

## Emergency notification under SARA Title III: Impacts on facility emergency planning

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### Abstract

Provisions for emergency notification under the Superfund Amendments and Reauthorization Act (SARA Title III) have a significant impact on industrial facilities. Some facilities became subject to reporting for the first time, while others needed to expand their programs, in order to remain in compliance. This paper addresses issues that may arise as a result of these provisions and demonstrates how these considerations may be incorporated into a practical emergency preparedness program. Detailed information, derived from developing modified emergency plans and response decision management tools for an example facility, is also provided.

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### Introduction

The emergency notification provisions under Title III of the Superfund Amendments and Reauthorization Act (SARA Title III) have far reaching implications for industrial facilities. Consideration of a number of factors is necessary in ensuring direct compliance as well as in addressing indirect implications and related community issues.

In an emergency situation, for example, facility personnel are faced with potentially difficult decisions on whether to notify, whom to notify and what information to provide. Such decision making can be even harder during night shifts or on weekends, when relatively few experienced staff may be present. Unfortunately, it is just those airborne releases at night, during nearly calm meteorological conditions, that can result in the greatest impacts. Regardless of time of occurrence, prompt liaison with fire and police departments, am-

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balances and other responders must be assured when needed. Facility personnel may also have to contend with a number of other federal, state and local reporting requirements at the same time as implementing response actions.

This paper identifies the main issues that arise as a direct consequence of the notification provisions, and discusses possible approaches to their resolution. Then it demonstrates how these considerations may be incorporated into a practical emergency preparedness program. The paper also describes how a particular electronics manufacturing facility undertook supplementary risk assessment steps, and enhanced its emergency plans by revising notification and response guidelines, to fully address the new SARA Title III requirements. This example illustrates how responsible companies are meeting these challenges.

### **Compliance and implications**

Under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Clean Water Act, a program for reporting of releases of oil and hazardous substances to the National Response Center (NRC) was established. Section 304 of SARA Title III, or the Emergency Planning and Community Right-to-Know Act of 1986, significantly extended the scope of this federal program [1]. The most important features of the new requirements, codified under 40 CFR Part 355 [2], include: the need to notify the Local Emergency Planning Committee (LEPC) or LEPCs, and the State Emergency Response Commission (SERC) or SERCs, of the potentially affected areas; a new list of reportable substances, described as Extremely Hazardous Substances (EHSs); as well as several specific informational requirements. The introduction of the EHS list focussed attention on airborne releases, as this list had been developed for the U.S. Environmental Protection Agency's (EPA's) Chemical Emergency Preparedness Program, which was designed to address accidental releases of toxic substances to the air [3].

The new requirements raised a number of questions that subject facilities needed to address, such as:

- **Basic preplanning**
  - Inventory of reportable substances
  - Can maximum releases exceed reportable quantities?
  - Hazard ranking and event classification
  - Off-site communication planning
- **Detailed notification planning**
  - Assignment of responsibilities
  - Determining when to notify
  - Development of notification data
  - Implementation of reporting

- Training of staff
- Consequences of reporting

Some facilities became subject to reporting for the first time. Many others, which had previously made certain provisions for reporting, found the need to review and expand on their programs in order to account for the increased direct compliance requirements as well as the related implications. This latter situation applied to the electronics manufacturer's site, which is discussed here as a case study example. Each of the issues listed above is discussed in the following sections.

### **Basic preplanning**

Facilities first needed to determine whether they were affected by the new requirements and, if so, whether any potential on-site scenarios could trigger the reporting requirements. Most facilities completing this review have found that they were basically subject to reporting except, for example, research laboratories where the substances stored are generally exempted under the SARA Title III definition of "hazardous chemical".

Specific questions raised included the following:

- Are reportable substances present at the facility?
- Are these substances present in amounts exceeding their respective Reportable Quantities (RQs)?
- Could releases occur in amounts exceeding the RQ(s)?
- What site-specific criteria should be used to determine notification priorities and timing?
- Which notification telephone numbers are needed in case of a release event?

