The Prevention & Management of Scrap Tire Fires

Introduction

With the disposal of an estimated 270 million vehicle tires each year in the United States, the management of scrap tires has become a major economic and environmental issue. Although responsible means for disposal, such as recycling, reuse and energy recovery have become more common, the tire dumps of the last forty years continue to present environmental and safety hazards that will last into the foreseeable future.

The fire service has had to confront this problem on an increasingly frequent basis. Over the past several years there has been a sharp increase in the occurrence and severity of scrap tire fires. Current storage regulations are often unheeded, and fire departments are generally ill equipped and untrained in the management of these incidents; this is especially true in rural areas, where many scrap tire piles are located.

Tire fires are different from conventional fires in many respects. Some of the major problems these fires present are listed below:

- Even relatively small tire fires can require large community resource commitment. In Lincoln, Nebraska, a fire in a pile of used tires measuring 150 feet by 50 feet by 10 feet high required one-half of the fire department's equipment and personnel to control. The overtime expenditure during this incident reduced the department's ability to provide prevention and education programs for the remainder of the budget year.

- The cost of management is often far beyond that which the fire department can absorb. Canadian officials estimate the 1990 Hagarsville, Ontario, fire cost $1.5 million to extinguish and caused $3 million in damage. At the height of the ten-acre tire fire in Catskill, New York, nearly 1,000 fire fighters and 1,000 support personnel were operating from as far away as 70 miles.

- The environmental consequences of major tire fires are significant. A tire fire in Rhinehart, Virginia issued a plume of smoke 3,000 feet high and 50 miles long with fallout reported in three states. This fire also threatened the drinking water in the District of Columbia with lead and arsenic contamination. Officials estimated the clean up cost at $1.3 million.

- Extreme heat turns rubber into oil, and a standard passenger car tire can generate about two gallons of oil as it burns and liquefies. If half of the burned tires in the Hagarsville, Ontario fire were liquefied in this manner, an estimated 14 million gallons of toxic oil could have been leached into the soil of nearby farmlands (by comparison, the Exxon-Valdez incident spilled 11 million gallons of oil into the sea).

The risks presented by tire fires demonstrates the need to address this problem. The potential for damage increases with every tire discarded. Fire departments, tire manufacturers, the insurance industry and the public are at risk when these fires occur.

In June of 1992, as part of an effort supported by the International Association of Fire Chiefs(IAFC) and the Scrap Tire Management Council, seventeen individuals representing the fire service, government and industry met in Washington, D.C. to exchanged information and experiences on managing tire fires. The recommendations of this group are contained in this document, and can be helpful in the prevention, planning and management of scrap tire fires. This document was updated in March 2000 to reflect the changes to National Fire Protections Association guidelines.

This document and the guidelines it contains are intended to compliment:

1. Nationally recognized standards and good practices, such as the Codes and Standards of the National Fire Protections Association (NFPA) and Factory Mutual Systems' Loss Prevention Data Guides;

2. Locally developed site-specific pre-fire plans developed by the fire protection organization;

3. Local or state ordinances, codes, statutes, standards or rules, particularly those that regulate scrap tire operators or storage facilities;

4. Emergency preparedness plans developed by local and state emergency management organizations

5. Advice and recommendations from technical specialists from organizations such as the Environmental Protection Agency and the rubber tire industry.

The guidelines contained in this document are based upon the collective experiences of incident commanders who have managed major scrap tire fires and are presented as an adjunct to the strategic and tactical practices already a part of proper fire ground management and control.

These guidelines do not necessarily represent the policies of the International Association of Fire Chiefs, it staff or members, nor of the Rubber Manufacturers Association, its staff or members.

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Chapter One:

Pre-Fire Plans

Pre-incident plans are developed to identify the special considerations and hazards of a particular site or property so that responding units will know what to expect and how to proceed during initial operations. Pre-plans must accommodate the agency's standard operating procedures and specify exactly how those procedures are to be applied should a fire break out at a given location.

All scrap tire and rubber products storage facilities should be considered high-risk storage sites and pre-planned accordingly - regardless of the site's location or the owner's attitudes.

Physically included within the pre-fire plan is information and resource material thought to be of possible use to the incident commander. In the case of a tire fire, these resources would include maps of the area, information on the hydrographic conditions of the soil, water supply contingency plans, emergency contacts and a variety of other important considerations.

Also included in the pre-fire plans should be anticipated assignments for mutual aid companies and organizational charts specifying the anticipated control sectors. The means of maintaining fireground and incident management, whether Incident Command System, or by some other means, should be anticipated and included in the pre-fire plans.

This chapter will discuss the following common elements of tire fires that need to be considered and included in the pre-fire plans:

1. The anticipated establishment of a functional incident management system, to include command and control of all responders and workers.

2. The early recognition of tire fires as potential hazardous materials (hazmat) incidents, with considerations given to treating them as such.

3. Information regarding the site's location, layout, size and composition. Also information regarding access and egress routes, the physical infrastructure of the roads and other "access" considerations.

4. Access to local, state and federal agencies or organizations with environmental and/or emergency management responsibilities.

5. Access to local and regional contractors with specialized equipment.

6. Information management plans, to include resource request tracking forms, video recording of incident progression and financial reimbursement requests.

1: Incident Management Planning

1.1 All fire incidents should be managed within the guidelines of an incident command system. A complete description of the components and structure of the various command systems is beyond the scope of this document, but is available through the Fire Service Incident Management System Consortium and the National Fire Protection Association.

1.2 A system of personnel accountability must be established and utilized from the earliest stages and continue throughout the duration of the incident. This is particularly important considering the number of fire fighters and other personnel operating at large tire fires. Further discussion of accountability is contained within Chapter Five, Health and Safety.

1.3 Mutual aid departments and outside agencies should be included in the pre-fire planning process. All departments and personnel operating at the fire should be familiar with the fireground control and accountability systems. Drills should be conducted to ensure that all personnel are familiar with their individual roles and responsibilities on the fireground.

2: Recognition of Hazmat Potential

2.1 The pre-fire plans should note that tire fires produce a variety of pollutants, and although not always toxic, should be regarded with a high index of suspicion. Since it is recommended that major tire fires be handled as hazardous materials incidents, the pre-fire plans should call for first-responder hazmat precautions and subsequent activation of department hazmat personnel and resources.

2.2 More information on hazmat management is contained in Chapter Five, Health and Safety, and Chapter Seven, Environmental Concerns.

3: Site Location, Layout, Size and Composition

3.1 The exact location and size of the tire storage yard or dump should be determined. This is often difficult and incompletely performed since many sites are located in remote areas or accumulate as the result of illegal dumping.

3.2 Maps of the site should be updated and made available in the pre-fire plan. Ingress and egress plans for apparatus and personnel should be included. The development of additional access points should be planned with the means of maintaining or expanding accesses provided. The possible locations for a command post and any usable on-site buildings may also be identified.

