

company response plans, and some capability to deal with incidents near their branch offices. Others must rely on response/cleanup contractors and the TEAP system of the chemical industry for most of their responses involving products of suppliers participating in TEAP. Only a small proportion of the drivers, warehouse personnel and other handlers/transporters of dangerous goods, who have received such training, are likely to be dealing with the larger quantities of the chemicals of concern for major accidents. Nevertheless, in view of the substantial movement of bulk chemicals by truck, this industry should be examined more closely for its risk potential and its prevention and response programs for major chemical accidents.

The chemical industry has a policy of responsible care for its primary transport companies and major chemical customers. This policy covers both prevention and readiness phases of chemical spills. A logical extension of "responsible care" would be to require periodic extended emergency response training for truckers and shipping/receiving personnel who handle Bhopal-type chemicals in large quantities.

The Marine/Shipping Industry. There is a substantial movement of dangerous goods through most major ports in Canada, both in the form of petroleum products, and chemicals in bulk and in containers. A very small portion of this volume of dangerous goods involves the type of toxic chemicals of concern in this report. Some work in assessing these movements has been done by government agencies. However, container terminals and the ports covered by the Canada Ports Corporation should be examined in greater detail for risk prevention and preparedness programs.

Since the shipping industry is international and vessels have limited direct access to contractors with marine clean-up equipment, the response to spill incidents from ships is largely the responsibility of a national government agency having an operational capability for marine activities (e.g., Coast Guard, Navy, etc.). In Canada, under the Canada Shipping Act and the Arctic Waters Pollution Prevention Act (as well as by custom, precedent and certain international agreements) the Canadian Coast Guard has responsibility for monitoring the effectiveness of the polluter's response to spills of oil or noxious substances. The Coast Guard has an extensive inventory of approximately \$34 million worth of oil spill response equipment and specialized vessels. A Coast Guard spill response is normally made as an agency of "last resort" after all commercial and industrial response mechanisms have been exhausted.

We must emphasize, however, that there is currently very little response capability in place in industry or government for ship spills involving any products other

than crude oils and petroleum fuels. The frequency of incidents involving spills of other hazardous materials from ships in Canada has historically been about seven per year, based on Coast Guard accident statistics. Informally, however, regional Coast Guard offices receive about 40 to 50 reports/inquiries per year about hazardous material cargo problems; more definite statistics on the frequency and nature of hazardous material spills in ports from ships may become available now that mandatory reporting is required under Transportation of Dangerous Goods Regulations.

Most of the accident prevention work for vessels is conducted by international organizations such as IMO, the International Maritime Organization, and UNEP, the United Nations Environmental Program. There is unfortunately no chemical ship owners' mutual-aid emergency response plan equivalent to that operated for oil spills by the International Tanker Owners Pollution Federation. The Canadian Coast Guard should undertake an industry review of potential Bhopal-type incidents involving the shipping industry in Canada. Consultation with relevant industry associations, government agencies and Ports Canada would be appropriate.

The Air Transport Industry. A major incident is not considered likely in the air transport industry because of the relatively small volumes carried and the additional restrictions on air transportation of dangerous goods developed by the International Civil Aviation Organization (ICAO). However, a scenario involving the dumping or crash of a pesticide spray plane into a municipal water supply has already occurred in Canada, but was fortunately detected before serious health effects arose. The municipal or provincial emergency measures plan, supplemented by response from provincial health, agriculture and environment officials, the agricultural chemical supplier and CANUTEC would likely be involved.

2.2 Governments

2.2.1 General Emergency Preparedness. The network of emergency response systems for chemical spills can vary considerably in different parts of Canada. The relationships between industrial, municipal, provincial/territorial and federal levels follow general patterns, with small adjustments apparent for individual locations. The general relationships are shown in Appendix III-4, but readers are advised to consult contingency planning agencies in their area.