The need to address such questions led many facilities, including the case example considered here, to conduct careful site-specific reviews. The case example facility already had extensive emergency planning procedures in place, including a written emergency planning mutual aid agreement with the fire departments serving the nearby towns. However, it was decided to supplement the existing procedures with a plan that specifically addressed the issues raised by the SARA Title III notification requirements, analyzed selected hypothetical release scenarios, and provided guidelines to compliance with both the letter and spirit of the law.

### *Inventory of reportable substances*

For the identification of reportable substances, a hazardous materials inventory is invariably found to be of considerable assistance. Such an inventory should ideally include the Chemical Abstracts Service (CAS) Registry Number as a unique identifier for ease of comparison with the regulatory lists. Comparisons are needed with the listed EHSs contained in 40 CFR Part 355, as well as the previously reportable (CERCLA) substances under 40 CFR 302.4.

Computerized comparisons can be made with the "List of Lists" available from EPA in database format. Commercially available or specialized software may also be used.

For the identified substances, comparisons of quantities with listed RQs may be performed in a phased manner. If the maximum amounts on site are less than the respective RQs, the substances would not be subject to reporting (with the possible exception of a simultaneous release of two or more reportable radionuclides). The Emergency and Hazardous Chemical Inventory reporting forms required under Section 312 of SARA Title III, and data used to generate the forms, may also be useful in determining potential reportability.

At the example facility, the basis of the current spill contingency plan was a computerized hazardous materials inventory that enabled potentially reportable substances present on site to be readily identified.

#### *Can maximum releases exceed reportable quantities?*

For substances present on site above their RQs, the next step is an evaluation of the maximum quantity that could be released at any one time. For planning purposes, conservative judgement of such release potential is appropriate. A common starting point is the maximum quantity contained in any one storage container or process vessel. An engineering evaluation may then be performed to make allowance for the potential for multiple container or vessel releases. If such quantities are found to exceed RQs, then further preplanning may be necessary.

At the example facility, the hazardous materials inventory included a listing for each designated building or outdoor storage area that specified container sizes and RQs of potentially reportable substances. This format made it relatively easy to perform the comparisons with regulatory listings and to determine the possibility of a reportable incident at each location. An engineering investigation was undertaken to evaluate the potential for multiple vessel releases. Also estimated were the maximum release rates from single containers for selected hypothetical initiating events. Each type of event could then be classified by means of a hazard ranking scheme, to facilitate simplified communication of the relative degree and importance of the hazard associated with a reported event.

#### *Hazard ranking and event classification*

SARA Title III places new emphasis on rapid initial notification of the LEPC in the event of an incident. The example facility, and many other sites containing numerous potentially reportable event scenarios, have found it essential to use such classification schemes to avoid arousing undue alarm when small spills with trivial impacts occur.

Companies that have already adopted incident classification schemes for managing on-site response have found it relatively easy to extend their current

methods to meet the expanded requirements for off-site communication. Many already have internal protocols which dictate that, for small incidents affecting just the occupants of one facility building or a small adjacent on-site area, only those personnel will be alerted. (Facilities frequently use public-address systems or extensions to their fire-alarm systems for this purpose.)

The greatest difficulty with the adaptation of such a system is to ensure that small events which have the potential to produce any off-site consequences get properly reported to the off-site LEPC and SERC contacts, even when the nature of the event is judged to be of no significant health consequence. The role of the preplanning incident consequence assessment and training activities discussed in more detail below is to assure that the potential importance of an incident in progress is rapidly communicated. Then, if complications develop to increase the risk, the maximum available resources for mitigation of adverse effects can be rapidly implemented.

For the example facility, a study using a hazard ranking system was conducted to clearly establish the primary gases and volatile liquids of interest. Based on the on-site engineering inspection, selected potential airborne release scenarios were then characterized. This was followed by an assessment of the hypothetical worst-case impacts using mathematical consequence modeling techniques. Liquid spill scenarios were also postulated and analyzed in a related manner, and surface water impacts on ecological systems were evaluated, making allowance for dilution and buffering capacity as necessary. Potential airborne and waterborne concentrations were compared with established guidelines and standards.

A classification level was assigned to each of the release scenarios studied. The classification system was designed to be compatible with the existing on-site classification scheme applied to other incidents. Using the release analysis results, a decision chart was developed that would enable facility personnel to make a rapid preliminary determination of an incident classification given basic information on the event. Community response personnel were also advised of the classification scheme.