3.3 Topographical, aerial and soil composition maps should be obtained and updated to show hydrants and water supply sources, accesses, interior lanes or passages and fuel load configurations.

3.4 Schools, homes, crops and transportation routes near the site should be identified as "high risk" exposures and considered should evacuation or pollution control become necessary.

3.5 The location of any utilities on or near the site should be identified so responders can quickly shut off power to electrical or gas lines and prevent the run-off of contaminated water into storm drains or plumbing systems.

3.6 The condition of roads and accesses should be considered in the pre-fire plans in order to avoid the common problem of first-arriving units becoming stuck in mud or unable to exit a narrow access. The fire department should identify how access can be made to remote sites. More information on access roads is contained in Chapter Two, Fire Prevention.

3.7 The composition of the pile should be considered since important differences exist in developing suppression strategy. Shredded or "chip" tire piles present different challenges than whole tires, as would the existence of plastics, metals, refuse or hazardous chemicals/waste. Additionally, the age of the pile and the local climate may affect the amount of rodent and insect infestation of the particular site.

4: Local, State and Federal Agencies or Organizations

4.1 Pre-fire plans should contain up-to-date emergency contacts for all local, state, and federal agencies or organizations with expertise or responsibility in management of environmental disasters. The lists should include phone numbers, facsimile numbers, addresses and radio frequencies if applicable.

4.2 Since emergency management structures differ across state and county lines, each fire department will have to research its own government structure and laws to determine the appropriate agencies to involve. These agencies should participate in, or at least become familiar with the pre-fire plans.

4.3 Examples of concerned agencies would be:

(a) State and local Police
(b) Public Works agencies
(c) State Department of Emergency Management
(d) Regional offices of the Federal Emergency Management Agency (FEMA)
(e) Regional, State or Federal Environmental Protection Agency (EPA)
(f) State Division of Natural Resources or State Forestry Agency
(g) State Fire Marshals office
(h) Finance, Purchasing and Budget agencies

4.4 The pre-fire plans should assign the various government agencies to appropriate sectors in the command system. This will allow for smoother transition of sector control in areas such as "environmental management" or "resource management" when those respective experts arrive on scene.

5: Local and Regional Contractors

5.1 Pre-fire plans should contain up-to-date emergency contacts for local and regional companies/organizations with access to heavy equipment or materials useful for managing scrap tire fires. Companies with heavy earth-moving equipment, front-end loaders, track excavators or mid-size dozers should be identified and contacted for support as part of the pre-planning effort.

5.2 Other commonly used organizations include:

(a) Construction and wood supply companies
(b) Equipment repair and maintenance contractors
(c) Fill dirt and gravel contractors
(d) Canteen or food services providers
(e) Sanitation or "Porta-John" companies
(f) Public and private universities - departments of ecology, environmental engineering, etc.
(g) Foam/chemical additives manufacturers
(h) Oil reclamation and clean-up companies
(i) Aerial photography and Infra-Red reconnaissance (sometimes provided by State Police or a university)

5.3 Private contractors expected to participate in fire suppression activities, such as tractor operators, will need to be trained in the use of fire fighting personal protective clothing and gear, including self-contained breathing apparatus. Provisions should also be made for earth-moving equipment to accommodate SCBA cylinders or other such equipment in a way that will not restrict the operator.

5.4 The pre-fire plans should assign the various contractors to appropriate sectors in the command system. This will allow for more efficient operations in areas such as "maintenance" or "reconnaissance" when those respective contractors arrive on scene. The contractors identified in the pre-fire plans should participate in, or at least become familiar with those plans.

6: Information Management and Resource Request Tracking

6.1 The amount of information, both written and oral, that is generated during a prolonged incident is overwhelming - and can cripple the command structure if it is not managed effectively. Therefore, an orderly system of information management should be designed as part of the pre-fire plans. A senior sector of the command system should be dedicated to Information and Resource Management.

6.2 All requests for major materials, supplies or resources should be coordinated by the Information and Resource Management Sector. Similarly, all incoming resources and supplies should be reported to the Sector. When another sector commander pulls a resource, notification should be immediately sent to the Resource Management Sector. In turn, the Resource Sector makes available the list of available supplies.

6.3 The management of this flow of requests and notification may be best handled by the use of carbon copy "tracking forms". The Information and Resource Management Officer should have copies of all tracking forms. Ideally this allows for rapid tracing of unfilled requests and missing materials. After the incident, a system of resource tracking will be critical for the reimbursement of the fire department(s) and all other concerned organizations by federal and state agencies.

6.4 Video taping of the incident should also be included in the pre-fire plans. This will allow for post-incident analysis as well as documentation of fire department activity. Videotaping of requests and meetings with government officials and private parties can only assist in assuring that promised resources are delivered.

Chapter Two:
Fire Prevention

The prevention of fire is a primary goal of both small and large fire departments. In dealing with stockpiles of scrap tires, prevention is of paramount importance because of the potential size, environmental impact, duration and cost of major tire fires.

Risk assessment and pre-fire plans may be used by local authorities to develop policies regarding tire storage site maintenance. Accordingly, the site owner/operator may be required to provide necessary on-site resources such as a water supply system, foam or chemical agents, fill dirt and other appropriate materials.

This chapter lists the on-site conditions and preventative requirements all scrap tire storage facilities should have as a baseline. Special attention is given to storage configuration since a major objective during a fire is to limit the fire spread. Also, since most tire fires are caused by arson, strong emphasis is on site security is included.

Each tire storage site will have different characteristics, and individual cases will require special considerations.

This chapter will discuss the following common elements of fire prevention in tire storage sites:

1. The on-site storage design requirements for materials and resources.

2. Site security and fire department access into the storage site.

3. Fire department reconnaissance and information gathering in situations where the site is an illegal dump or the party responsible for the storage site is unknown or unreachable.

4. Determining requirements for water supply on or near the site.

5. Maintaining professional and productive working relationships with site owner/operators.

1: Security and Fire Department Access

1.1 The perimeter of the facility should have a chain-link fence at least ten (10) feet high with intruder controls on the top (in accordance to applicable local laws). Clearly visible signs with business hours and regulations should be posted near the facility entrance. A qualified security attendant or site manager should be on-site at all times when the facility is open [some sites have developed effective security off-hours by using security dogs].

1.2 Each tire storage yard or pile should be provided with emergency vehicle access routes, such that no portion of the pile is more than 150 feet from an access road or fire break. Access routes through the piles should have a clear width of at least 60 feet.

1.3 There should be gates protecting each access point that can be locked when the facility is closed. All gates should have a 20 feet open width and remain unobstructed at all times. The gates should have rapid entry design compatible with fire department requirements. Electrical gates should have default capabilities to the unlocked position.

1.4 All roads and accesses should be designed to support the loads imposed by fire fighting equipment. All bridges and structures, including drainage structures on access roads, should be capable of carrying a minimum design load of HS-20 per AASFTO "Standard Specifications for Highway Bridges." Access routes should be surfaced with material designed to permit accessibility under all climatic conditions.

