



UNITED STATES EXPERIENCE IN ENVIRONMENTAL EMERGENCY PLANNING AND RESPONSES

EXECUTIVE SUMMARY

This background paper reviews the development and key regulations of US environmental emergency planning and response, current main programs in their pollution/spill prevention, preparedness and response, systems and institutions carrying/implementing emergency planning and responses, and some on-going changes of their emergency response system after the September 11 terrorist attack.

American environmental emergency policy and regulations were developed mainly in response to catastrophic oil, chemical and hazardous substance spills/incidents and the related public outcries/concerns over disasters such as the Torrey Canyon and Exxon Valdez Oil Spills, the Bhopal Chemical Spill as well as the latest 9/11 terrorist attacks. Major US regulations in emergency planning and response include: the National Contingency Plan (NCP), the Clean Water Act, the Oil Pollution Act/SPCC rule, the Clean Air Act/the RMP rule, the Superfund Act, its amendments and the Emergency Planning and Community Right-to-Know act, and the latest Homeland Security Act.

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Major emergency planning and response programs include: the oil spill program, the chemical emergency preparedness program, chemical risk management plan program, and superfund hazardous waste emergency response program. A comprehensive and sophisticated National Response System (NRS) has been developed, tested and improved over decades. There are three major components in the National Response System: On-Scene Coordinators, the National Response Team (NRT), and thirteen (13) Regional Response Teams (RRTs). A fourth component, Special Forces, are organizations with special skills and knowledge that can be called upon to support a response. Through detailed and specific regulations such as NCP, this NRS clearly defines the rules, responsibilities and authorities of Federal, state and local agencies and other parties involved, and procedures, processes, requirements, and, resources allocations in emergency planning, preparedness and response.

Many lessons have been learned over the decades. Incident prevention is now US EPA's priority; Preparedness through setting up implementation institutions and capacity building such as training and drill exercises are essential. When it comes to on-scene emergency response, the most important one is the need of establishing an Incident Command System (ICS) by a Unified Command (UC). The NCP also states that the NRS functions as an Incident Command System (ICS) under the direction of the Federal OSC. NRS is well organized and very effective in emergency planning and responses, and thus is recommended for China to consider and to adjust according to the China situation.

SECTION I INTRODUCTION

The purpose of this background study paper is to provide a brief review on US experience in environmental emergency planning and responses. Specifically, this paper will review the background of US policy and regulatory development, its current policy/legal framework, programs and institutional setup, monitoring, enforcement, and response mechanisms. Lessons learned and new developments in US environmental emergency planning and response will also be briefly discussed wherever appropriate throughout the paper.

SECTION II BACKGROUND OF POLICY AND REGULATORY DEVELOPMENT

US experiences in environmental emergency planning and responses are built upon lessons they learned from the spills/incidents on their waters and lands as well as on other countries'.

Like many other countries, US policies and regulations in emergency planning and response were developed, established, enacted, and implemented, mainly in response to major environmental spills/disasters and resulting public concerns or outcries. In fact, the very first American regulation, yet still the main one for environmental emergency responses, the National Oil and Hazardous Substances Pollution Contingency Plan, or *National Contingency Plan* (NCP) in short, was in response to the *Torrey Canyon* spill in England.

Before the *Torrey Canyon* spill, the United States had not formally addressed the potential for major oil or hazardous substance spills. On March 18, 1967, the *Torrey Canyon* oil tanker ran aground 15 miles off Land's End, England, spilling 33 million gallons of crude oil that eventually affected more than 150 miles of coastline in England and France. The spill had significant negative impacts on beaches, wildlife, fishing, and tourism. Recognizing the possibility of similar spills in the United States, the US federal government sent a team of representatives from different federal agencies to Europe to observe the cleanup activities and bring back lessons learned. Based on what the team learned from the *Torrey Canyon* spill and response, several federal agencies developed the *National Contingency Plan* (NCP).

The NCP was signed into law on November 13, 1968. It for the first time laid down a comprehensive legal framework to handle or respond to spills in the USA, established the National Response System, a network of individuals and teams from local, state, and federal agencies who combine their expertise and resources to ensure that oil spill control and cleanup activities are timely and efficient, and minimize threats to human health and the environment. The NCP is primarily focused on response aspects in control and removal and remediation of spills. It does not address prevention or early planning to avoid the spills.

Over the last few decades, numerous chemical, oil and hazardous substance spills/incidents occurred in US and around the world. American has learned a great deal from these accidents in their planning and responses. Among these accidents two major disaster events have dramatically shaped American policy and legislation and thus fundamentally changed their planning and response system. These two events were the Union Carbide Bhopal chemical spill tragedy in 1984 and the Exxon Valdez oil spill catastrophe in 1989.

The Bhopal tragedy in 1984, along with a less severe but similar Union Carbide 1985 accident in Institute, West Virginia, made Americans believe that chemical spills like Bhopal could happen in their own communities. The mounting concerns over chemical hazards and safety of chemical plants and manufactures has led to major changes within the US chemical industry, and to a series of Federal laws and regulations intended to prevent major chemical accidents, and to mitigate and respond to any that do occur (Belke and Dietrich, US EPA, 2005). In response to the increasing public concern, the US Environmental Protection Agency (EPA) started its Chemical Emergency Preparedness Program (CEPP) in 1985 (EPA, 1987).

