organisations and emergency responders at all levels rely on various types of equipment to perform tasks essential to their missions. A critical component of operational preparedness is the acquisition of equipment that will perform to certain standards, including the capability to be interoperable with similar equipment used by other jurisdictions.

Publications management

Publications management refers to forms and form standardisation, developing publication materials, administering publications and revising publications when necessary. Administrative tasks will include establishing conventions for naming and numbering, managing the publication and promulgation of documents, and exercising control over sensitive documents.

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Resource management

The NIMS defines standardised mechanisms and establishes requirements for processes to describe, inventory, mobilise, dispatch, track and recover resources over the life cycle of an incident. In the exotic Newcastle disease outbreak in 1993 in the USA, 60% of the federal veterinary workforce were deployed to the outbreak. An additional 2,000 people were also deployed at five locations in three different states. The logistics of ordering the right people and having them arrive at the right time required an extensive system to mobilise, dispatch and track these resources.

Communications and information management

The NIMS identifies the requirement for a standardised framework for communications, information management (collection, analysis and dissemination) and information sharing at all levels of incident management. Such standardisation increases in importance as the complexity of the incident increases. Many of our recent incident responses, including those to bovine spongiform encephalopathy, exotic ND and Hurricanes Katrina and Rita, have involved multi-agency cooperation, and communication is of the utmost importance.

The two main elements are briefly described below.

Incident management communications

Incident management organisations must ensure that effective, interoperable communication processes, procedures and systems exist to support a wide variety of incident management activities across agencies and jurisdictions. As major outbreaks require more resources than the regular day-to-day activities a national veterinary service will have to use available resources from other agencies. This is the case for both a disease outbreak and a natural disaster. In a major natural disaster, such as inflicted in the USA by Hurricane Katrina, hundreds of agencies, jurisdictions and volunteer organisations came together to provide a single response organisation, sometimes successfully, sometimes not.

Information management

Information management processes, procedures and systems help ensure that information, including communications and data, flows efficiently through a commonly accepted architecture that will support:

– the numerous agencies and jurisdictions responsible for managing or directing domestic incidents

– those affected by the incident

– those contributing resources to the incident management effort.

Effective information management enhances incident management and response and helps ensure that crisis decision-making is better informed. An effective organisational structure is also important to enhance communication and decrease duplication of effort.

Supporting technologies

Technology and technological systems provide supporting capabilities essential for implementing and continuously refining the NIMS. These include voice and data communications systems, information management systems (i.e. record keeping and resource tracking) and data display systems. Also included are specialised technologies that facilitate ongoing operations and incident management activities in situations that call for unique technology-based capabilities.

Ongoing management and maintenance

This component establishes an activity to provide strategic direction for and oversight of the NIMS, supporting both routine review and the continuous refinement of the system and its components over the long term.

As stated previously, this paper is a summary of the overall NIMS document. The NIMS training courses are available at: http://training.fema.gov/EMIWeb/IS/is700.asp.

Additional training and information is also available at the Federal Emergency Management Agency's Emergency Management Institute, which offers a broad range of on-line independent study courses as well as residential training that addresses key elements of NIMS (1).

Conclusion

The NIMS is part of a comprehensive National Response Plan (NRP) (4). This is summed up in the first five paragraphs of the Preface to the NRP:

'In Homeland Security Presidential Directive (HSPD)-5, the President directed the development of a new NRP to align Federal coordination structures, capabilities, and resources into a unified, all-discipline, and all-hazards approach to domestic incident management. This approach is unique and far reaching in that it, for the first time, eliminates critical seams and ties together a complete spectrum of incident management activities to include the prevention of, preparedness for, response to, and recovery from terrorism, major natural disasters, and other major emergencies. The end result is vastly improved coordination among federal, state, local, and tribal organisations to help save lives and protect America's communities by increasing the speed, effectiveness, and efficiency of incident management.

The NRP represents a true "national" framework in terms of both product and process. The NRP development process included extensive vetting and coordination with Federal, State, local, and tribal agencies, nongovernmental organisations (NGOs), private-sector entities, and the first-responder and emergency management communities across the country. The NRP incorporates best practices from a wide variety of incident management disciplines to include fire, rescue, emergency management, law enforcement, public works, and emergency medical services. The collective input we received from our public- and private-sector partners has been, and will continue to be, absolutely critical to the implementation and continued refinement of the core concepts included in this groundbreaking national plan.