1.5 All emergency vehicle accesses should have unobstructed vertical clearance of 14 feet, or as needed for passage of large fire fighting apparatus. A minimum turning radius of 45 feet should be provided for emergency vehicle access. All dead-end accesses in excess of 150 feet long should be provided with a turn-around area.

1.6 Accesses should be well maintained and remain accessible to the fire department at all times.

2: Storage Site Design Requirements

2.1 Tire piles should be limited to 20 feet (6 m) in height with a maximum perimeter of 250 feet (76.2 m) in length by 50 feet in width (13 m). The edges of the pile should be at least 50 feet from the perimeter fence, and that area should be clear of debris or vegetation. Since tires tend to slide down from the sides of the pile and close off the fire breaks, all interior firebreaks should be at least 60 feet wide.

2.2 An area extending 200 feet from the outside perimeter of the pile(s) should be totally void of trees, plants or vegetation. All exposures, including buildings, vehicles or flammable materials should be at least 200 feet away from the tire stockpiles. Piles or storage racks should not be located near or below power lines.

2.3 Scrap tires should not be stored on wetlands, flood plains, ravines, canyons or on steeply graded surfaces. Ideally, the site should be flat with a concrete or hard packed clay surface (not asphalt or grass) designed to capture and contain water run-off. Additionally, scrap tire storage sites should not be located under power transmitting lines.

2.4 No open-air burning should be allowed within 1000 feet of the tire pile and no welding or other heat-generating devices allowed within 200 feet of the pile. Smoking should only be permitted in designated areas well clear of the pile. Lightening rods conforming to local and state codes should be placed on the facility, but away from the tire piles.

3. Water Supply Requirements

3.1 When the volume of tires in storage exceeds 50,000 cubic feet, a water supply sufficient to supply 1,000 gallons per minute (GPM) for six hours should be made available. For a storage area that is in excess of 50,000 cubic feet, 2,000 gpm should be available.

3.2 If there is a stream, lake or other body of water located in the vicinity of the storage area, fire department drafting connections should be provided in accordance with the fire department's response plan.

3.3 All water supply systems should be approved by the responsible local authority (fire marshal, fire chief, etc).

3.4 Each fuel-fired vehicle operating at the storage yard should be equipped with at least one 2A10BC-rated or higher portable fire extinguisher.

4: Remote Site Reconnaissance and Information Gathering

4.1 Most large tire piles are located in remote, rural areas. Many are the product of years' of illegal dumping. Since these dumps sites are isolated and "out of site" the local fire department very often fails to consider the fire prevention issues that need to be addressed.

4.2 Aerial photography is very useful in determining the locations of tire piles. However, an on-site inspection will be necessary for determining the site's actual size. Aerial photos may not reveal the depth of the pile, especially if tires have been dumped into a ravine or pit. Photos also may not reveal stretches of tires dumped in forested or wooded areas.

4.3 Site inspections and reconnaissance should be conducted on a regular basis to determine whether the site is growing in size, to determine the composition of the pile's contents and to record changes in ecological and environmental changes associated with the pile's existence.

4.4 Fire department inspections and fire prevention records may be useful for persuading public agencies and legal entities that appropriate clean-up requirements must be set. Such records may also justify establishing such clean-up requirements.

5: Relationships with Site Owner/Operators

5.1 A significant number of major tire fires have occurred just after stepped-up regulatory or code enforcement efforts were initiated against the facility or property. Nearly all these fires were attributable to arson.

5.2 When approaching the owner/operator of a scrap tire storage or disposal site, it is strongly advised that efforts are made to assure him that the planning and fire prevention efforts are not necessarily part of any punitive action or a precursor to legal action.

5.3 Pre-fire planning and fire prevention efforts should foster a good working relationship with the facility or property owners and operators. It is important to have such a relationship established.

Chapter Three:

Size-Up

The responsibilities of the first-arriving unit or member to assume command of the incident is a fundamental concept of the Incident Command System. The company officer on the first arriving unit will need to "size-up" the scale of the incident and communicate the extent of emergency to the dispatcher and other responding units.

The officer's size-up directs the initial operations of the incident and provides the groundwork for developing an effective command system. The success of initial communications, safety, water supply, suppression and property conservation efforts will depend on accurate size-up and early coordinated actions by the first-arriving units.

Size-up is an important on-going function that does not end until the incident is resolved and fire department activities have terminated.

This chapter will address the following concerns that need to be addressed during initial size-up:

1. Identification of dangers to civilians and firefighters at the scene and potential threats to the local community.

2. The recognition of the fire as a potential hazmat incident.

3. The extent of fire involvement and its rate of spread through available fuel.

4. The location and proximity of buildings, transportation routes, utilities or other complicating exposures.

5. Recognition of immediate environmental concerns.

6. An initial estimate of the need for additional resources, apparatus and personnel.

1: Dangers to Life Safety

1.1 The first arriving units should determine whether any threats to their own safety exist. Personnel should keep a safe distance from any scene thought to be unsafe because of criminal trespassers or hostile property owners. First responders also need to assess the dangers of live wires, hazmat or environmental exposures and other possible complications.

1.2 The incident commander should tour of the site's perimeter (if possible) in order to view all angles of the fire, determine the location and rate of fire spread, amount of available fuel and the location of exposures. During this initial survey, a determination should be made whether any persons have been injured or if anyone at the site is in danger.

1.3 Nearby homes, commercial buildings or public places should be considered for evacuation depending on the amount and direction of the smoke plum.

Any area likely to be contacted by direct smoke should be evacuated as a precaution. Consider closing roads or transportation routes affected by thick smoke.

2: Recognition of the Fire as a Hazmat Incident.

2.1 The scene should be approached and sized-up as a hazmat incident. More details on this aspect are contained in Chapter Five, Health and Safety.

3: Fire Involvement and Rate of Spread

3.1 During size-up the incident commander needs to determine the amount of fuel actively burning and the total amount of fuel available. The incident commander will have to estimate the rate of spread in order to decide where fire breaks will be cut through the pile.

3.2 The composition of the pile will affect the rate and direction of fire spread. Fires occurring in piles of whole tires tend to burn down into the middle of the pile where pockets of air allow for continued combustion. In piles involving chipped or shredded tires, the fire tends to spread over the surface of the pile and then cause surface crustation, inhibiting the downward spread of fire into the pile.

3.3 Attention should be given to the significance of burning embers during size-up. Embers of scrap rubber may travel considerable distances (1/4 miles or more) and must be controlled.

3.4 During size-up the incident commander will have to determine the accessibility of sections of the pile, and will have to determine the need to create additional access points.

4: Location and Proximity of Exposures

4.1 After life safety considerations have been addressed, the fire department's second priority is property conservation. During the incident commander's initial tour of the site, the location and types of exposures should be noted.