#### *Off-site communication planning*

A further basic planning step is to determine specifically whom to initially notify and what related lines of practical communication with off-site parties may need to occur in the event of a release. Contact made with the Chairman of the LEPC during the planning process should identify the Community Emergency Coordinator and telephone number. It is possible that this person may be the local Fire or Police Chief, so that a further call to this responder in an actual event may be superfluous. The telephone numbers for the SERCs have been widely published. If more than one LEPC or SERC could be affected by a release, all the respective contacts should be identified. It is generally useful to advise the Community Emergency Coordinator well in advance that

the facility may at some point need to report accidental releases, so that actual emergency notifications result in a minimum of confusion.

The cited example of written letters or agreements documenting all notification protocols is a wise planning procedure. This is particularly true for arrangements with first responders and medical support facilities, including physicians available to provide expert advice on treatment of exposures to unusual chemical substances.

### **Detailed notification planning**

The review of emergency preplanning steps just outlined indicates the basic reasons for focussing more attention on details of the emergency organization, classifying seriousness of incidents, and developing specific decision-making guidance to assure proper notification does occur. It is inherently difficult, however, to ensure that appropriate and timely communication will occur under emergency circumstances. The emergency organization must provide communication pathways that are both prompt and reliable for key information. This can conflict with constraints of normal organizational protocols. There is still a need to protect sensitive proprietary information and to limit potential liability, while minimizing actual risks to both employees and the public. For that reason, the rest of this paper includes more detailed information derived from the experience of developing modified emergency plans and response decision management tools for the example facility and other sites subject to SARA Title III requirements.

### *Assignment of responsibilities*

In order to assure compliance with the notification requirements at all times, a set of procedures and functional responsibilities needs to be defined. Questions to be asked include: Who at the facility is responsible for:

- Assessing the released material, its release rate or quantity, and other relevant data?
- Determining reportability?
- Developing notification data?
- Making the notifications?
- Follow-up liaison?
- Submitting written follow-up reports?

A facility emergency organization chart, together with a series of defined responsibilities for each functional position, is helpful in specifying these and other assignments as well as delineating the chain-of-command during an incident.

At the example facility, prior emergency planning efforts had produced an appropriate emergency organization for effectively managing on-site consequences of a wide range of emergency events, as well as basic communications

with appropriate key local responders and state officials. However, as at many facilities, the immediate notice requirement and related pressures to make quick decisions on the potential for any effects from off-site transport of airborne gases or vapors from liquid spills did create the need for several changes in the emergency communication process. The principal requirement was a delegation of specific SARA Title III related responsibilities to properly trained individuals within the emergency organization.

#### *Determining when to notify*

Despite implementation of the basic preplanning measures described above, an actual release event would require a number of further decisions to be made, for example:

- Does the release contain a reportable substance?
- Does the released quantity exceed the RQ(s)?
- Could the release result in exposure to persons beyond the boundaries of the facility?
- Do any further SARA Title III exemptions apply?
- Do any further reporting requirements apply?

The first task is to ensure that procedures exist for communicating the information on release characteristics from first responders at the scene of the incident to personnel responsible for making the reportability determination. Also, release detection systems may need to be enhanced to aid in the rapid identification of incidents.

In most facilities, as in our case example, managers prefer to err on the side of caution in making reportability determinations. For example, it is often assumed that all external gaseous releases could result in a finite off-site exposure, even if it concerns only a few molecules. Similarly, virtually any external liquid release could result in a finite amount of volatilization, and thereby off-site exposure. Therefore, a general decision might be made to report all releases of an RQ of a gas or liquid, unless the release is confined to a building and complete containment was assured. On the other hand, needless over-reporting can result in inappropriate use of facility personnel's time at a critical point in an emergency. It could also cause unnecessary concern among local responders and cognizant regulatory agencies.