CEPP was a voluntary program to encourage state and local authorities to identify hazards in their areas and to plan for chemical emergency response actions. When a similar accident occurred in Institute USA in 1985, the US Congress adopted many of the elements of CEPP and passed the Emergency Planning and Community Right-to-Know Act (EPCRA) in 1986, and the Clean Air Act Amendments of 1990, which authorized EPA's Risk Management Program (RMP). These two acts have also shifted the previous focus on responses to its current policy priority of spill prevention, planning and response preparedness.

EPCRA and RMP are for emergency planning and response to chemicals and hazardous substances/waste spills. The Exxon Valdez spill in 1989, on the other hand, led to establishment of the policy and regulatory framework for oil spills – the US EPA Oil Spill Program.

The *Exxon Valdez* oil spill is probably the best known and most widely reported of all spills. The images of oiled shorelines, dead and dying wildlife, and thousands of workers cleaning the beaches generated a huge public outcry. Together with other accidents and concerns, the *Exxon Valdez* incident prompted the U.S. Congress to pass the *Oil Pollution Act of 1990*. This law sets the groundwork and emphasizes the need for prevention and preparedness/planning for oil spills. Building on years of response experience and lessons learned, the law required EPA and the Coast Guard to strengthen regulations on safety requirements for oil tank vessels and planning and preparedness of oil tank owners and operators – thus, setting spill prevention and planning as its priorities. For example, one of the requirements is that as of July 17, 1992 all tank vessels of 20,000 tons or greater are required to carry special equipment that will enable the vessel captain and the vessel traffic center in Valdez to communicate better for safer sailing through that area. This is a direct result of the lessons they learned from their emergency response to the Exxon Valdez spill in which difficulty in communication had seriously jeopardized response activities due to the remote location.

While the Exxon Valdez and Bhopal events have shaped US existing policy and regulation in planning and responses to environmental emergencies, the September 11 2001 terrorist attacks on US land is currently transforming and will likely fundamentally reshape American policy and regulations in emergency planning and response. In 2002, the US Congress passed the Homeland Security Act, which is sparking a fundamental transformation of American life and government mentality. This transformation involves the advent of various security-related requirements affecting many of the chemical plants and other facilities covered under the existing accident prevention rules, as well as a complete re-evaluation and restructuring of the US system for responding to national emergencies including environmental events (Belke and Dietrich, US EPA, 2005).

Because of this transformation, what is presented in this background study paper is a reflection of American past and current experience. US policy and regulations in emergency planning and responses are undergoing dramatic change.

SECTION III EMERGENCY PLANNING AND RESPONSE PROGRAMS

In this section, we will briefly review three major and currently existing emergency planning and response programs. These three programs are known as the Oil Spill Prevention Program, the Chemical Risk Management Plan (RMP) Program, and the Superfund Emergency Response Program. They were developed over last two decades in response to, respectively, chemical spills, oil spills, and hazardous substance and waste spills.

OIL PROGRAM OVERVIEW

To address the potential environmental threat posed by petroleum and non-petroleum oils, the U.S. EPA has established a program designed to prevent oil spills (According to EPA, the program has reduced the number of spills to less than 1% of the total volume handled each year). The program is also designed to prepare for and respond to any oil spill affecting the inland waters of the United States. EPA's Oil Program has a long history of responding to oil spills, including several major ones, and the lessons learned have helped to improve USA prevention and response capabilities. The Oil Program is administered through EPA headquarters and the 10 EPA Regions.

Preventing Oil Spills

The US EPA has set its priority as prevention. Americans believe that the environmental and economic effects of oil spills can be avoided by preventing and containing them in the first place. To achieve its prevention and containment objectives, US EPA has developed a program called the Spill Prevention, Control, and Countermeasures, or the SPCC program. For more than two decades, EPA's SPCC program has worked at several hundred thousand oil storage facilities to prevent the discharge of all kinds of oil into the waters of the United States. EPA's approach to preventing oil spills combines planning and enforcement measures. To prevent oil spills, EPA requires owners or operators of certain oil storage facilities to prepare and implement Professional Engineer (PE)-certified [SPCC Plans](#) that detail the facility's spill prevention and control and countermeasure activities. EPA also enforces the oil spill [liability](#) and [penalty](#) provisions under the Federal Water Pollution Control Act as amended by the [Oil Pollution Act of 1990](#), which provides incentives to facility owners/operators to take necessary steps to prevent oil spills.

In addition, the EPA conducts document reviews and on-site facility inspections and audits to ensure compliance with the SPCCs. For example, in fiscal year (FY) 2004, 1,008 SPCC inspections were conducted by EPA regional inspectors to ensure compliance with the SPCC regulations and provide outreach/compliance assistance to facilities (OEM EPA, 2004). Inspections consist of an on-site walk through and include verification that facilities have adequate secondary containment; integrity inspection programs; emergency contact information on hand; and countermeasures to detect, respond to and clean up a spill if it occurs. Inspectors also review the SPCC plan to ensure compliance with the regulation's technical requirements.

Preparing for Oil Spills

Oil spills do occur despite prevention efforts. Preparing a timely and coordinated response to such an emergency of undefined magnitude that can happen anywhere, at any time, and in any kind of weather is an enormous challenge that requires significant planning and training.

Two principal elements of EPA's oil spill preparedness program are developing and coordinating [contingency plans](#) as part of a [contingency planning network](#) and conducting oil spill prevention and response [training](#). Well-designed facility, local, area, regional, and national contingency plans assist response personnel in their efforts to contain and clean up any size spill by providing information that the response teams will need before, during, and after an oil spill occurs. Training ensures that emergency responders, whether they are facility personnel, response contractors, or state and local government officials, understand all aspects of oil spill response.