Presentation of an overview of the relative "readiness" of companies, industries and various levels of government in Canada for potential major chemical incidents has been an objective of Working Group 3. A questionnaire (Appendix III-5) was

circulated to provincial and territorial emergency agencies through Emergency Planning Canada. While acknowledging that the survey would not be a definitive assessment, we tried to minimize subjectivity in designing the questions. The lack of any detailed information on these subjects at the provincial level did result in "informed opinions". The responses show a range of levels of preparedness for major chemical accidents, with some correlation, as expected, between the perceived level of risk and the levels of readiness judged to exist in each jurisdiction. The comments received indicate that the respondents agree that the levels of readiness for chemical accidents should be improved.

Several elements of general emergency preparedness are particularly relevant to contingency planning by governments for Bhopal-type incidents in Canada. Advances could be made in both prevention and government readiness for major chemical accidents if further work was undertaken by provincial and federal agencies in areas such as the following.

- (a) **Hazard Analysis.** Both risk assessment and hazard analysis have been applied in emergency prevention and contingency planning projects in Canada. For emergency preparedness purposes, we believe hazard analysis is more useful. It is widely used internationally by the chemical industry. Many larger Canadian chemical companies have used it for years. However, there is a shortage of consistent and concise guidance about the application of contemporary hazard analysis techniques across Canada. Hazard identification and analysis is one of the primary steps in emergency prevention and preparedness development. It is essential that this be conducted in all industries and by all levels of government using the best available systems.
- (b) **Assessment of Response Capability.** A preparedness capability is more than the sum of its specialist parts such as police, fire and medical services. However, an examination of disaster responses has repeatedly identified shortcomings that cannot be attributed to any one specialist agency. Rather, they are shortcomings of the total system of response. A recurring requirement at all levels of government is to provide data, options, judgements or assessments on emergency preparedness for numerous reasons. The Bhopal Aftermath Review is simply one more reason. However, it has become evident to Working Group 3 that there appears to be no common base for collection of data on preparedness, and no established measureable units or criteria on which to make objective evaluations. Some provincial agencies have been considering this need within their own organizations. There appears to be a consensus among the emergency planners that a systematic process of collecting

and evaluating data on preparedness is essential. Such an assessment system should be developed and applied across Canada if it is shown to be feasible.

- (c) **Public Warning.** Improved methods of public warning are sorely needed, even though research abounds on the requirements for public warning in emergencies. These requirements must be stringently met in the event of a sudden toxic chemical release. A warning system must be customized to local situations; provide full coverage for the entire area of potential risk; be delivered within the time available for response; and be intelligible. Experience has shown that a warning that is not intelligible or instructive is no warning at all. A clear understanding is needed of the responsibilities for designing the warning system, installing equipment, educating the public, predicting the path and concentrations of an actual release, preparing the public warning and instructions, activating the warning system and delivering the warning and instructions to the public. Provinces, territories and municipalities could address these needs through municipal-provincial coordination groups for emergency preparedness and response, with federal support.
- (d) **The Profession of Emergency Preparedness.** Often, emergency coordinators or planners in government agencies are selected because of experience in a single technical or service area such as police, fire, military, environmental management or medical care. Occasionally they are selected for other reasons. Nevertheless, once they are selected, their further development is usually one of accident or individual pursuit. There is no systematic approach to developing those employed as general planners/coordinators/managers of emergency systems in government. There is a need to put into place a professional development program for generalist emergency planners and managers, including an examination of the merits of certification or degrees of qualification, and the development of suitable career-development materials and milestones. This could be a joint federal-provincial project, with input from industrial and municipal emergency planners.

2.2.2 Government Systems for Emergencies

Municipal. The level of government most immediately and directly affected by a major toxic chemical release in an urban area is the municipal government. It has primary responsibility for an initial response by elected officials, fire, police and other emergency services to assess the danger, protect threatened populations, take steps to contain or mitigate the problem where confident and safe to do so (e.g., fight fire, use

water spray barrier or foam), control crowds and traffic, and take command of the response operation for public safety when necessary. As an accident escalates in magnitude, the command of operations may shift from municipal governments to provincial, although the latter transfer occurs only under unusual circumstances. A Bhopal-type incident is probably one of these unusual circumstances.