As a preplanning measure, it is advisable to document the steps involved in determining reportability as they apply to the facility, particularly in view of potential confusion arising due to other federal, state and local reporting requirements. Many companies have developed guidelines, or decision charts, to aid personnel in taking the correct action under the stress of an actual emergency. The decision chart illustrated in Fig. 1 provides guidance on determining reportability and implementation of notification. Additional explanatory notes will be appropriate in site-specific situations. (This chart incidentally anticipates the designation of EHSs as CERCLA substances.) A more detailed

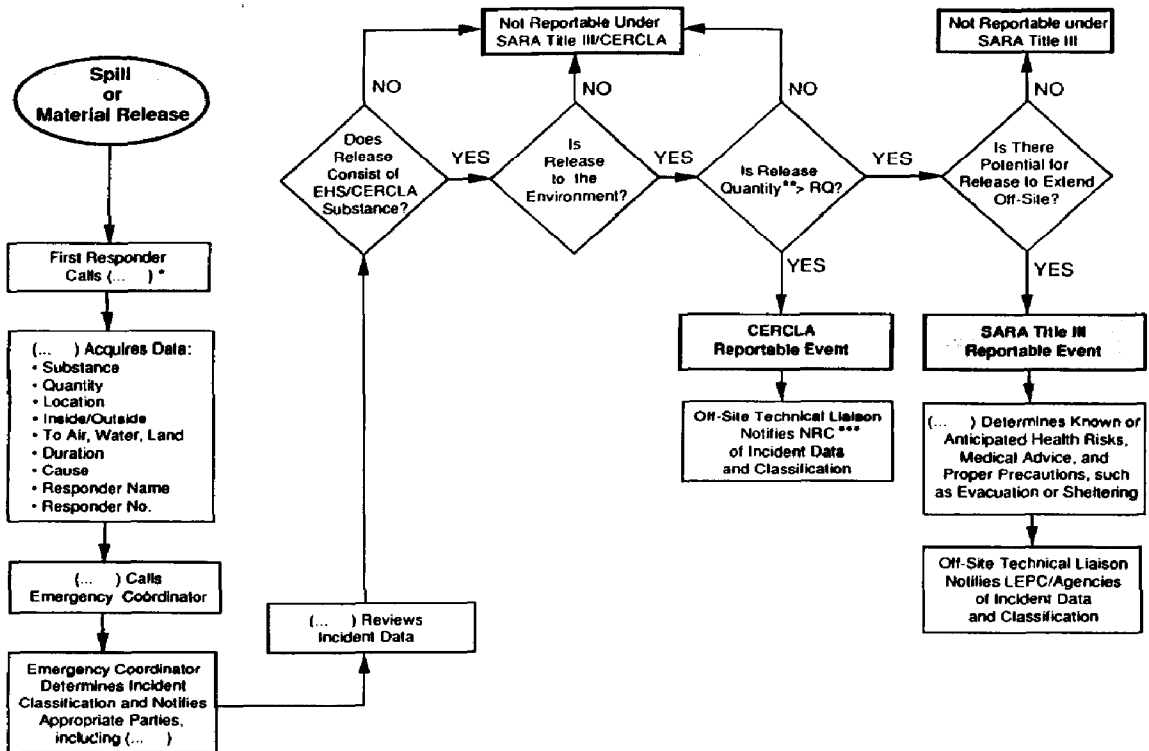


Fig. 1. CERCLA/SARA Title III notification decision chart.

\*Individuals identified by the emergency plan.

\*\*Quantity released to the environment as defined under CERCLA.

\*\*\*National Response Center.

version of this chart was developed for the example facility. In particular, it was expanded to consider both incident classification and differing state and federal reporting requirements.

A facility may have ongoing minor releases that are considered a normal part of the facility operations. For such releases, an applicability determination of the "federally permitted" and "continuous" release exemptions may need to be made. In particular, reporting may be necessary for a "statistically significant increase" in the quantity released, as interpreted by EPA.

Criteria for compliance with other accidental release reporting requirements may differ in significant aspects. Examples of federal statutes containing reporting requirements are:

- Resource Conservation and Recovery Act
- Toxic Substance Control Act ("Notice Of Substantial Risk")
- Occupational Safety and Health Act
- Federal Insecticide, Fungicide and Rodenticide Act
- Hazardous Materials Transportation Act
- Atomic Energy Act



Permit violations and specific state requirements may constitute other reporting obligations. In preparation of notification guidelines, consideration should be given to the potential for releases to trigger reporting under other than the CERCLA/SARA requirements.