One of the actions in preparedness is the preparation of Facility Response Plans (FRPs) at facility levels. FRPs are an important planning link between facilities and the area contingency plans as required under the Oil Pollution Act (OPA). Certain facilities with large oil storage capacity are required to prepare and submit a FRP to prepare to respond to a worst case discharge of oil and to a substantial threat of such a discharge. The FRP requires facilities to establish emergency response resources, conduct a hazard evaluation, and determine discharge scenarios for small, medium and worst case discharges. Facilities that may cause significant and substantial harm in the event of a release are required to submit the FRP to the Regional Office for approval. Facilities must also train employees and conduct drills and exercises to prepare for an oil response. EPA conducts inspections and drills at FRP facilities and has found that unannounced exercises are an effective way to determine emergency response readiness. For example, in FY 2004, 208 FRP inspections and/or unannounced drills were conducted by EPA regional personnel at oil storage facilities required to have FRPs.

Responding to Oil Spills

Despite the US best efforts to prevent spills, almost 14,000 oil spills are reported each year, mobilizing thousands of specially trained emergency response personnel and challenging the best-laid contingency plans. Although many spills are contained and cleaned up by the party responsible for the spill, some spills require assistance from local and state agencies, and occasionally, the federal government. Under the [National Contingency Plan](#) discussed in Section I, USA through its environmental agency EPA, developed a National Response System – an institutional framework that is established to tackle oil spills in the US. EPA is the lead federal response agency for [oil spills occurring in inland waters](#), and the U.S. Coast Guard is the lead response agency for [spills in coastal waters](#) and deepwater ports.

Whether or not the EPA manages the response, it tracks all reports of oil spills. The EPA usually learns about a spill from the responsible party, who is required by law to report the spill to the federal government, or from state and local responders. Once the federal government receives the report, either through the [National Response Center](#), EPA, or another agency, it is recorded in the [Emergency Response Notification System](#), or ERNS. ERNS contains historical spill information for the entire country dating from 1986, and is accessible by the public and currently available for downloading.

The National Response Center or NRC is the federal government's national communications center, which is staffed 24 hours a day by U.S. Coast Guard officers and marine science technicians. The NRC receives all reports of releases involving chemicals, hazardous substances and oil that trigger the federal notification requirements under several laws. Reports to the NRC activate the National Contingency Plan and the federal government's response capabilities. It is the responsibility of the NRC staff to notify the pre-designated on-scene coordinator (OSC) assigned to the area of the incident and to collect available information on the size and nature of the release, the facility or vessel involved, and the party (ies) responsible for the release. The NRC maintains reports of all releases and spills in a national database

CHEMICAL RMP PROGRAM OVERVIEW

Similar to SPCC in the oil spill program, to prevent chemical releases the EPA requires owners or operators of certain facilities to prepare and implement Risk Management Plans (RMPs) and submit these plans to EPA. When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes

that use certain flammable and toxic substances to develop a Risk Management Program, which includes:

1. Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases;
2. A prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and
3. An emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g., the fire department) should an accident occur.

Under this program, covered facilities must submit their Risk Management Program or “Plan” (RMP) to EPA, which will make the information publicly available. The plans must be revised and resubmitted every five years.

The Risk Management Program focuses on spill prevention and emergency preparedness, and especially is about reducing chemical risk at the local community level. The information in the RMP helps local fire, police, and emergency response personnel (who must prepare for and respond to chemical accidents), and is useful to citizens in understanding the chemical hazards in communities. The EPA believes that making the RMPs available to the public stimulates communication between industry and the public to improve accident prevention and emergency response practices at the local level. Post September 11 concern over information safety is currently impacting the RMP Rule and revision is under way. The amendments to the Chemical Accident Prevention Rule were published in the Federal Register on April 9, 2004 (Refer to Accidental Release Prevention Requirements: Risk Management Program Requirements Under Clean Air Act Section 112(r)(7); Amendments to the Submission Schedule and Data Requirements; Final Rule. 69 FR 18819, April 9, 2004).

Like the SPCC in the Oil Spill Program, the US EPA monitors and enforces its RMP Rule through field audits/inspections. For example, in FY 2004, 730 RMP field audits/inspections were conducted by regional and state auditors to ensure compliance with the Risk Management Program (OEM EPA, 2004). These field audits/ inspections consist of an on-site visit and a document review to verify completeness of the RMP and to evaluate the underlying safety programs. Auditors review RMPs for compliance with the regulations. Auditors may also review the supporting documentation for the RMP program elements.

OVERVIEW OF EPA’S SUPERFUND EMERGENCY RESPONSE PROGRAM

The EPA's Superfund Emergency Response program provides a quick response to the release, or threatened release, of hazardous substances, wastes, and contaminants wherever and whenever they occur. It is one of two major components of the Superfund program designed to protect human health and the environment from the multiple threats posed by hazardous substances. The program's top priorities are to

1. be ready 24 hours-a-day to respond to a release incident;
2. respond with whatever resources are required to eliminate immediate dangers to the public and the environment; and
3. inform the community about a release and the substances involved.

The program is a vital part of US efforts to reduce and eliminate threats from hazardous substances releases. Like the Oil Program, EPA responses to Superfund emergencies are implemented through its 10 Regional Offices, and are characterized by close cooperation among a vast network of federal, state, and local government agencies, and between government and industry.