Other local agencies and services that would be involved in major chemical incidents include elected officials, emergency medical clinics, hospitals, poison control centres, public works, social services for emergency accommodation, clothing and feeding, and other welfare services. The involvement of all these agencies in an integrated, coordinated fashion requires municipal-level contingency plans. These plans normally cover a wide variety of potential emergencies, of which a Bhopal-type incident would be one example.

Provincial/Territorial. Numerous provincial/territorial departments and agencies form the main backup resources for support and, if necessary, control of the government responses, in case the resources of the municipal response plan are exceeded. Such an escalation of government involvement is assumed for a Bhopal-type disaster. These are also the primary response agencies for incidents occurring in rural areas. Among these agencies and their roles are the following typical examples:

- (a) **Emergency Measures Agency:** Coordinates overall contingency planning and response in support of, or on behalf of, a municipality, rural area or provincial/territorial lands; operates a provincial alerting network with local police and other agencies; controls supplemental emergency resources; recommends declaration of emergency to appropriate agency; operates provincial command centre(s); controls records and costs.
- (b) **Solicitor General (RCMP or provincial police):** Provides control of access to accident site; supplements local police forces; assists or conducts public evacuation; maintains security of evacuated rural areas.
- (c) **Environment Agency:** Provides monitoring and advisory support to response team for environmental concerns and technological problems/solutions; relays any initial accident reports to local police and provincial emergency measures agency; provides other specialized support such as lab analysis; may provide trained equipped response team for monitoring or site cleanup.

- (d) **Natural Resources Department:** Provides logistical support, communications and other resources; may be primary regulatory agency for prevention and cleanup of chemical emergency (e.g., sour gas well blowouts); may also control and provide some temporary accommodation.
- (e) **Transportation Department:** Provides specialized equipment on request; constructs special access routes; assists with communications equipment.
- (f) **Communications Department:** Provides or arranges emergency communications; may operate communications network.
- (g) **Hospitals and Ambulance Agency:** Ensures required treatment and care services are maintained for hospitals; arranges supplementary ambulance support.
- (h) **Health and Social Services Department:** Maintains inventory and access for supplementary resources for health care and social services; handles many support services following evacuation.
- (i) **Public Works and Housing:** Locates and provides temporary shelter; provides special vehicles and equipment if appropriate.
- (j) **Others** include Agriculture, Attorney General, Treasury, Labour and similar agencies.

Federal. A number of federal departments and agencies are responsible for contingency plans, response or support in chemical emergencies. Some incidents would fall under federal responsibility for direct response or monitoring.

- (a) **Transport Canada/TDG.** Operates CANUTEC Emergency Information Centre; regulates multi-modal transport of dangerous goods (except highways, bulk vessels and pipelines); requires shippers, importers and handlers to have contingency plans and response arrangements; provides inspectors at scene of transportation accidents, when required.
- (b) **Transport Canada/Canadian Coast Guard.** Monitors response activities at the scene of vessel spills; when required and feasible responds to certain pollution incidents with large inventory of specialized equipment and vessels; is currently reviewing its future role in chemical incidents.
- (c) **Canadian Transport Commission/RTC.** Responds to railway derailments with regional inspectors (particularly when dangerous goods are involved); provides

guidance or issues orders for railroad and shipper response activities on railway right-of-way; and cooperates with local and provincial response organizations.