For completeness, guidelines should include a reminder to submit the necessary written follow-up notices. Also, if the facility is subject to annual release reporting under SARA Title III, procedures should include a method of documenting accidental releases of "Toxic Chemicals" (as listed under SARA Title III regulations) for incorporation into the annual release estimates.

#### *Development of notification data*

The determination of the content of the notification can be the most complex part of the reporting process. SARA Title III specifies the minimum data requirements including:

- "any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals," and
- "proper precautions to take as a result of a release, including evacuation (unless such information is readily available to the Community Emergency Coordinator pursuant to the emergency plan)"

At a minimum, chemical-specific information on potentially reportable substances on site, such as Material Safety Data Sheets, should be easily accessible to the person responsible for developing the notification data. Beyond this, the requirements necessitate an evaluation of the likely consequences of the incident on the community. Could there be significant airborne exposure or contamination of surface water — especially drinking water? What is the expected severity, direction and distance of impacts? When might the exposure be initiated and what is the likely duration? The community needs answers to these types of questions in order to respond appropriately.

For example, if an airborne release is short-lived, giving rise to a "puff" of contaminant material, and there is a moderately strong wind, the community may determine that there is insufficient time available to evacuate residents, and that the (short duration) exposure to the material may be best minimized by communicating instructions to shelter indoors, close windows and shut off ventilation or air conditioning systems. The community leaders and public safety officials must weigh the risks associated with evacuation, including panic, accidents and exposure when outdoors, against the risk of exposure associated with in-place sheltering.

If the potential for airborne releases exists, meteorological instrumentation indicating wind speed and direction will assist in evaluation of the incident. Ambient air monitoring and surface water monitoring may also assist in determining the potential severity of effects, particularly for prolonged releases. Guidebooks and charts have been developed to determine approximate impact

distances of concern [4]. Such guidance material will, however, not be site-specific and may produce unrealistic results. In most instances, prior identification of selected release scenarios and evaluation of potential impacts will be helpful in the case of an actual incident. Comparison of the actual situation with one of the previously analyzed scenarios should enable a reasonable estimate to be made of potential impacts.

A variety of methods, many involving computer modeling techniques, exist for the determination of downwind impacts from airborne releases, and consequences of discharges to water. Airborne transport and dispersion models may also be used in a real-time mode for calculation of impacts using actual release conditions and current meteorological data.

Once the study of selected release scenarios has been performed, the results can be used to develop instructions on characterizing release impacts for reporting purposes. These instructions need to be understandable to any employee that may be required to use them, including night shift, weekend and holiday personnel, as well as vacation replacements.

Planning documentation prepared for the example facility included data on potential release impacts for selected scenarios that can be used as a basis for the development of notification data. Guidelines were also included on incident classification adjustments that may be appropriate for releases other than the postulated scenarios.

### *Method of reporting*

At many facilities, including the case example, concern was expressed about how to transmit information to an LEPC so that it will be used in the most appropriate manner. Before enactment of SARA Title III, release notifications were primarily communicated to the National Response Center, which is staffed by professional hazardous materials emergency response personnel. Under SARA Title III, notification is required at the local community and state level, and the ability to digest and respond appropriately to the transmitted data will vary considerably from one location to the next. Prior discussion with the Community Emergency Coordinator and other response personnel can be useful in identifying the type of information that is most readily assimilated, as well as technical jargon to be avoided. For example, some response personnel may welcome impact data to be communicated in terms of the Immediately Dangerous to Life and Health (IDLH) value, where others may be overwhelmed by this and other unfamiliar acronyms.

As discussed earlier, an approach that can alleviate this problem is the prior establishment of a standardized incident classification scheme for reporting purposes. Many facilities have such a system for classifying internal incidents, be they fires, explosions, flooding, hazardous material releases or other events. The system assists in identifying the appropriate actions that are pre-defined for each classification level. For purposes of SARA Title III, the classification

scheme, as in the case of the example facility, is extended to include potential off-site impacts. A Level 1 incident, for instance, may have no significant off-site impact; Level 2 may result in potential off-site hazards; and Level 3 may be expected to result in serious risk to the community.