SECTION IV REGULATORY FRAMEWORK

This section briefly reviews major regulations that form the legal framework for chemical, oil and hazardous spill prevention, preparedness and responses.

Clean Water Act Overview

The Clean Water Act (CWA) of 1972 is the principal federal statute protecting navigable waters and adjoining shorelines from pollution. Since its enactment, the CWA has formed the foundation for regulations detailing specific requirements for pollution prevention and response measures. Section 311 of the CWA addresses pollution from oil and hazardous substance releases, providing the EPA and the U.S. Coast Guard with the authority to establish a program for preventing, preparing for, and responding to oil spills that occur in navigable waters of the United States. The EPA implements provisions of the Clean Water Act through a variety of regulations, including the [National Contingency Plan](#) and the [Oil Pollution Prevention](#) regulations.

Oil Pollution Act Overview

The Oil Pollution Act is the main piece of legislation governing oil spill prevention, preparedness and responses. As discussed in Section II, the Oil Pollution Act (OPA) was signed into law in August 1990, largely in response to rising public concern following the [Exxon Valdez incident](#). The OPA improved the nation's ability to prevent and respond to oil

spills by establishing [provisions](#) that expand the federal government's ability, and most importantly provide the money and resources necessary, to respond to oil spills. The OPA created the national [Oil Spill Liability Trust Fund](#), which is available to provide up to one billion dollars per spill incident.

In addition, the OPA provided new requirements for contingency planning both by government and industry. The [National Oil and Hazardous Substances Pollution Contingency Plan \(NCP\)](#) has been expanded in a three-tiered approach: the Federal government is required to direct all public and private response efforts for certain types of spill events; Area Committees -- composed of federal, state, and local government officials -- must develop detailed, location-specific Area Contingency Plans; and owners or operators of vessels and certain facilities that pose a serious threat to the environment must prepare their own Facility Response Plans.

The 1990 the OPA ensured “the polluter pays principle” (i.e., shippers and owners or operators of facilities that handle oil pay the costs of discharges that do occur), increased penalties for regulatory noncompliance, broadened the response and enforcement authorities of the Federal government, and preserved State authority to establish laws governing oil spill prevention and response.

Finally, the 1990 the OPA amended the CWA to require regulations to be promulgated that require owners or operators of certain vessels and facilities to prepare and submit Facility Response Plans (FRPs) for responding to a worst case discharge of oil and to a substantial threat of such a discharge – the commonly referred “FRP Rule”. The EPA published the FRP rule on July 1, 1994. The FRP requirement for onshore facilities applies to any facility that, “because of its location, could reasonably be expected to cause substantial harm to the environment by discharging into or on the navigable waters, adjoining shorelines, or the exclusive economic zone.”

In 2002, the U.S. EPA further amended the Oil Pollution Prevention regulation (40 CFR part 112), and set forth requirements for prevention of, preparedness for, and response to oil discharges at specific non-transportation-related facilities. To prevent oil from reaching navigable waters and adjoining shorelines, and to contain discharges of oil, the regulation requires these facilities to develop and implement Spill Prevention, Control, and Countermeasure (SPCC) Plans; it also establishes procedures, methods, and equipment requirements, including training of employees. Subparts A through C of 40 CFR part 112 are thus often referred to as the “SPCC rule.” The regulation is largely performance-based (as requested in comments from the regulated community), which allows flexibility in meeting the rule requirements to prevent discharges of oil to navigable waters and adjoining shorelines.

CERCLA OVERVIEW

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

CERCLA:

- established prohibitions and requirements concerning closed and abandoned hazardous waste sites;
- provided for liability of persons responsible for releases of hazardous waste at these sites; and
- established a trust fund to provide for cleanup when no responsible party could be identified.
- The law authorizes two kinds of response actions:
 - Short-term removals, where actions may be taken to address releases or threatened releases requiring prompt response.
 - Long-term remedial response actions, that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious, but not immediately life threatening. These actions can be conducted only at sites listed on EPA's National Priorities List (NPL).

CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986, and the NCP provide authority for the following types of response actions: first, CERCLA established a program to report spills of hazardous substances; second, CERCLA created an emergency response program to cleanup releases of hazardous substances; and third, CERCLA established a remedial program for the permanent cleanup of uncontrolled releases from inactive or abandoned hazardous waste disposal sites. Anyone who handles hazardous substances is subject to CERCLA spill reporting requirements [CERCLA Section 103(a)]. Any time a hazardous substance is released to the environment and that release exceeds its reportable quantity (RQ) (e.g., one pound) within a 24-hour period, the release must be reported to the National Response Center. EPA periodically publishes a list of these hazardous and extremely hazardous substances and their RQs (40 CFR Part 302).

EPCRA OVERVIEW

The Emergency Planning and Community Right-to-Know Act (EPCRA) was passed in response to concerns regarding the environmental and safety hazards posed by the storage and handling of toxic chemicals. As discussed in Section II, these concerns were triggered by the disaster in Bhopal, India, in which more than 2,000 people suffered death or serious injury from the accidental release of methyl isocyanate. To reduce the likelihood of such a disaster in the United States, Congress imposed requirements on both states and regulated facilities.