4.2 Buildings, equipment and utilities in the proximity of the fire will need to be protected by water curtain or direct application of water by fog stream in order to lessen the effects of the intense radiant heat from burning rubber. If multiple exposures exist, the incident commander will have to prioritize their importance during size-up. Considerations of the exposures should include the possible existence of heavy fire loads, hazardous materials or vital fire fighting equipment (such as water supply pumps, etc).

4.3 The proximity of utilities, overhead and below-grade, needs to be accessed during size up. Service interruptions should be made as necessary, but consideration should be given to the impact such interruptions may have on existing fire protection systems, phone lines and other utilities.

5: Immediate Environmental Concerns

5.1 The proximity of wild lands, forested areas, bodies of water and similar natural boundaries should be noted by the incident commander during size-up.

5.2 Given the rural location of many tire piles, the potential for fire spread into wooded areas is often great. The prevention of heavy brush fire, forest fire or wild land-urban interface fire should be a very high priority. In the case of such fire spread, additional resources will be required, drawing from the already strained resources of the local fire protection agencies.

5.3 The potential for run-off into, and pollution of natural resources is a significant concern and should be addressed during size-up. If necessary, immediate efforts should be made to contain pollution from the fire and master-stream runoff.

5.4 The incident commander should size-up the potential environmental consequences of the fire and begin notifying the appropriate agencies as outlined in the pre-fire plans.

6: Additional Resources, Apparatus and Personnel

6.1 An immediate assessment for the need for additional resources and the summoning of those resources should be included in the size-up report. The early notification of allied agencies (as established in the Pre-Fire Plans) will facilitate their timely placement into the command structure and involvement in the incident.

6.2 An initial size-up report should be radioed by the incident commander so that other responding units and the controlling dispatcher understand the extent of the incident. The size-up report should include the designation of the unit(s) on the scene, a brief description of the incident, any safety concerns, a brief description of action taken, a declaration of strategy, and the location of the command post.

Chapter Four:

Establishing Control

The organization of fireground command must develop at a pace that stays ahead of the tactical deployment of personnel and resources. In order to manage a major tire fire the incident commander must be able to direct, control, and track the positions and functions of all operating companies.

An intact command structure is the most effective tool the incident commander can utilize to combat a major tire fire. The command structure should aid the incident commander in:

- Establishing overall incident objectives
- Determining appropriate strategy
- Developing action plans
- Obtaining and assigning resources
- Assigning specific objectives to tactical sectors
- Predicting outcomes
- Continually sizing-up the incident and revising plans

This chapter will address the following issues as they pertain to establishing control of a major tire fire:

1. Assigning tactical sectors and establishing a command post early in the incident.
2. Developing effective communications among fireground units, mutual aid companies and dispatch.
3. Deploying initial suppression resources to "knock-down" or contain the fire.
4. Evacuation of civilians who may potentially be in danger of exposure to smoke or other hazardous products.
5. Contacting public agencies and private contractors, and coordinating resources from outside agencies.
6. Coordinating mutual aid resources and developing accurate site information

1: Assignment of Tactical Sectors and Command Post

1.1 The incident commander will need to sector out the tactical responsibilities of the incident. Experience has shown that the following functions should be sectored, if possible, from the earliest stages:

(a) Water supply
(b) Information and communications
(c) Materials and resources
(d) Mutual aid and staging
(e) Environmental conservation
(f) Health and Safety
(g) Suppression

1.2 A command post should be established with appropriate lighting, phone and radio communications. Charts or maps of the fire ground should be posted, with the locations of apparatus, exposures and water supplies clearly marked. Personnel accountability measures should be monitored through the command post.

1.3 The command post should always remain accessible and identified, whether it is located on apparatus or in a structure. The location of the command post should be out of the way, but close enough to allow the incident commander to view of the incident.

1.4 Be prepared to move the command post if wind direct shifts, exposing personnel to the products of combustion (accurate weather forecasting is an asset).

2: Development of Communications

2.1 It is vital to the success of the operation that an effective communications system be established early in the incident, and utilized by all personnel. Hand-held and mobile radios with dedicated frequencies provide the most effective means of communications on the fireground, while cellular and fixed telephone and facsimile are useful for managing information and contacting outside agencies.

2.2 Ideally, the radio system should match the command system, limiting radio traffic to the incident commander on one primary channel, while assigning alternate channels to the various sectors for tactical operations. Personnel engaged in fire suppression or other potentially hazardous activities should remain in direct communication with personnel outside of the hazardous area, as provided for by the fire department's personnel accountability system.

2.3 Mutual aid companies and outside agencies should be included in the communications structure as needed, based on their deployment within the command system. Extra portable radios programmed to the appropriate frequency(ies) should be made available to mutual aid personnel by the communications officer. Radio communications should be articulated in clear dialogue (instead of codes) in order to avoid confusion.

2.4 The incident commander and the communications officer should anticipate the need to expand the communications system as the incident grows in size. Manufacturers, rental companies and large public safety organizations may be considered as sources for obtaining extra radios. Additionally, the need to coordinate phone, facsimile and radio resources with the Public Information Officer's responsibilities should be anticipated.

3: Deploying Initial Suppression Resources

3.1 A water supply capable of providing at least 1,000 gallons per minute (gpm) should be established for every 50,000 cubic feet or more of whole tires involved. In most areas the remote location of tire storage yards will necessitate using water tankers or other special measures.

3.2 In a major fire, it is unlikely that initial resources will be sufficient to completely control the fire. In this case the goal of initial suppression operations will be to limit fire spread and protect exposures. Radiant heat will enhance fire spread and complicate exposure control, while limiting the ability of fire fighters to approach the fire with hand lines (1 3/4 to 2 1/2 inch lines).

3.3 The intense heat created by tire fires, and the burn characteristics of rubber will lessen the effectiveness of direct water application as a cooling or suppression tactic. In general, variable gallonage - constant pressure fog nozzles are more effective than solid streams. Solid streams tend to spray off the tires without reducing the surface temperatures, and cause increased run-off while depleting water supplies more quickly.

3.4 The benefits of master streams and ladder pipes should be weighed against the potential for "pushing the fire" and the heavy taxation of water supplies. Ideally, the unburned fuel should be separated from the pile before, or as soon as, large lines are applied directly to the burning surface.

3.5 The use of wetting agents or foam additives is controversial, but generally considered being of little immediate value for fighting tire fires, especially during initial operations. The costs involved suggest the use of such additives may be efficient only for exposure control.

4: Evacuation of Civilians

4.1 Evacuation of civilians, as a life safety consideration, should be considered as a highest priority by the incident commander. No strategy for managing the incident should by-pass evacuation considerations. Since burning tires are extremely difficult to

extinguish, the incident commander should not attempt to “beat the clock” - make early evacuations a higher priority.

4.2 Areas subject to evacuation should be anticipated during the pre-fire planning process. Any areas exposed to the smoke plum, or subject to such exposure from shifting winds, should be evacuated as a precaution.

