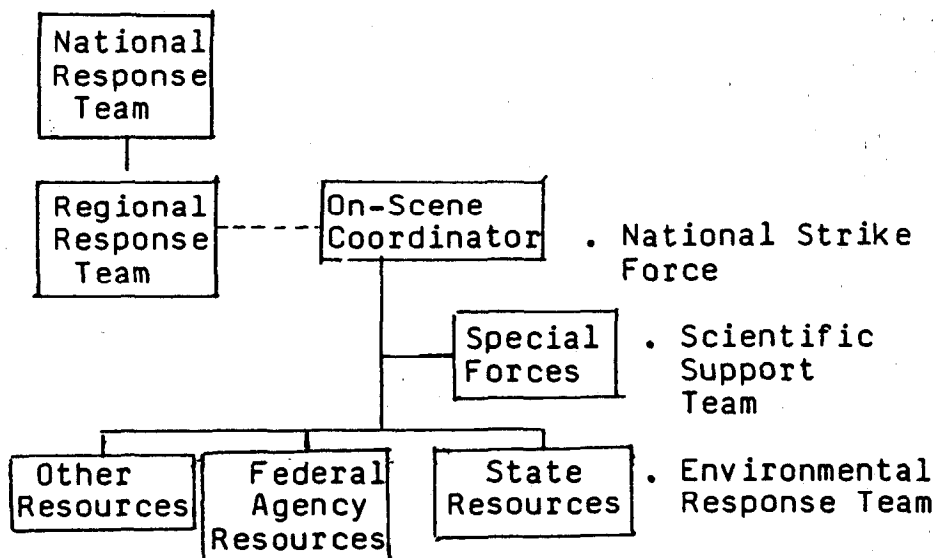


NOAA'S SCIENTIFIC SUPPORT COORDINATORS (SSC) AND  
HAZARDOUS MATERIALS RESPONSE PROJECT: Paper provided  
to workshop by Professor M. Champ

What is a SSC?

A Scientific Support Coordinator (SSC) is a member of one of the groups special forces available upon request to federal On-Scene Coordinators (OSC) for response to actual or potential releases of pollutants, such as oil and hazardous materials, as well as for contingency planning. The role of a SSC in relation to the other special forces is described in the National Contingency Plan (Fig. 1). During spills, SSC's serve on the OSC's staff and provide technical assistance in support of the OSC's operational decisions by integrating the scientific information pertinent to a particular incident and by generally coordinating scientific activity on-scene. During non-response periods, SSC's can be utilized by the OSC and their Marine Safety Office's (MSO's) and the Regional Response Teams (RRT) to assist in the development of local and regional contingency plans.

Figure 1. National Response Organisation



The SSC's for coastal areas, where the OSC is a predesignated Coast Guard official, are provided by NOAA's (National Oceanic and Atmospheric Administration) Hazardous Materials Response Project (HAZMAT). This project consists of a team of scientific support coordinators, assigned to various regions of the country, and five functional support groups. To supplement this core response group the SSC's and the HAZMAT response team seek out and synthesize information from regional scientific experts and industry representatives e.g. chemical manufacturers, as part of their response activities. The HAZMAT organisation is displayed in Figure 2.

### Response Objectives

The overall goal of the SSC's is to provide timely and effective coordination of scientific resources for emergency response to potential or actual oil and hazardous material spills for the purpose of protecting public welfare and minimizing adverse environmental and/or socioeconomic impacts. The major objectives of SSC's are:

- (1) To provide the National Response Team, Regional Response Team and On-Scene Coordinators with highly qualified scientific assistance in:
  - (a) evaluating the imminent hazards to human health and the need for protection strategies, and
  - (b) mitigating or preventing the environmental and socioeconomic impacts of release of oil and other hazardous substances;
- (2) To provide scientific assistance in assessing public health hazards, and the environmental and socioeconomic damage resulting from such incidents; and
- (3) To maximize the research advantage offered by the spill situation, especially for improving future response capabilities.

In an emergency situation, these objectives will be approached in the order of precedence indicated.