EPCRA establishes requirements for Federal, State and local governments, Indian Tribes, and industry regarding emergency planning and “Community Right-to-Know” reporting on hazardous and toxic chemicals. The Community Right-to-Know provisions help increase the public’s knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities, working with facilities, can use the information to improve chemical safety and protect public health and the environment.

EPCRA has four major provisions:

- Emergency planning (Section 301-303)
- Emergency release notification (Section 304)
- Hazardous chemical storage reporting requirements (Sections 311-312), and
- Toxic chemical release inventory (Section 313).

The emergency planning section of the law is designed to help communities prepare for and respond to emergencies involving hazardous substances. Every community in the United States must be part of a comprehensive plan.

EPCRA requires U.S. states to create State Emergency Response Commissions (SERCs) and requires local communities to form Local Emergency Planning Committees (LEPCs) to prepare local emergency response plans for chemical accidents. EPCRA also requires facilities to provide LEPCs with information necessary for emergency planning, and to submit annual inventory reports and information about hazardous chemicals at the facility to SERCs, LEPCs and local fire departments. The statute also established the Toxics Release Inventory (TRI), which requires certain facilities to report annually to the EPA the quantities of their emissions of toxic chemicals. The EPCRA data are available to the public and the EPA maintains a national database containing the TRI toxic chemical release reports.

The Governor of each state has designated a State Emergency Response Commission (SERC). Each SERC is responsible for implementing EPCRA provisions within their state. The SERCs in turn have designated about 3,500 local emergency planning districts and appointed a Local Emergency Planning Committees (LEPC) for each district. The SERC supervises and coordinates the activities of the LEPC, establishes procedures for receiving and processing public requests for information collected under EPCRA, and reviews local emergency response plans.

The LEPC membership must include, at a minimum, local officials including police, fire, civil defense, public health, transportation, and environmental professionals, as well as representatives of facilities subject to the emergency planning requirements, community groups, and the media. The LEPCs must develop an emergency response plan, review it at least annually, and provide information about chemicals in the community to citizens.

CLEAN AIR ACT OVERVIEW

EPCRA has greatly advanced community awareness and emergency planning and preparedness. However, serious chemical accidents continued to occur in the U.S. throughout the late 1980s, and in 1990, information from these accidents prompted Congress to incorporate two new regulatory programs into the Clean Air Act (CAA), with focus on accident prevention or risk management and process safety.

Section 112(r) of the amended CAA called for the EPA to develop regulations to prevent and respond to chemical facility accidents that could affect the public and environment off-site. In 1996, the EPA promulgated the Risk Management Program regulations (40 CFR Part 68), which is commonly referred as RMP Rule. The EPA RMP Rule was the first U.S. Federal regulation specifically designed to prevent major chemical accidents that could harm the public and the environment including the water environment. The RMP prevention requirements include using written operating procedures, providing employee training, ensuring ongoing mechanical integrity of equipment, analyzing and controlling process hazards, etc.

Other requirements in the EPA RMP include:

1. Facilities must prepare a history of accidental releases occurring over the past five years.
2. Facilities must perform an Offsite Consequence Analysis (OCA) - an analytical estimate of the potential consequences to the public and environment around the facility of hypothetical worst case and alternative accidental release scenarios.

3. Facilities must submit a summary report, called a Risk Management Plan (RMP), to the EPA. The RMP contains the facility's five-year accident history, a summary of its accidental release prevention program, its offsite consequence analysis, and a summary of its emergency response plan. The CAA requires the EPA to make all RMPs available to state and local governments and the public, although it also authorizes restrictions on access to the offsite consequence analysis portion of the plan. Facilities must update their RMP at least every five years, or more frequently when certain changes occur.

The Risk Management Program regulation went into effect in 1999, and the EPA received RMPs from approximately 15,000 U.S. chemical facilities. A few rounds of revisions were made over the time, and some changes are still under way after September 11, 2001.

NATIONAL CONTINGENCY PLAN OVERVIEW

The [National Oil and Hazardous Substances Pollution Contingency Plan](#), more commonly called the National Contingency Plan or NCP, is the US federal government's blueprint for responding to both oil spills and hazardous substance releases. The National Contingency Plan is the result of US efforts to develop a national response capability and promote overall coordination among the hierarchy of responders and contingency plans.

As discussed earlier, the first National Contingency Plan was developed and published in 1968 in response to a massive oil spill from the oil tanker *Torrey Canyon* off the coast of England the year before. To avoid the problems faced by response officials involved in this incident, US officials developed a coordinated approach to cope with potential spills in US waters. The 1968 plan provided the first comprehensive system of accident reporting, spill containment, and cleanup, and established a response headquarters, a national reaction team, and regional reaction teams (precursors to the current [National Response Team](#) and [Regional Response Teams](#)).

Congress has broadened the scope of the National Contingency Plan over the years. As required by the [Clean Water Act of 1972](#), the NCP was revised the following year to include a framework for responding to hazardous substance spills as well as oil discharges. Following the passage of [Superfund legislation](#) in 1980, the NCP was broadened to cover releases at hazardous waste sites requiring [emergency removal actions](#). Over the years, additional revisions have been made to the NCP to keep pace with the enactment of legislation. The latest revisions to the NCP were finalized in 1994 to reflect the oil spill provisions of the [Oil Pollution Act of 1990](#).

With all three major types of spills/incidents – oil, chemicals and hazardous substance/wastes release covered in the NCP, the current NCP defines the responsibilities of governmental agencies and other parties, and establishes organizations/response systems, and sets up the legal requirements and procedures for US environmental emergency responses.