4.3 The staging locations for evacuees should be identified during the pre-fire planning process. The time needed to conduct the evacuations in an orderly manner should be considered and factored into calculations for transportation requirements. Liaison with law enforcement and emergency preparedness organizations will be necessary to facilitate this activity. Medical and health care agencies should also be involved to assist the elderly, especially if the evacuation time is prolonged.

4.4 No evacuees should be allowed to return to the vicinity until environmental monitoring has been performed by the appropriate authorities and the area is deemed safe and habitable.

5: Coordinating Public Agencies and Private Contractors

5.1 Public agencies and private contractors, as identified in the pre-fire plans, should be contacted in the earliest possible stages of the incident. If the resources of a given agency or company are not needed initially, those agencies should still be placed on “stand-by” since the fire may progress to larger proportions than expected.

5.2 Agencies or companies should be contacted by the resource sector commander via phone or facsimile. Notes or recordings should be made to list the specific services each agency can offer, with an anticipated time of arrival for each item. If possible, each outside organization should be given a specific assignment, a point of contact and any pertinent incident information prior to their arrival on the fireground. If possible, all meetings and transactions with outside representatives should be recorded in order to clarify any conflicts that arise after the incident.

5.3 Private contractors expected to participate in fire suppression activities, such as tractor operators, will need to be trained in the use of fire fighting personal protective clothing and gear, including self-contained breathing apparatus. Provisions should also be made for earth-moving equipment to accommodate SCBA cylinders or other such equipment in a way that will not restrict the operator.

5.4 The resources or services available from each outside organization should be communicated to the incident commander in a concise and systematic manner. The resource sector will have to “weed out” extraneous information and well-meant but unnecessary contributions.

6: Mutual Aid Resources and Site Information

6.1 The command sector responsible for coordinating mutual aid companies should be established as soon as the call for mutual aid is issued. In the case of large fires the sector commander should anticipate the influx of a great number of personnel and resources from other departments, and realize that mutual aid companies will require direction and management from the moment they arrive.

6.2 Directions to the incident should be marked along the major transportation routes for incoming mutual aid companies. Signs, flares or other means can be used effectively for this purpose. A staging area should be established and clearly designated; all incoming units should report to the staging area before receiving assignments on the fireground.

6.3 All incoming mutual aid companies and outside organizations should be directed to report in to the mutual aid sector commander. During sign-in, each company should indicate - on a chart - information such as:

(a) The individual in charge of the group
(b) Types of apparatus or equipment
(c) The number of personnel
(d) Levels of training
(e) How long they will commit to the incident
(f) Any special needs

6.4 The mutual aid commander should assign specific tasks to individual mutual aid teams, as directed by the incident commander. Each team operating on the fireground should be provided with maps, charts or other materials which convey information about the size and extent of the fire, and indicate where command, rehab, water supply and other sectors are located.

6.5 Radios or protective equipment may need to be distributed to ensure the mutual aid companies are properly protected and accounted for. Consideration may be given to assigning one local fire department member to each mutual aid company to improve communications and coordinate fireground activities.

6.6 Mutual aid companies may require food, shelter and rehabilitation services nearly immediately upon arrival. Consideration should be given by the mutual aid sector commander to addressing these needs.

Chapter Five:

Health and Safety

Scrap tire fires present a number of uncommon dangers to the health and safety of fire fighters, in part due to the lack of experience most fire fighters and fire officers have in dealing with such incidents. The potentially hazardous effects of rubber fire emissions, the physical exertion required to fight such fires, the intense heat and the often unsanitary conditions of dumps all present unique dangers to fire fighters that need to be recognized as priority health and safety concerns.

National and local safety standards such as those contained NFPA 1500 and OSHA/EPA Rules and Regulations should constitute the fundamental base of fire department safety operations, and should be applied to all operations, including those commencing at tire fires.

This chapter will discuss the following health and safety concerns in fighting tire fires:

1. Understanding the hazardous elements of scrap tire burn emissions and the appropriate development of hazmat procedures.

2. Establishing appropriate levels of protection for personnel operating on the fireground.

3. Rehabilitation and rotation of personnel and maintaining accountability of all members.

4. Safe procedures for use and maintenance of fire fighting and earth-moving equipment.

5. Recognizing the dangers posed by snakes, rodents and insects living in tire and rubber dumps.

1: Hazardous Emissions and Hazmat Procedures

1.1 As the tire fire grows in intensity, it generates higher temperatures and voluminous amounts of thick, black acrid smoke. The plume (smoke column) may become even denser due to the accumulation of hydrocarbon pools.

1.2 Rubber has a heating value of 15,000 BTU's per pound, which is similar to petroleum. However, as combustion becomes less complete, the amount of organics emitted tends to increase. This suggests that smoldering tires may present more danger than those fully involved.

1.3 Studies of tire fires have identified the emission of significant quantities of bezo(a)pyrene, a reported carcinogen, and high emissions of other noxious compounds, particularly benzene (another known carcinogen), with concentrations often exceeding 1 part per million (ppm). Additional discussion of the burn characteristics are presented in Chapter Seven, Environmental Concerns.

1.4 Given the potential health and safety dangers of tire fires, the incident commander should enact all appropriate hazmat procedures, to include sealing off the areas with well-marked hot, warm and cool zones. Each zone should be clearly marked with fire-line tape, cones or other highly visible means. Personnel entering the hot zone should be equipped with appropriate personal protective gear, as described in section 2 of this chapter.

1.5 Sanitation facilities (soap and water) should be provided for decontamination of personnel exiting the hot and warm zones. Soaked or heavily exposed gear should be dropped by fire fighters in the warm zone and decontaminated before re-use.

2: Establishing Appropriate Levels of Protection

2.1 Personal protective clothing (turn-out gear) and self-contained breathing apparatus (SCBA) meeting NFPA standards should be worn by all personnel working in or exposed to the products of combustion. All non-fire department personnel similarly exposed to the products of combustion should be provided with turnout gear and SCBA, and the appropriate training required to use that gear.

2.2 Respiratory equipment for heavy machine operators should be provided. This may be best accomplished by affixing brackets in the cab of the vehicles for holding air cylinders.

2.3 If it rains during the incident, it is likely that a "black rain" will cover personnel and equipment below the area of the smoke plum. Since this rain contains potentially hazardous organic compounds from the smoke, full turnout clothing should be worn by all personnel. Decontamination of personnel and equipment from this residual should be a health and safety priority.

3: Rehabilitation, Rotation and Accountability of Personnel

3.1 All personnel operating on the fireground should be accounted for at all times by command. All personnel should be monitored for exposure times, time on task and last period of rest. It is advisable for the incident commander to assign safety officers early in the incident to monitor these and other areas.