The NRP is built on the template of the NIMS, which provides a consistent doctrinal framework for incident management at all jurisdictional levels, regardless of the cause, size, or complexity of the incident. The activation of the NRP and its coordinating structures and protocols – either partially or fully – for specific Incidents of National Significance provides mechanisms for the coordination and implementation of a wide variety of incident management and emergency assistance activities. Included in these activities are Federal support to State, local, and tribal authorities; interaction with NGOs, private donor, and private-sector organisations; and the coordinated, direct exercise of Federal authorities, when appropriate.

The NRP is also an essential element of the broader policy coordination and reconciliation mechanisms of the Federal Government. The operational and resource coordinating structures described in the NRP are designed to support existing White House policy mechanisms and decision-making entities during the response to a specific threat or incident. Also, while the NRP itself creates no new authorities, it serves to unify and enhance the incident management capabilities and resources of individual agencies and organisations acting under their own authorities in response to a wide array of potential threats and hazards.'

It will not be simple to change the linkages and tried-and-true individual organisation approach that have served small-scale incidents so well. Change is not without cost in both time and money. Adapting the approach of the USA to a more integrated and coordinated NRP based on the principles of the NIMS (Fig. 2) will require:
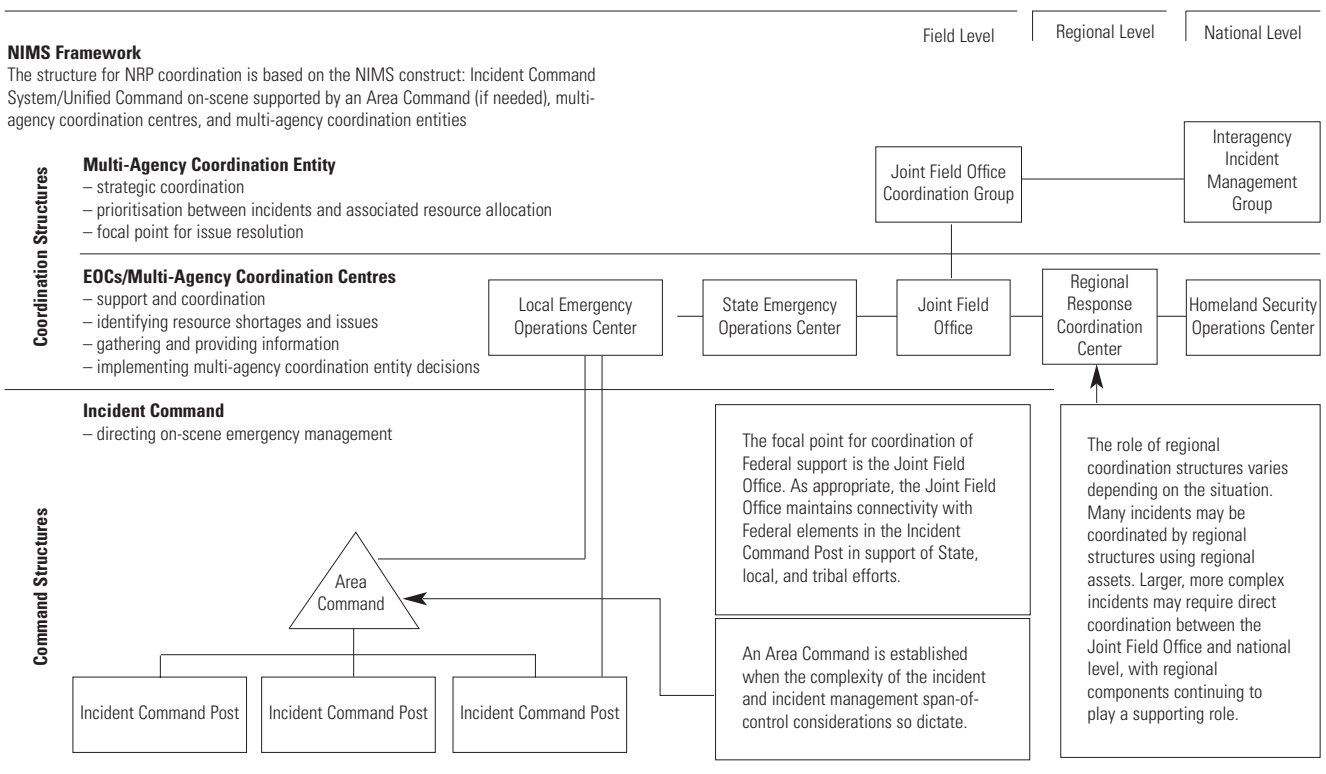
EOCs: Emergency Operation Centers
NIMS: National Incident Management System