SECTION V INSTITUTIONAL SETUP AND IMPLEMENTATION

In the United States, the system for organizing responses to major chemical, oil and or hazardous substance spills/incidents is called the *National Response System*. This section describes the basic components of the National Response System and outlines the responsibilities of the teams and individuals who plan for and respond to major spills/incidents.

There are three major components in the National Response System: (1) *On-Scene Coordinators*, (2) *National Response Team*, and (3) *Regional Response Teams*. A fourth component, *Special Forces*, are organizations with special skills and knowledge that can be called upon to support a response.

The National Response System is activated when the *National Response Center* receives notification of a spill or emergency incident. The National Response Center, located in Washington, D.C., is one of the first organizations to be notified when a spill occurs. It is staffed by officers and marine science technicians from the US Coast Guard, and serves as the national communications center responsible for notifying On-Scene Coordinators (OSCs) who oversee cleanup efforts at a spill site.

ON-SCENE COORDINATORS

On-Scene Coordinators have the most prominent role in the National Response System. They are federal officials who are pre-designated under the NCP to be responsible for directing response actions and coordinating all other efforts at the scene of a discharge or spill. In addition, OSCs work in partnership with other federal, state, local, and private response agencies. OSCs' duties also include providing support and information to regional response committees.

Four federal agencies have staff that serve as OSCs: the Coast Guard, the US Environmental Protection Agency (EPA), the US Department of Energy, and the US Department of Defense. Among these agencies, the Coast Guard and EPA have the greatest responsibility for responding to oil spill emergencies. There are 48 OSCs in the Coast Guard and 215 OSCs in EPA. OSCs are stationed in locations across the country to allow for quick and efficient response to spills. When a spill occurs in coastal waters, the local Coast Guard Port Commander is the OSC. When a spill occurs in an inland area, such as a spill from a pipeline or rail tank car, a regional EPA official is assigned as the OSC. The OSC is

responsible for four main tasks during an oil spill response: (1) assessment, (2) monitoring, (3) response assistance, and (4) reporting.

Assessment

As part of a response to a spill, an OSC must evaluate the size and nature of a spill and its potential hazards. The OSC who is in charge also estimates the resources needed to contain the spill and clean it up and assesses the ability of the responsible party or local authorities to handle the incident. Collectively these activities are called assessment. OSCs typically conduct assessment activities at the beginning of a response. The assessment determines the need for personnel, equipment, and other resources to promptly and effectively combat the spill.

Monitoring

Throughout a response, OSCs monitor the actions being taken to control and clean up a spill to make sure they are appropriate. All spills of a legally defined minimum size must be monitored by an OSC, even though most spills are small and are cleaned up by the responsible party or local fire or police departments. Monitoring can be conducted from the site when necessary, or from an agency office if the situation appears to be under control.

Response Assistance

Once a spill has been assessed, an OSC determines whether federal assistance will be necessary to help control and contain the spill. If an OSC decides that federal assistance is required, he or she will obtain needed resources such as personnel and equipment. If sufficient resources are not available at or near the spill site, an OSC can secure them using a special fund such as the Oil Spill Liability Trust Fund that the federal government established for oil spill response purpose. The fund is intended to ensure that oil spill cleanups will not be hindered by a lack of personnel or equipment.

Reporting

As required by the NCP, OSCs report all activities that take place during and after a spill. For example, following a spill, the OSC is required to file a summary report that outlines the actions taken to remedy the spill and the level of assistance provided by local, state, and federal agencies. These reports can be used to identify problem areas and improve spill response plans. They can also be shared with other agencies which may make recommendations about how to respond more effectively in future incidents or how to prevent more spills. Over recent decades, a great deal of experience and lessons has been accumulated through such a reporting requirement, which in turn redefines and strengthens today's emergency response capability in the USA.

Planning

Under the NCP guidelines, OSCs also participate in the inland/coastal area planning committees. These committees support the OSC in preparing area contingency plans for emergency incidents.

REGIONAL RESPONSE TEAMS

Regional Response Teams (RRTs) are another major component of the National Response System. There are 13 RRTs in the United States, each representing a particular geographic region of the United States (including Alaska, the Caribbean, and the Pacific Basin). RRTs are composed of representatives from states and from field offices of the federal agencies that make up the National Response Team. The RRTs provide assistance when it is requested by OSCs and may respond on-scene. The four major responsibilities of RRTs are (1) response, (2) planning, (3) training, and (4) coordination.

Response

Regional Response Team members do not respond directly to spills like OSCs do, but they may be called upon to provide technical advice, equipment, or manpower to assist with a response. RRTs provide a forum for federal agency field offices and state agencies to exchange information about their abilities to respond to OSCs' requests for assistance.

Planning

Each RRT develops a Regional Contingency Plan to ensure that during an actual spill the roles of federal and state agencies are clear. Following a spill, the RRT reviews the OSC's reports to identify problems with the Region's response to the incident and improves the plan as necessary.

Training

Regional Response Teams provide simulation exercises of regional plans to test the abilities of federal, state, and local agencies to coordinate their responses to spills. Any major problems identified as a result of these exercises may be addressed and changed in the Regional Contingency Plans so the same problems do not arise during an actual spill response.