- (d) **Environment Canada.** Provides weather and trajectory modelling information on request; monitors environmental damage and technical cleanup activities for incidents of federal responsibility; provides general technical guidance on spill contingency planning, response training and countermeasures; evaluates and develops new spill technology; publishes technical reports and manuals on chemical and oil spills; manages national environmental emergency program.
- (e) **Health and Welfare Canada.** Provides emergency health and welfare support and advisory services to provinces; develops and conducts training courses on emergency health and welfare management for all levels of government; acts as lead federal contact for emergency health and welfare matters.
- (f) **Emergency Planning Canada.** Acts as the primary federal agency for the coordination of emergency planning, training and operational assistance in support of the provinces, territories and other federal departments having responsibilities for specific response functions in emergencies, including chemical accidents; arranges supplementary federal resources when requested by a province; supports provincial and local emergency preparedness initiatives through Joint Emergency Preparedness Program (JEPP) funds.
- (g) **Other Departments and Agencies.** Others such as Agriculture, Defence, Employment and Immigration, Revenue/Customs, Fisheries and Oceans, Indian and Northern Affairs, RCMP, Public Works, Labour, Canada Ports Corporation, and the Canadian Centre for Occupational Health and Safety, may become involved in support activities for certain types of incident, or in special areas of expertise.

International/Bilateral. Through the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO), the United Nations Emergency Program (UNEP), the World Health Organization (WHO), and others, significant international programs are underway for prevention and contingency planning for chemical accidents. These are primarily intended for the international aviation and shipping industries, or for developing countries.

Between the U.S. and Canada, a joint Canada-U.S. Marine Pollution Contingency Plan covers cooperative actions by Canadian and U.S. Coast Guards for vessel pollution incidents affecting boundary waters. The U.S. Coast Guard operates three strike

teams with specialized equipment and training in hazardous chemical accident response. The Canadian Coast Guard is reviewing their capabilities in this area.

Another joint Canada-U.S. response plan to address all boundary areas not covered in the marine plan is being developed by the U.S. Environmental Protection Agency and Environment Canada's Environmental Protection Service in consultation with affected states and provinces. On the Canadian side, it will rely heavily on the existing response plans within the provinces and in industry.

3 OTHER DISCUSSION TOPICS

3.1 "Good Samaritan" Protection

This subject is a difficult and contentious area. Readers are advised to seek legal counsel for more specific information.

The concept of voluntary "third party" assistance or intervention at the scene of an emergency is often referred to as the action of "Good Samaritans". For industrial accidents involving hazardous chemicals, some concern may be associated with the legal position and liability protection of third parties who assist authorities or the participants in the emergency response or clean-up, even though these volunteers have no responsibility for having caused or been involved in an incident (the "first" and "second" parties, respectively).

In Canada, civil or "tort law" falls under provincial jurisdiction, including the subject of "Good Samaritan" legislation. There are only a few specific "Good Samaritan Acts" and their protection for "third party" helpers is restricted to the provision of emergency medical aid administered at the accident site. At the same time, there is little legislation in Canada that creates a "duty" for third parties to go to the aid of people involved in an accident, even if these parties have a capability to help and are in a position to help. Therefore, under most current laws in Canada, third parties are not required to offer help, and cannot be prosecuted for failing to provide such aid.

Liability protection is provided under certain provincial statutes to third parties who act under the direction (written or verbal) of a minister or officials in a declared emergency situation, or in a situation where another Act (e.g., Environmental Protection, Forestry Protection) specifically provides liability protection for the minister, and officials and persons acting under their direction.

If, however, a "Good Samaritan" decides to provide assistance to someone other than a minister or official who may "direct" them and provide liability protection, the volunteer helper should then ensure that such actions:

- (a) fall strictly within his/her areas of knowledge and competence; and
- (b) cover everything within these areas of competence that any reasonably competent person would be expected to do under the circumstances.

Failure to meet these requirements may mean this volunteer could be subject to claims of liability for actions incorrectly taken and for actions not taken within the area of their competence. However, some lawyers believe that precedents in common law tend to

protect well-meaning volunteers who provide help to the best of their ability. Only for cases where gross negligence may be involved would such voluntary assistance likely be challenged in Canadian courts. Despite this view, many companies include a "hold harmless" provision in their contracts for emergency response.