3.2 Prolonged tire fires will require a great deal of physical exertion on behalf of the fire fighters. Therefore, personnel should be regularly rotated with only limited work time in the hot zone. This amount of time should be based on the hazardous products risk and task to be performed. Personnel should then be assigned to a rest and rehabilitation sector where food, water and medical evaluations are available.

3.3 Command should regularly rotate and relieve personnel, and limit operational time of personnel at the incident scene. During the briefing process, specific rotation time lines should be given - this aids in scheduling, rehabilitation and health (environmental) monitoring.

3.4 In many past incidents the first responding fire fighters were volunteers, with regular jobs and other commitments that limited the ability of the fire department to maintain the staffing levels needed to develop rotating shifts. Extra assistance may be needed, but in no case should the health and safety of fire fighters be risked by under-staffing particular tasks or skipping proper rest and rehabilitation.

4. Use and Maintenance of Equipment.

4.1 Most equipment, including SCBA, should be decontaminated after removal from the hot zone and before re-use. Although on-site cleaning of turnout gear is not usually necessary (unless the gear is soaked or heavily soiled with residual), all gear used during the fire should be professionally cleaned after the incident and before storage in the fire station or private residences.

4.2 Multiple sets of turnout gear and equipment, including SCBA, should be provided to replace equipment that becomes soaked, contaminated or otherwise rendered not appropriate for service.

4.3 Respiratory equipment for heavy machine operators should be provided. This may be best accomplished by affixing brackets in the cab of the vehicles for holding air cylinders.

4.4 Safe operating zones around the paths of heavy equipment and machinery should be provided; a guide person on the ground and radio communications with operators is useful.

4.5 Dangerous conditions (ie; working in the proximity of moving equipment, tripping hazards from wire rings, unstable footing) on the scene dictate that operations be conducted with adequate visibility; if lighting cannot be provided during darkness, serious consideration should be given to suspending night operations.

5: Snakes, Rodents and Insects

5.1 Scrap tire piles are breeding grounds for millions of mosquitoes, rodents and snakes. Personnel may need special protection from fleeing rodents and reptiles or insects. Food preparation facilities should be enclosed.

Chapter Six:

Suppression Tactics

Conventional fire suppression tactics are not completely effective in scrap tire fires. It is difficult to reach all the burning surfaces, and the unique shape of tires allows the storage of enough air to support combustion throughout the pile. Because of these complications tire fires can burn for weeks, and even months despite aggressive fire suppression tactics.

The environmental consequences of all suppression techniques should be evaluated carefully. Communications between the incident commander and on-scene environmental specialists is critical.

This chapter will discuss the following fire suppression issues:

1. Tactics and strategy.

2. Protection of exposures, including outbuildings, unburned tires and fire fighting equipment.

3. Reconnaissance of "hot spots" and fire spread during the incident.

1: Tactics and Strategy

1.1 A major objective will be to separate the unburned fuel (tires) from the burning fuel; let that which is burning burn as freely as possible while continuing efforts to separate fuel from the fire. Utilization of entrained air may be helpful in ensuring a more complete combustion process - though it is untested at present. Establishment of an anticipated control point to stop fire spread is an important strategy.

1.2 The use of heavy equipment such as front-end loaders, track excavators (CAT 225 with long-reach boom) and mid-size dozers are necessary in gaining access and removing unburned tires from the pile. Burning sections of rubber can be pulled off the pile, isolated and effectively extinguished using hand lines set on fog pattern - or can be submerged in a large drop tank or depression filled with water.

1.3 The intense heat created by tire fires, and the burn characteristics of rubber will lessen the effectiveness of direct water application as a cooling or suppression tactic. However, once the decision is made to mount a conventional water-attack on the fire, variable gallonage - constant pressure fog nozzles are more effective than solid streams.

1.4 Solid streams tend to spray off the tires without reducing the surface temperatures, and cause increased run-off while depleting water supplies more quickly. The use of air tankers for water and retardant drops have not proven to be of any significant value.

1.5 The benefits of master streams and ladder pipes should be weighed against the potential for "pushing the fire" and the heavy taxation of water supplies. Ideally, the unburned fuel should be separated from the pile before, or as soon as, large lines are applied directly to the burning surface. The fire should be attacked from the windward side.

1.6 The use of wetting agents or foam additives is controversial, but generally considered to be of little immediate value for fighting tire fires. The costs involved suggest the use of such additives may be efficient only for exposure control.

1.7 In many cases the only effective means of managing major tire fires is by smothering the burning portions with dirt or fill material. However, even when completely covered, it is estimated tire fires can continue to smolder deep in the base of the pile for weeks, requiring continued observation and environmental monitoring.

1.8 It may be necessary to create firebreaks and alternative access points into the storage area and through the pile. Firebreaks should be cleared to a width of at least 60 feet, and if high wind is a factor lane width should be increased accordingly.

1.9 Fire fighters operating atop the pile should be provided stable platforms on which to stand, since the piles tend to be unstable. Wooden pallets are lightweight, easy to obtain and work well for this purpose. It may also be feasible to mount monitor lines to heavy pallets.

2: Protection of Exposures

2.1 Buildings, equipment and other exposures should be protected with direct application of water, possibly mixed with foam or other water additives. Fog patterns use less water, resulting in less run-off and reducing potential soil contamination.

2.2 Equipment operating in the proximity of the fire or in avenues of fire spread should be protected with hose lines. Appropriate size wreckers should also be near-by to quickly remove stuck apparatus or heavy machinery.

3: Reconnaissance of "Hot Spots" and Fire Spread

3.1 Since size-up will continue throughout the incident, accurate information gathering is essential. Owing to the size of some tire piles, the ability of fire fighters to gauge the amount and location of fire using conventional methods is severely limited.

3.2 It may be very difficult for the incident commander to gauge the fire's location, rate of spread and extension within the pile. The most effective way of tracking "hot spots" is aerial reconnaissance and photography, using both regular and infrared (IR) film. IR film will show hot spots below the surface of the pile and below the cover of dirt or fill material. Aerial photos also make excellent maps for suppression and control sectors.

3.3 Fire department reconnaissance efforts should also include monitoring of environmental exposures, including pollution of water and soil near the site. Weather conditions and forecasts should also be monitored by command to anticipate problems associated with wind, extreme temperatures and rain.

Chapter Seven:

Environmental Concerns

Fire departments are playing an increasingly greater role in the protection of the environment through hazardous materials emergency response and control operations. Scrap tire piles, both before and after a fire, generally have not been categorized as a hazardous material, though they do present a threat to the environment - particularly when being pyrolitically decomposed through fire.

It is important to involve environmental protection officials in all phases of fire department operations - planning and emergency operations - so that their expert advice can be considered by fireground commanders as decisions are made on the management of the incident. It is important to remember that the residual products from the fire become the concern, and often become the responsibility of state and federal environmental protection agencies. It is therefore appropriate to seek out and carefully consider those officials' recommendations in the formulation of operational plans.