Fig. 2
Structure for National Response Plan (NRP) coordination in the United States of America (2)

– supporting NRP concepts, processes and structures so that they can fulfil their assigned functional responsibilities and ensure effective and efficient incident management. Such development will include designating representatives to staff interagency coordinating structures, as required;

– agreeing to the terms and conditions in the 'Memorandum of Agreement: Mutual Aid for Incidents of National Significance (non-Stafford Act)', set forth in the Financial Management Support Annex, Attachment 3, December 2004, in the NRP (4). This provision is applicable only to Federal departments and agencies;

– providing cooperation, resources, and support to the Secretary of Homeland Security in the implementation of the NRP, as appropriate and consistent with the authorities and responsibilities of those agencies that are providing support;

– cooperating with appropriate Federal incident management leadership, including the Principal Federal Official, Federal Coordinating Officer, and Federal Resource Coordinator, as appropriate and consistent with the agencies' own authorities and responsibilities, in order to enable effective and efficient incident management;

– modifying existing interagency and agency incident management and emergency response plans to facilitate compliance with the NRP;

– forming and maintaining incident management partnerships with state, local, tribal and regional entities, the private sector, and NGOs;

– utilising departmental and agency-specific authorities, resources, and programmes to facilitate incident management activities in accordance with the NRP;

– developing, exercising, and refining headquarters and regional capabilities to ensure sustained operational readiness in support of the NRP.

The NRP and the NIMS are continual works in progress and will be undergoing continual improvements based on lessons learned. In this first year of operating under the NRP and NIMS there have been a variety of opportunities to learn what worked and what did not work, what was implemented and what had not yet transitioned to the new plans. This past 2005 hurricane season alone will provide a wealth of learning opportunities to revise and improve these plans. Phase 3 of the NRP implementations calls for a review and assessment at the end of the year that began in December 2005. This will be followed by a four-year review cycle to ensure continual improvement.

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Le Système national de gestion des incidents : une approche pluri-organisationnelle aux situations d'urgence

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Résumé

Le présent article décrit l'élaboration d'un système universel de gestion des incidents à tous les niveaux de gouvernement aux États-Unis d'Amérique, nommé National Incident Management System (Système national de gestion des incidents). Ce système a été intégré dans le Plan national d'intervention et dans les procédures des organismes qui relèvent du Département de l'agriculture des États-Unis (USDA), en prenant comme modèle le Système national inter-organisationnel de gestion des incidents du Service des forêts. Ce modèle a augmenté l'efficacité de l'USDA pour réagir à toute une série de situations d'urgence qui pourraient toucher l'agriculture américaine, y compris les catastrophes naturelles (séismes, inondations, ouragans, invasions de ravageurs et foyers de maladie, incendies dans des réserves naturelles ou autres type de feux), accidents nucléaires ou conventionnels, introduction accidentelle ou délibérée d'agents biologiques, chimiques ou radiologiques, menaçant l'approvisionnement alimentaire, les infrastructures essentielles ou l'économie des États-Unis d'Amérique.

Mots-clés

Plan national d'intervention – Système de commandement en cas d'incident – Système national de gestion des incidents – Système national inter-organisationnel de gestion des incidents – Tous-risques.

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El Sistema Nacional de Gestión de Incidentes como mecanismo interinstitucional de respuesta de emergencia

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Resumen

El autor describe sucintamente la creación de un sistema universal de gestión de incidentes común a todos los órganos gubernamentales de los Estados Unidos de América, denominado Sistema Nacional de Gestión de Incidentes. El sistema ha sido incorporado al Plan Nacional de Respuesta y a los protocolos de los organismos del Departamento de Agricultura de los Estados Unidos (USDA), utilizando como modelo el Sistema Nacional de Gestión Interinstitucional de Incidentes del Servicio Forestal del país. Este modelo ha colocado al USDA en disposición de intervenir con mayor eficacia en muy diversas emergencias susceptibles de afectar a la agricultura estadounidense, entre ellas catástrofes naturales (terremotos, inundaciones, huracanes, plagas o brotes de enfermedad e incendios forestales o de otro tipo), accidentes nucleares o convencionales e introducción accidental o deliberada de un agente biológico, químico

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o radiológico que amenace el abastecimiento alimentario, la economía o alguna infraestructura básica del país.

Palabras clave
Peligro – Plan Nacional de Respuesta – Sistema de mando en caso de incidentes – Sistema Nacional de Gestión de Incidentes – Sistema Nacional de Gestión Interinstitucional de Incidentes.

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