In summary, the protection of the "Good Samaritan" at Canadian accidents is understood to be as follows:

- (a) if a third party had a duty in law to assist, and did everything reasonable to assist, there would be no liability incurred; however,
- (b) if, as is currently the situation in most parts of Canada, a third party has no duty in law to assist, and does nothing, there can be no prosecution or liability for failing to assist;
- (c) protection against liability for "Good Samaritans" exists if they cease to be volunteers and act under the direction (written or verbal) of a minister or his officials, provided that they in turn are acting under declared emergency conditions or under protective provisions of other specific acts; and
- (d) if, despite there being no duty to assist, the third party volunteers to assist someone other than an official having statutory protection against liability, then such a "Good Samaritan" may be vulnerable to liability claims but likely only if his actions can be challenged as negligent.

On behalf of the provinces, and at the request of the federal Minister of Justice, the Federal Law Reform Commission is currently examining such questions as duties and liability protection for the third party actions at the scene of an accident, including actions to rescue people in immediate danger, and to mitigate damage caused by the accident.

3.2 Community Awareness and Contingency Planning

Communities must deal with a variety of possible emergencies, including those of a natural and technological nature. Many municipalities address this problem through an integrated plan with fire, police and emergency medical services as the primary agencies involved. The local emergency organization must be concerned about hazardous chemicals stored or passing through their communities, since they will be responsible for dealing with their citizens safety and disaster needs. The initial response to an incident is normally provided by a local agency (fire or police); the nature of that response can greatly affect the eventual outcome and magnitude of the incident. An up-to-date community plan for orderly evacuation of threatened areas is essential.

In many recent chemical emergencies occurring around the world, one of the most consistent shortcomings identified after the events were over has been the lack of both an awareness by municipal officials and the citizens as to the hazard that a chemical emergency could pose for their safety, and of a comprehensive, publicized plan for their possible evacuation.

Both of the mutual aid systems discussed in Section 2.1.2 include community organizations, so that integration of the industry and community emergency plans is assured in those examples. The degree to which individual chemical companies have made local communities aware of their plans and helped integrate the plans into those of the community probably varies. It must be remembered, however, that this is a two-way street. The community should be prepared to devote the resources necessary to develop a community plan if it is needed and work with local organizations to consider integration of their individual plans. The CCPA survey demonstrated that a number of companies have already fully integrated their plans into those of the local community. Other companies mentioned their extensive commitment to community outreach and liaison measures. Over the past few years many companies have improved their liaison with local fire departments in particular. Other CCPA companies have identified this as an area where they will be seeking improvement in the future.

The CCPA safety assessment and responsible care programs will each assist chemical companies in achieving improvements in working with the local community. The safety assessment program specifically addresses communications with the community. The CCPA also intends to develop a responsible care practice called "Working with the Community and the Public". This practice will implement the CCPA's responsible care principle that its companies will "be responsive and sensitive to legitimate community concerns". In preparing programs for its members in this area, CCPA will be assisted by the "Community Awareness and Emergency Response" (CAER) program developed by the U.S. Chemical Manufacturers' Association. This program encourages ongoing communication and mutually supportive contingency planning between industry and the community for incidents that affect the general public. A Canadian program incorporating the principles of CAER for both chemical producers and major chemical users should improve the current state of response capabilities in communities where dangerous chemicals are manufactured or used.

In general, joint preparedness and communications by an industry and the community may involve activities such as:

- (a) joint meetings of industry and community officials to share information on joint disaster planning and the particular chemicals of concern;
- (b) the joint conduct of hazard assessments;
- (c) the development of mutually-supportive contingency plans for the industrial and community organizations, including early public warning, on-going emergency consultations and information, and the linkages between the industry and community plan;
- (d) formal agreements for mutual aid and common understanding of roles/actions;
- (e) training courses, information brochures and public education materials;
- (f) public meetings to discuss the plans; and
- (g) disaster simulations and emergency response exercises.

Problems that can arise include apathy ("it cannot happen here"), over-confidence ("a plan on the shelf means we are ready") and cost concerns ("we cannot afford the plan"). These can be overcome by frank and open dialogue with the public, an ongoing commitment to public safety management and an assurance that the moderate costs of preparation are worth the effort to avoid the disastrous and costly problems when caught unprepared.