This chapter will highlight the following issues environmental concerns that the incident commander should consider in deciding on courses of action or in implementing operational plans:

1. What happens when a tire burns
2. Tire Composition and Decomposition Products
3. Scrap Tire Pile Burn Characteristics
4. Environmental priorities of the fire department

1: What Happens When a Tire Burns

1.1 Scrap tires are not subject to spontaneous combustion. Under high temperature and controlled conditions found in certain industrial furnaces and boilers (cement kilns, paper and pulp mills and coal-fired utilities) complete combustion of scrap tires produce useful energy, oxides of carbon, sulfur and nitrogen, water, and inert residues. Conversely, uncontrolled burning of tire, such as in "open field" scrap tire pile fires produces incomplete combustion products and the release of dense smoke, a wide

range of pyrolytic hydrocarbons and ash residues that can pose environmental and human health concerns.

1.2 Analyses of emissions, oil runoff and ash from scrap tire pile fires have been reported for a number of scrap tire pile fire sites. Reports of some scrap tire fire episodes may be obtained from the Scrap Tire Management Council and U.S. Environmental Protection Agency, as well as other sources.

1.3 Generally, the cost of recovery after a scrap tire pile fire episode is extremely high and argues favorably for fire prevention measures and appropriate scrap tire storage standards to minimize the risk to fire fighters and adverse human health and environmental effects.

2: Tire Composition and Decomposition Products

2.1 Tires composition varies with the type and manufacturer but typically contains natural and synthetic rubber polymers, oil, fillers, sulfur and sulfur compounds, phenolic resin, clay, aromatic, naphthenic and paraffinic oil, fabric, petroleum waxes, pigments such as zinc oxide and titanium dioxide, carbon black, fatty acids, inert materials and fiber made from steel, nylon, polyester or rayon.

2.2 A wide variety of decomposition products are generated during scrap tire fires. Many of the decomposition products have been characterized in test burns and include ash (carbon, zinc oxide, titanium dioxide, silicon dioxides, etc.), sulfur compounds (carbon disulfide, sulfur dioxide, hydrogen sulfide), polynuclear aromatic hydrocarbons usually detected in oil runoff (such as benzo(a)pyrene, chrysene, benzo(a)anthracene, etc), aromatic, naphthenic and paraffinic oils, oxides of carbon and nitrogen, particulates and various aromatic hydrocarbons including toluene, xylene, benzene, etc. These decomposition products are extensive and varied depending on a variety of factors such as tire type, burn rate, pile size, ambient temperature and humidity, among others.

3: Scrap Tire Pile Burn Characteristics

3.1 Scrap tire pile burn characteristics has been studied and can be divided into stages such as ignition and propagation, compression, equilibrium and pyrolysis.

3.2 Ignition and Propagation Stage: Scrap tire piles require an accelerant to create enough sustained heat in order to emit flammable vapors. According to the laws of combustion for solids, solids must pass through a liquid to gas phase prior to open flame occurrence. Scrap tires do not readily show this liquid to gas phasing during their decomposition. In the open air, scrap tires decompose and form flammable vapors at temperatures around 538 Centigrade (C).

3.3 Once a scrap tire pile has gained an open flame front and elevated temperatures are applied to a fairly large area with constant radiant heat flow, tires not actually in the open flame stage decompose at a fairly rapid rate at temperatures as low as 210 C. Thus, those tires directly in the path of the radiant heat flow decompose at a faster rate than those upwind of the open flame.

3.4 Once ignited, a tire pile initially propagates at about two square feet per minute to a depth of about two cubic feet every five minutes, all in the windward direction. During this initial phase, the fire has little forward pressure and no downward pressure as most of the heat is being absorbed by the surrounding tires. In large piles the propagation effect is accelerated after the first ten minutes to approximately one-half time.

3.5 Compression Phase: After the first several minutes of the fire, the top layers of tires collapse into strips (some of the tires are shredding and a few lose their round shape and begin to flatten out). This is the beginning of the tire pile compression effect. During this phase and spread of the fire, the heat and smoke effect increase dramatically. Open flaming and forward pressure is produced (the tires are converting into flammable gas at a much higher rate resulting in increasing radiant heat flow). As the tire pile fire grows in intensity, it generates higher temperatures and voluminous amounts of smoke. Smoke from the unburned products of combustion is the greatest during this phase.

3.6 A greater potential for harmful organic emissions exist at lower burn rates. Although it is difficult to isolate consistent trends in the types and amounts of specific volatile organic compounds formed during combustion of scrap tires under varied burn rates, the potentially harmful products of incomplete combustion emitted into the atmosphere are mainly polyaromatic hydrocarbons. In general, as the burn rate increases, the amount of carbon monoxide (CO), sulfur monoxide and unburned hydrocarbons also increases. As the burn rate decreases, the amount of organics potentially emitted tends to increase with respect to the amount of tire material combusted.

3.7 The U.S. Environmental Protection Agency examined emissions from simulated open burning of scrap tires. During high burn rates, more than 50 potentially harmful organic compounds can be identified in test burn emissions. Most of the compounds are aliphatically, olefinically or acetylenically substituted aromatics. Cyclic and chained alkanes, alkenes, dienes as well as sulfonated, nitrogenated compounds, thiophene, substituted thiophenes, isocyanobenzene and benzodiazine are also identified.

3.8 Results of the EPA study show reasonable agreement with compounds were identified in actual plume samples. In general, elevated levels of CO, particulates, carbon, zinc, benzene, toluene, xylene and polyaromatic hydrocarbons are measured. Polynuclear aromatic hydrocarbons may include naphthalene, benzo(a)pyrene, pyrene,

crysene, fluorene, anthracene and phenanthrene. Metals in plumes consist primarily of lead, iron and zinc.

3.9 In very large tire piles, the initial compression stage is the time when the surrounding air cannot quickly absorb the heat flow from the fire. At this point there is very little downward pressure. The tire fire is basically an open breathing fire with uneven and incomplete combustion. The heat output in BTUs per square foot is relatively low because the fire is not very deep seated (most of the tires are still in a doughnut shape). The actual temperature is near the ignition temperature and heat output is approximately 60 BTUs per square foot per minute.

3.10 In large high-piled tires it is important to be aware that within thirty minutes to one hour these piles will start to collapse in on themselves. In low piles, the tendency is to convert much of the fuel within the first hour, so the sequence, fire effect and temperature are different. In large collapsing tire piles the situation changes over time.

3.11 Several hours after the fire starts a visible collapse of the pile begins. Compression causes the open fame to slow as the internal portion of the fire receives less air. The pile continues to collapse building downward pressure and continuing to form a semi-solid mass of rubber, cord and steel. At the same time, an equilibrium is starting to occur.

3.13 Equilibrium and Pyrolysis Stage: The fire takes on an appearance of low open flame, deep seated internal fire with a top coating of ash. The fire has taken on a chemical equilibrium or it has reached a level of fuel conversion approximately equal to the amount of fuel, heat and oxygen available. The temperature internally increases up to 1100 C and eventually will reach 460 BTUs per square foot per minute.