### Response Assistance from SSC's

During actual or potential pollution incidents, SSC's are organized to provide assistance in the three areas discussed below requiring different types of scientific activity. The level and depth of scientific activity and the sources of information utilized depends on the particular incident and the request(s) of the OSC. The SSC's are most useful to the OSC when dealing with major oil spills, and chemical incidents of any size. Assistance from SSC's can be obtained on a 24-hour basis by a telephone request from the OSC. Notification of SSC's is discussed in a later section.

### Rapid Assessment of Adverse Effects and Mitigation Strategies

This type of scientific coordination and assistance is frequently required during the initial phases of an incident when response operations and cleanup strategies are being developed. Depending upon the specific incident, the SSC's notify and work with groups such as state agencies, universities, CHEMTREK, shipper and manufacturer of the material and others, in compiling the technical information pertinent to immediate response actions. Specific types of scientific activity pertinent to protecting and mitigating adverse effects on human health and environmental and socioeconomic resources include:

- (1) Liaison with natural resource, chemical and medical experts;
- (2) Support in trajectory modelling i.e. prediction of the movement of a contaminant in a given period, time and location of landfall, etc.;
- (3) Rapid assessment of and advice on the nature, behaviour and fate of the pollutant, e.g., toxic properties, alteration in physical and chemical characteristics which can be expected under a variety of environmental conditions, and the prospects of water column mixing, sinking etc.;
- (4) Advice on safety precautions for response personnel and general public health considerations, and the location of emergency medical experts and facilities (if requested);
- (5) Identification of critical habitats requiring extraordinary protective efforts;

- (6) Advice in dealing with oil and hazardous materials under unusual environmental conditions, e.g. sea ice and severe storms; and
- (7) Assistance in public relations efforts on scientific issues.

#### Assessment of Damage

Damage to natural resources includes :

- (1) immediate or long-term injury, alteration, or destruction of naturally occurring organisms, populations, communities, habitats or functional properties of ecological systems, and
- (2) associated impacts on aesthetic, recreational commercial or other benefits derived from these resources. The purpose of this area of assistance is to provide sound scientific information, analysis and opinions that can be used in litigation or administrative proceedings. The emphasis on litigation is important and has major bearing on both the conduct and the scope of work performed under this objective.

Operationally, environmental damage assessment activities involve four major components:

- (1) On-scene surveys (sampling and analysis) of acute and other directly measurable impacts on natural resources;
- (2) Other scientific studies, including laboratory investigations, that establish the more subtle, sub-lethal environmental effects of the incident;
- (3) Surveys of potential socioeconomic losses; and
- (4) Interpretation and analysis of findings from the studies above to provide information to be used in legal or administrative proceedings.

#### Hazardous Substance Assistance and Research

Impact mitigation and assessment activities require extraordinary organization and the "state-of-the-art" knowledge can be improved with a greater degree of planning and coordination of experts. To this end, the SSC's and the HAZMAT team are concentrating on hazardous substances as a focal point of their contingency planning activity.

The need for promoting and coordinating research activities during response to enhance the general understanding of pollution discharges in marine estuarine environments is addressed by this type of SSC assistance. Research included under this objective to be initiated and coordinated by the SSC's includes both field and laboratory studies, baseline studies, and socioeconomic analyses. The specific intents of this objective are to:

- (1) Provide a mechanism for timely notification of appropriate scientists of research opportunities;
- (2) Coordinate research activities in the spill area to prevent unnecessary duplication and minimize interference with operational activities; and
- (3) Assist in the direction of national research efforts toward improving damage mitigation and assessment capabilities.

#### Notification and Activation

Of major importance in any spill response is the timing of notification and activation of response forces. Acute environmental impacts will be most severe during the early stages of the incident. Thus mitigation efforts must be most concentrated at the outset. This fact argues strongly for the prompt activation of the special forces whose assistance will be needed during the initial stages of an incident.

The SSC is activated by a call from the OSC or his representative. This phone call requesting assistance is all that is required to initiate the SSC's involvement. The level of the SSC's involvement depends upon the nature of the OSC's requests, i.e. what the OSC asks for in the way of scientific assistance, the specifics of a particular pollution incident and the status of the federal fund. The SSC is available for consultation on any or all spills - the key to the SSC's involvement is activation by the OSC. When the OSC determines that scientific support is required, he contacts the SSC and, in conjunction with the SSC, identifies the operational questions to be addressed.