A variety of industry and community representatives have expressed a renewed commitment, at least in some progressive communities, to develop community awareness and contingency planning. Oil and chemical industry programs, actions by some railroad companies in meeting with communities on their routes, and stronger encouragement and guidance by provincial governments are some examples. Public awareness is a critically important prerequisite of readiness for Bhopal-type incidents and must be stressed to all communities in the nation where such accidents could possibly occur.

3.3 Emergency Medical Services

The greatest impact of a major chemical accident that affects a sizeable population will be on the portion of the public exposed and on the medical services community which will have to deal with mass casualty treatment. As health protection is a provincial matter, the majority of the response systems to deal with disasters from a health perspective are at the community or provincial level. The federal role is largely one of provision of support, guidance and advice when requested.

3.3.1 Community Level. The medical components are important factors in most community incident response plans. Hospitals, most of which have their own disaster plans, are an integral part of this component. Many hospitals, particularly those in major cities, have poison control or toxicology centres which have to be prepared for a major chemical accident. Universities and medical schools are also valuable community-level resources.

3.3.2 Provincial Level. Ambulance services are controlled and licensed by most provincial governments, although they are community-based. The health sciences sections of universities, particularly those with medical schools, may have toxicologists or biochemists who may be of assistance. As well, many provincial laboratory directors may be able to provide assistance.

3.3.3 Federal Level. The federal response is coordinated through Health and Welfare Canada. The Emergency Services Division, Medical Services Branch, is responsible for assistance and advice to provinces and municipalities in emergency health services planning, including the provision of emergency medical units to augment existing resources in the event of a disaster. In addition, they produce, conduct and direct emergency services courses including a Community Emergency Planning (Health) Course.

Within the Health Protection Branch a number of resources could be utilized in a Bhopal-like incident. The Environmental Health Directorate includes the Bureau of Chemical Hazards which is engaged in a wide ranging program of research and assessment on chemical contaminants and therefore may be able to offer pertinent advice. Laboratories which may be able to assist in analysis are available. In addition, there are toxicologists, biochemists and other professionals who may be able to offer guidance and advice.

3.3.4 Further Studies. Training and planning aspects of mass casualty care should be reviewed. Prior planning, training and drills are the key ingredients for adequate care of disaster victims. As was implied above, most local and provincial authorities have general contingency plans for treatment of mass casualties and for coordination of emergency medical services, regardless of the type of accident. These plans would certainly be applied in a Bhopal-type incident in terms of general emergency medical service worker coordination and procedures (e.g., field triage, treatment for burns, injuries and cuts, removal to hospital facilities and further treatment) for major fires or explosions. In cases of mass casualty treatment for toxic gas or vapour releases involving some of the

Bhopal-type chemicals, the protocols would probably need to be adjusted. Some of the problem areas where more work or preparation may be required include:

- (a) special or additional training of both professional and volunteer workers in chemical incident response;
- (b) protection of field workers during removal of victims from the contaminated accident site;
- (c) sampling and identification of chemical or contamination products to ensure proper medical treatment;
- (d) decontamination procedures and equipment for victims of chemical accidents;
- (e) symptom interpretation and triage decisions by medical professionals for Bhopal-type chemicals;
- (f) knowledge of chemical toxicology and treatment protocols, and adequacy of references in poison control centres and hospitals; and
- (g) availability of medical supplies for chemical antidotes .

To address these needs, better mass casualty treatment systems and plans, further surveys/research and a network for information exchange could be considered. Experience gained by emergency medical professionals in incidents involving chemicals could be gathered and assessed, together with information on short-term chemical exposure symptoms and treatment. The current information is mainly based on pharmaceutical products, household poisons and drugs, but industrial chemicals are not yet covered completely.

Existing federal-provincial consultation groups and professional advisory bodies having emergency medical expertise could undertake or coordinate the tasks listed above.