Coordination

The RRTs are responsible for identifying the resources available from each federal agency and state in their regions. Such resources include equipment, guidance, training, and technical expertise for dealing with oil spills. When there are too few resources in a Region,

the RRT can request assistance from federal or state authorities to ensure that sufficient resources will be available during a spill. This coordination by the RRTs ensures that resources are used as wisely as possible and that no Region is lacking what it needs to protect human health and the environment from the effects of a spill.

THE NATIONAL RESPONSE TEAM

The third major component of the National Response System is the National Response Team (NRT). It is an organization composed of 16 federal agencies, each of which has responsibilities in environmental areas and expertise in various aspects of emergency response to environmental incidents. EPA serves as the NRT's chair and the Coast Guard serves as the vice chair. Although the NRT does not respond directly to incidents, it is responsible for three major activities relating to managing spill response: (1) distributing information, (2) planning for emergencies, and (3) training for emergencies.

Distributing information

The NRT is responsible for ensuring that technical, financial, and operational information about spills is available to all members of the team. NRT committees focus attention on specific issues, then collect and disseminate information on those issues to other members of the team.

Planning for Emergencies

The NRT ensures that the roles of federal agencies on the team for spill emergency response are clearly outlined in the NCP. After a major spill event, the effectiveness of the response is carefully assessed by the NRT. The NRT may use information gathered from the assessment to make recommendations for improving the NCP and the National Response System. The NRT may be asked to help Regional Response Teams (see below) develop Regional Contingency Plans. The NRT also reviews these plans to ensure that they comply with federal policies on emergency response.

Training for Emergencies

One important aspect of any emergency response is preparedness, which is best developed by training. Although most training is actually performed by state and local personnel, the NRT develops training courses and programs, coordinates federal agency training efforts, and provides information to regional, state, and local officials about training needs and courses. (Sources: NRT-1, 2001)

Supporting RRTs

The NRT supports RRTs by reviewing Regional Contingency Plans and ensuring that they are consistent with national policies on spill cleanup. The NRT also supports RRTs by monitoring and assessing RRT effectiveness during a spill cleanup activity. The NRT may ask an RRT to focus on specific lessons learned from an incident and to share those lessons with other members of the National Response System. In this way, the RRTs can improve their own Regional Contingency Plans while helping to solve problems that might occur elsewhere within the National Response System.

SPECIAL FORCES

Special Forces are national resources with unique expertise. When responders face difficult problems, they can call on Special Forces for assistance. The NCP designates five special force components: (1) the Coast Guard National Strike Force (NSF), (2) the Coast Guard Public Information Assist Team (PIAT), (3) the EPA Environmental Response Team (ERT), (4) the National Oceanic and Atmospheric Administration's Scientific Support Coordinators (SSCs), and (5) National Resource Trustees.

National Strike Force

The NSF provides specially trained personnel equipped to handle major oil spills and chemical releases and maintains a national inventory of spill response equipment. In addition, the NSF aids development and implementation of exercises and training for the National Response System.

Public Information Assist Team

The PIAT is a team of skilled public affairs specialists that supplements the existing public information capabilities of OSCs.

Environmental Response Team

The scientists and engineers who make up the ERT provide expertise in sampling and analysis, hazard assessment, cleanup techniques, and technical support.

Scientific Support Coordinators

Scientific Support Coordinators lead the scientific teams that provide support to OSCs in the areas of chemistry, natural resources, pollutant transport modeling, contingency planning, and environmental tradeoffs. SSCs also serve as liaison to natural resources trustees and the scientific community.

Natural Resource Trustees

Natural Resource Trustees are federal, state, or tribal officials who act on behalf of the public for resources under their control. They are important to spill response because they often have special knowledge and technical expertise about areas where a spill occurred. Trustees also cooperate with the OSC in coordinating assessments, investigations, planning, and response.

In summary, the National Response System is the mechanism established by the federal government to respond to discharges/spills/incidents of oil and hazardous substances in the United States. This system functions through a cooperative network of federal, state, and local agencies. The primary mission of the system is to provide support to state and local response activities. The major components of the National Response System are the On-scene Coordinators, the National Response Team, and the 13 Regional Response Teams, with supplementary support from Special Forces. These individuals and teams work together to develop detailed contingency plans to outline responses to spill emergencies before they occur and to develop or engage in training that prepares responders for actual emergencies. During spill events, they cooperate to ensure that all necessary resources such as personnel and equipment are available and that containment, cleanup, and disposal activities are timely, efficient, and effective. Four Special Forces components provide specialized support to OSCs during spill response. It is through this cooperation that the National Response System protects human health and the environment from potential harm from spills in the US.

Over the years, Americans have learnt a great deal from their emergency responses. One particular and essential element in their response management is the Incident Command System (ICS) led by a unified command. This unified command approach brings together the various functions of the federal government, state and local government, and the party responsible for an incident to achieve an effective and efficient response. They have learnt that Unified Command (UC) is a necessary tool for effectively managing multi-jurisdictional responses to oil and hazardous substance releases. The NCP states that the NRS functions as an Incident Command System (ICS) under the direction of the Federal OSC. In every response, the OSC retains the authority to direct the spill response, and must direct responses to spills that pose a substantial threat to the public and welfare of the United States (NTS-1, 2001). Information about ICS and UC, how it works and when it shall be used, can be found at the US Department of Labor (OSHA) website.