3.14 Initially the pile has about 60 BTUs per square foot, even on high piles, however, even though the pile has collapsed inward and decreased in depth the overall heat that must be removed for extinguishment is now greater. Based on 460 BTUs per square foot per minute, the rate of heat removal required has not increased to 5520 per cubic foot of deep-seated fire. Tire fires in this stage consume their fuel much more slowly and completely.

3.15 The downward pressure pushes oil out of the fire and possibly into the ground, water and other areas depending on the location of the fire. Large amounts of pyrolytic oil can be produced during a scrap tire pile fire depending on the burn characteristics and amount of tires in the pile. The extent of environmental damage will vary and depends upon many environmental such as soil characteristics and type, permeability, level of water column etc. The reader is encouraged to consult the U.S. Environmental Protection Agency for detailed information on steps that can be taken to minimize the adverse effects to the environment.

3.16 Based upon the nature of the constituents found in the oil, steps should be taken to collect oil runoff and handled as hazardous waste oil. Analysis of oil samples collected from the scrap tire pile fire sites vary but typically reveal the presence of heavy metals (arsenic, cadmium, chromium, lead) and polynuclear aromatic hydrocarbons (naphthalene, acenaphthylene, fluorene, phenanthrene, anthracene, fluroanthene, pyrene, chrsene, benzo(a)pyrene, benzo (a)anthracene).

3.17 Contaminate run-off water due to the fire fighting and rain should be contained and treated. Water runoff sample analysis shows heavy metals, cyanide and polynuclear aromatic hydrocarbons. Surface water and groundwater near the tire fire site may become contaminated with benzene, toluene and xylene as well as zinc, phenol, ammonia and other compounds.

3.18 Tire residue contains partially combusted tires, ash, steel and thousands of individual chemical compounds. An analysis of residues from some tire fire sites has revealed the presence of heavy metals and organics including benzene, styrene, toluene, xylene, and polyaromatic hydrocarbons. The residue should be evaluated to determine appropriate disposal procedures. Of the environmental considerations should be the leaching of chemical compounds that can potentially contaminate soil and ground water.

3.19 As the fire burns itself out, the high piles show a marked decrease in fire propagation at the edges with decreasing temperatures while internally the temperatures remain very high. If the fire is opened it become hazardous with high emission rate of fire gasses which flash up at high speed when involved with increase oxygen.

4: The Environmental Role of the Fire Department

4.1 Early notification of environmental protection agencies at the local, state and federal levels is critical. Risk communication and threat assessments should be coordinated between fireground commanders and environmental specialists. The input from these officials should be sought in developing strategic and tactical alternatives and determining operational plans.

4.2 Environmental contamination must be monitored for groundwater, surface water, soil and air contamination or pollution. The results of this monitoring data should aid commanders in making decisions on evacuation, diking and possible neutralization of contaminants. Generally, environmental agency personnel have the capability or can acquire the capability to initiate such monitoring or sampling and interpret the data from such processes.

4.3 Changing climatic conditions will significantly affect environmental considerations. It is therefore important to monitor ambient conditions on and around the incident site.

4.4 Containment and diking of run-off may be important. There are a variety of containment systems that can be deployed with speed at the scene. In one incident the fire department stacked columns of tires along side each other, covered with tarps and soil to form a dike. Hydrocarbons (oil) can be skimmed off runoff and the residual water recycled for use on the incident.

4.5 There will be great concern over the polluting of the air primarily due to the highly visible, thick, black smoke plume from the fire. This is a short-term problem. The longer-term problems are in groundwater, surface water and soil contamination.

4.6 Some state, and most federal environmental protection agency representatives have pre-authorized spending authority to mitigate environmental damage (for example, USEPA has a method to reimburse local governments that respond to tire fire incidents, up to $25,000 for each incident).

4.7 State and federal EPA offices have environmental waste recovery and removal firms on retainers which they are authorized to summon to assist at incidents of this type. They can significantly reduce the costs to local governments through cost avoidance and the early deployment of specialized resources.

Chapter Eight:

Public Relations and Information

Model incident management systems call for the designation of a public information officer (PIO) or incident information officer (IIO) whose duties and responsibilities are well defined. These designated officers formulate and release information about the incident to the news media and other appropriate agencies and organizations. As a member of the command staff, the PIO or IIO closely coordinates the release of information with the incident commander.

The size, high-visibility and widespread effect major scrap tire fires have on local communities often turns them into significant media events with national coverage. The proper management of the media is important both in building a positive image for the fire department and its operations at the incident and minimizing the impact on operating forces of reporters on the scene.

This chapter will address the following considerations in managing incident information dissemination:

1. Developing an information distribution system

2. Responding to the needs of reporters and press

1: Developing an Information Distribution System

1.1 A PIO or IIO should be designated in the earliest stages of the incident. Press staging areas should be designated and communicated to communications center personnel, law enforcement agencies and subordinate commanders so media personnel can be diverted or escorted to that specific area.

1.2 Adequate support staff for the information officers should be maintained as the incident grows. “Hot lines” or separate telephone lines should be established early in the incident for both the media and members of the public to call for information about the incident, to clarify evacuation instructions, etc. Such “hot lines” will greatly relieve the communications center personnel of the added burden presented by thousands of calls for information. These numbers should be well publicized.

1.3 Information should be prepared in advance of the incident and be appropriately released as the incident unfolds. When these incidents extend into days or weeks, a rotation plan will need to be established for information officers to ensure continuity in the management of the media.

1.4 It will be necessary to distribute information on the status of regulatory, code enforcement and hazard abatement activities by local or state governments, as media interest will quickly focus on that aspect.

1.5 Interviews with local public officials should be coordinated by the information officer, and special briefings should be given to the local official by the information officer prior to the interview.

2: Responding to Reporters and the Press

2.1 Formal credentialing and identification at the local level may be of assistance in limiting the numbers of media personnel who will be given escorted access to the scene.

2.2 The PIO should be cognizant of publication and production deadlines of the media providing coverage and arrange briefings to accommodate their needs as much as possible. Media personnel may also require access to telephones and information on local accommodations while covering the incident.

2.3 Written press releases should be prepared and distributed. Briefings should be given at regular publicized intervals to reduce the barrage of requests for interviews and information. The PIO should be truthful and honest in all releases and statements. If the PIO does not have an answer, that should be stated and an answer obtained as soon as possible. The PIO should avoid saying “no comment.”

2.4 Photo and video opportunities should be provided regularly for members of the media. All trips into and out of the incident operational area should be fully escorted by the information officer and law enforcement.

2.5 The PIO should respond to and dispel rumor and innuendo; the fire department should follow up taped or live interviews with a written statement of the actual facts of the situation. All fire department command personnel should maintain a positive, professional demeanor, especially in the presence of the press.