More often than not, initial details on a pollution incident are sketchy, and the first order of business is usually one of assembling information which is critical in determining the ultimate nature and scope of the response - what is the potential magnitude of the spill, the nature of the pollutant, and the prognosis for containment.

In a spill situation, the SSC will respond by phone or report to the scene of the incident if requested to provide whatever immediate assistance may be required and to gather information necessary to determine the scope of the eventual response likely to be required. If the spill has potentially serious consequences, the SSC would notify the appropriate HAZMAT response team functional leaders, and regional and local experts to provide the OSC with the scientific information pertinent to his response decisions.

#### Contingency Planning Assistance from SSC's

In addition to assisting the OSC during spills, SSC's also work with the Regional Response Team, USCG Marine Safety Offices and the scientific community on response-related scientific matters in between pollution incidents. During these non-response periods, the SSC concentrates on sharpening the scientific aspects of the contingency plans to improve the quality of future response activities.

Prior to a spill, considerable information can be provided to the OSC to help in the development of contingency plans. This information includes:

- (1) the probability that spills originating from selected sites will impact specific areas of critical environments,
- (2) the locations of environmentally sensitive regions,
- (3) background data on the behaviour of the various pollutants known to be present in a given area under a range of environmental conditions, and
- (4) the likely environmental impact of various alternative cleanup strategies.

Information is also needed prior to a spill for the purpose of damage assessment. Data needs include only environmental information but also socioeconomic "baselines". Assessing damage following a spill and relating it directly to the pollutant as the cause is extremely difficult; it is even more difficult, however, if there is no information on conditions prior to the incident against which a change can be determined. Consequently, efforts are being made to collect, organize, and evaluate existing information on the environmental and socioeconomic characteristics of a region. Critical information gaps are being identified and, where (NOAA or other) funds allow, studies will be initiated to address these areas.

At a minimum, SSC's are working toward having the following elements in place prior to a major spill event:

- (1) A trained core scientific response team whose members are current in the "state-of-the-art" in mitigation, damage assessment, and operational functions;
- (2) Development of sufficient equipment and supplies with which to undertake an effective response;
- (3) Ensuring that regional scientific response plans are developed and updated, as necessary, including the formulation of activation and notification procedures; identification of personnel, equipment and communications resources; and establishment of reporting requirements;
- (4) Developing detailed scientific plans, including chemical action plans, for varying spill scenarios (e.g. differing pollutants, location, environmental conditions, size of spill, and impacted areas) in conjunction with the MSO's;
- (5) Establishing an information network among representatives of Federal, state, academic, and public groups concerned with pollution in coastal and offshore waters;
- (6) Establishing prior contractual agreements with potential scientific response personnel, chemical laboratories, and sources of logistics support to ensure an adequate, immediate response;
- (7) Identifying, integrating and ensuring access to regional data bases;
- (8) Conducting or contracting for scientific studies that are supportive or prespill or spill activities (e.g., mapping of the sensitivity of coastal environments to spilled oil, identification of critical natural resources and habitats, and projections of pollutant trajectories);
- (9) Identifying priority research projects (and appropriate researchers) that may benefit from field verification;
- (10) Providing scientific assistance to the RRT and OSC in planning regional responses; and

- (11) Establishing data management and chain of custody systems according to specific guidelines for samples taken during spills.

For further information

The SSC's can be reached through the Hazardous Materials Response (HAZMAT) Project located in Boulder, Colorado. The HAZMAT Project has in progress several contingency planning programs which are likely to be of interest to the Coast Guard, state agencies, scientists, and industry representatives. Please feel free to contact the SSC's directly or Mr. John Robinson, Manager of the HAZMAT Project, for additional information. Mr. Robinson can be reached at the following numbers:

Commercial: 303-497-6551  
FTS: 320-6551  
Pager: 303-443-1414, acct. A-5 (24-hr.  
number).

FIGURE 2

HAZARDOUS MATERIALS RESPONSE ORGANIZATION