SECTION VI NEW DEVELOPMENT AND PROGRAM INTEGRATION

In 2004, the Office of Emergency Management (OEM) was created in Washington D.C. to integrate the functions of the former Chemical Emergency Preparedness and Prevention Office (CEPPO), the Oil Spill Prevention Program, and the Superfund Emergency Response Program. Prior to the establishment of OEM, various components of emergency planning, accident and spill prevention, and emergency response were fragmented within the EPA Office of Solid Waste and Emergency Response (OSWER). The reorganization is aimed, by integrating the responsibilities of the former three offices/programs, to improve internal coordination on issues related to prevention of, preparedness for, and response to chemical, oil and hazardous substance emergencies.

As discussed in Section II, the September 11 2001 event has fundamentally changed American life and governmental mentality, including a significant impact on EPA policies and agenda. Homeland Security Presidential Directive 5 establishes a single, comprehensive National Incident Management System (NIMS) and a comprehensive National Response Plan (NRP), and assigns roles and responsibilities for each. The EPA is a full participant in NIMS and the NRP. Homeland Security Presidential Directive 8 establishes a method of delivering federal preparedness assistance to state and local governments, and mandates a national preparedness goal, and a comprehensive national training and exercise program. As a result, EPA effort has become integrated into US Homeland Security efforts (National Response Plan (NRP) and National Incident Management System (NIMS) for any potential catastrophic incidents.

The US Homeland Security's National Response Plan establishes a comprehensive all-hazards approach to enhance the ability of the United States to manage domestic incidents. The plan incorporates best practices and procedures from incident management disciplines—homeland security, emergency management, law enforcement, firefighting, public works, public health, responder and recovery worker health and safety, emergency medical services, and the private sector—and integrates them into a unified structure. It forms the basis of how the federal government coordinates with state, local, and tribal governments and the private sector during incidents.

In July 2003, the EPA issued a National Approach to Response (NAP). The NAP provides a framework for a consistent, agency-wide approach to quickly and comprehensively respond to major incidents. Under the NAP, EPA adopted the National Interagency Incident Management System (NIMS) Incident Command System (ICS) as the management structure for a major incident. The NAPs provides all the details on coordination, and back up rules, training plans, capacity building and data management etc. The National Approach to Response also clarifies regional coordination and affirms the role of the National Incident

Coordination Team (NICT) as the focal point for multi-program information sharing and issue resolution. The National Approach to Response identifies “backup” regional offices for each region that will provide, upon request, additional emergency response support. It also establishes the Homeland Security Policy Coordinating Committee as a forum for addressing significant policy issues. Other priorities identified in the National Approach to Response are the establishment of the Response Support Corps; a training and exercise plan; laboratory capabilities; and data management. Currently the EPA is developing a National Emergency Response Program training strategy, Response Support Corps (RSC) guidance, National Telecommunication Plan Strategy (using high-tech and IT), National Incident Management System (NIMS) compliance strategy.

In addition to its effort tied into the homeland security, the EPA is also currently working on amendments to the Risk Management Program (RMP) rule, resubmission of Risk Management Plans, and introduction of new regulatory approaches for the Spill Prevention, Control and Countermeasures (SPCC) regulation. In short, the EPA emergency response program will continue to evolve.

SECTION VII SUMMARY AND RECOMMENDATIONS

Summary US environmental emergency policy and regulations were developed mainly in response to catastrophic oil, chemical and hazardous substance spills and related public outcry and concern over disasters such as the Torrey Canyon and Exxon Valdez Oil Spills and the Bhopal Chemical Spill as well as the latest 9/11 terrorist attacks. Major US regulations in emergency planning and response include: the National Contingency Plan (NCP), the Clean Water Act, the Oil Pollution Act/SPCC rule, the Clean Air Act/the RMP rule, the Superfund amendments and the Emergency Planning and Community Right-to-Know Act, and the latest Homeland Security Act.

Major emergency planning and response programs include: the oil spill program, the chemical emergency preparedness program, chemical risk management plan program, and superfund hazardous waste emergency response program. A comprehensive and sophisticated National Response System (NRS) has been developed, tested and improved over decades. Through detailed and specific regulations such as NCP, this NRS clearly defines the rules, responsibilities and authorities of Federal, state and local agencies and other parties involved, and procedures/processes/requirements in emergency planning, preparedness and response. NRS is well organized and thus very effective in emergency planning and responses.

SECTION VIII RECOMMENDATIONS

For China, the fast pace of economic development unavoidably demands mass production, storage and transportation of chemicals, oils and hazardous substances. Spills and

disasters like that occurring at the Jinin chemical plant can be prevented. Some spills/incidents will unfortunately occur regardless of prevention efforts because of man-made or natural events. Chinese policy and regulations can take a dual approach – preventing and containing spills through implementing comprehensive environmental safety and health programs, and building a national emergency response system with a central and unified command. Throughout the history of US environmental regulation,, allocation of monetary and human resources has always been a key component. In addition, detailed and clearly defined rules, responsibilities, authorities, specific processes and procedures, and vigorous implementation and enforcements are the foundation of US success.

With its historically strong central government, China can, and is recommended, to adopt a National Response System in its environmental emergency planning and response similar to the US NRS. It can also profit from US experience and be more efficient in developing its enabling system. For example, China does not need to go through the same trial and error process and piecemeal collection of policies and regulations. Specifically, China can consolidate efforts to manage oil, chemical and hazardous substance spills. It can start to draft one emergency planning, preparedness and response regulation, in which a national emergency response system is established with mandatory resource allocation and including clear and specific definitions of rules and responsibilities of each central ministry and provincial and local government department, any special forces, and when and how they shall be called upon into emergency response.

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