3.4 On-Scene Coordination of Response

Occasionally, coordination problems can arise at the scene of emergency incidents. Such difficulties can be serious when time is critical and appropriate team-work actions must be taken. Examples of such problems are:

- (a) absence of a unified command structure;
- (b) gaps or duplications in alerting or in other response activities such as monitoring and advisory support;
- (c) uncoordinated resources, communications support groups, or uncontrolled site access;

- (d) conflicting advice to emergency managers or conflicting public/media information;
- (e) no identification of key personnel and a command centre; or
- (f) some combination of the above problems.

Effective contingency planning and communication among responders beforehand, combined with application of the principle of unity of command can avoid these problems. In emergency operations, there can be only one boss, responsible for overall response coordination. This person is often called the On-Scene Commander or On-Scene Coordinator, or simply the OSC. Normally, the authority having jurisdiction over the area or location of the incident is in charge of any major emergency situation. Local or provincial government authorities charged with such responsibilities usually approach the problem of chemical emergency response as one of a series of natural and man-made emergencies for which they must be ready. In such an integrated emergency management system, all the participants know the command control and communication structure in place. Adjustments can be made by the response team to account for variations in the type of emergency, but the essential element is that a response plan and the relationships between the players are established and understood beforehand. If, on the other hand, a specialist agency is given the responsibility for organizing the response, then all the potential response groups must have met and worked out in detail the operational, advisory and support functions for that specific type of response. Integration of groups having such plans for different types of emergencies must then be clear beforehand, through a series of meetings, agreements and exercises.

In chemical emergencies, where technical information and advice is critical, the support groups must know the sources of information, determine and resolve any conflicting information and make consensus recommendations to the person in charge. One specialist or the On-Scene Commander should be designated to deal with the media, and make information available to the public, meeting with the press at specified times, preferably in some location away from the operations centre. Press releases should be developed with appropriate input from line and support functions, and should be cleared for release only through the same specialist or the OSC.

Visible identification of the OSC and the command post is often made through a distinctively coloured and marked vest or safety hat, and by raising a flag marked "C.P." at the location of the command post.

In summary, coordination problems are solved through good planning and discussion beforehand, and through a team-work approach under a unified command structure at the time of the response.

3.5 Spill Response Training

Introductory or basic-level training for emergency prevention and initial response by smaller companies, including those in a number of industries using, handling or transporting dangerous goods, has been accelerating recently, with the enactment of Transportation of Dangerous Goods regulations effective July 1, 1985. Since 1973, some provincial and federal agencies, and many of the larger companies in the petroleum and chemical industries have been presenting both classroom courses and "hands-on" training for key emergency response personnel. Provincial emergency measures agencies and their federal counterpart, Emergency Planning Canada, have been teaching courses on disaster management and various other emergency topics for many years. The Canadian Coast Guard has recently developed and presented a comprehensive 15-day course in Marine Emergency Management. There are also several different advisory or working groups examining needs for training courses and materials for emergency spill response.

Some of the specific efforts in training for spills countermeasures and other emergency response are given below. One can conclude, looking at this list, that there is still a shortage of hands-on training for hazardous chemical spills, especially for response to larger accidents, but some of the groups mentioned at the end of this discussion are working on this problem.

3.5.1 The Petroleum Industry. Over the years, the petroleum industry has undertaken:

- (a) in-house transport of dangerous goods and spill response courses/exercises for company personnel;
- (b) mutual-aid exercises and hands-on training for employees of participating companies and for contracted response personnel;
- (c) various Petroleum Industry Training Service courses in Western Canada;
- (d) hands-on training for oil spill response at Lambton College, Sarnia;
- (e) periodic workshops/exercises on specific topics or countermeasures techniques, such as On-scene Command, winter river boom development, dispersant application and dispersant decision-making; and,
- (f) the development of a series of training modules for oil spill response through the Petroleum Association for the Conservation of the Canadian Environment (PACE), in cooperation with the Canadian Petroleum Association, its regional affiliates and several government agencies. The group has recently begun to look at training