The scheme described here is compatible with the current efforts to define a standardized set of Emergency Response Planning Guidelines (ERPGs) for assessing potential risks from public exposure to a set of 50 of the most abundant and hazardous chemicals. This effort was initiated by several members of the U.S. chemical manufacturing industry, coordinated by the Organization Resources Counselors, Inc. in Washington, D.C. and utilizing the scientific peer review and publication services of the American Industrial Hygiene Association (AIHA). Currently available ERPG documents can be requested from the AIHA.

The number of event classification levels and their definitions can be adjusted to meet local circumstances, as occurred at the example facility. Certainly many responders will be glad to be told that the initial facility emergency coordinator's assessment is a Level 1 (or other classification) incident, rather than being forced immediately to rely on a personal assessment of the situation based on a complex, and perhaps incomplete, set of technical information.

The decision chart on reportability determination, prepared for the example facility, was supplemented with procedures for classifying incidents. Initially, the guidance provides a classification of predefined event scenarios; it then suggests specific methods for adapting this scheme for any events which differ from these scenarios.

### *Training of staff*

In accordance with the example provided above for the case study facility, guidelines may usefully be developed for determining reportability of a release, developing the necessary incident data and implementing the notifications. At the example facility, the release analysis and notification guidelines were incorporated into a supplementary emergency response plan document that specifies reporting obligations under SARA Title III. This document also defines the facility emergency organization and individual functional responsibilities, identifies emergency contacts and describes the interaction of this SARA Title III plan with the other facility emergency plans and procedures.

Because the content of even the clearest of guidelines can be fairly complex, a training session in emergency notification for all relevant personnel is advisable. This is particularly true if a number of different reportable substances and potential release types exist at the facility. Training will normally include example statements to be given, follow-up liaison, and methods of communicating data to indicate the appropriate level of urgency without causing undue alarm. Indeed, one significant aspect of reporting minor as well as major releases to the local community, instead of only to the NRC, is that the potential

for personal involvement in a reportable event is much greater. An incident that might directly affect responders, and their families and friends, can lead to emotional involvement that must be anticipated.

Training may also need to cover other federal, state or local accidental release notification requirements that are relevant to the facility. The steps identified in a notification decision chart (such as that illustrated in Fig. 1) may be used as the basis for organization of the training process, and for determination of focus points for supplementary exercises.

After the initial instruction has been given, further training in the form of exercises and drills is invaluable. Often, facilities utilize drills only to simulate physical response actions in containing a release, and evacuation of personnel from buildings. However, a vital part of a simulation is the notification procedure, using if necessary "dummy" telephone lines.

### *Consequences of reporting*

Notification may result in a local, state or federal response action. The basis of federal response is contained in the National Contingency Plan, which defines the roles of the 14 federal agencies making up the National Response Team. On-Scene Coordinators, from either EPA or the U.S. Coast Guard, are designated as needed at incident locations. Potential liabilities also exist as a result of releases, regardless of notification.

The facility may be concerned whether any other regulatory consequences may arise. A national SARA Title III release follow-up program initially did not exist, as releases of Extremely Hazardous Substances were not necessarily reported to a federal agency. However, with the inclusion of EHSs as listed CERCLA substances, the National Response Center will be notified of all reportable releases. If one or more "triggering" criteria are met, the facility may be required by EPA to complete a questionnaire under the Accidental Release Information Program (ARIP). ARIP was established by EPA to serve as a database on the cause of chemical accidents and to assist in identification of preventative measures. The facility may also be selected for an audit under the EPA Chemical Safety Audit Program.

On the other hand, SARA Title III provides for the imposition of substantial penalties for failure to report accidental releases. Regulatory action has also been taken for late reporting, and for failure to provide the necessary written follow-up notifications, forcing companies to take these requirements very seriously.

### **Conclusion**

Under SARA Title III, certain facilities are required to participate in the community planning process and provide information requested by the LEPC necessary for the development of the community emergency plan. However,

facilities are not specifically required to conduct their own emergency planning, and the emergency notification requirements may at first sight have appeared to many facilities not to be of great significance. However, the above discussion has shown that preplanning is beneficial in streamlining the notification procedures. In addition, responding to Title III in a proactive manner requires a reexamination of many of the fundamental features of existing emergency plans. This review and revision process may often be synchronized with one of the scheduled update review cycles that is normally an inherent feature of sound facility emergency planning.

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