

Bristolville Oil Spill Burn Safety Plan

1. ISB SITE DESCRIPTION¹

	NO	YES	
A. Geographic Location of Burn Site(s):	N/A	N/A	Mahan Denman Rd. Bristolville, Oh
B. Hazards:			Oil Type: (See General Site Safety Plan) Burn Promoters: (If yes, attach an MSDS) Combustion by-products: (See Section ----) Heat/Flame: (See Section ---)
C. Weather Conditions: (used to determine trajectory of boom sweep and smoke plume)	NA	NA	Wind velocity/direction: 5-15 knots/North Current velocity/direction:
D. Population Centers: Indicate demographic information -- e.g., urban (or rural; residential or industrial)		X	Rural
E. Sensitive Areas: (e.g., endangered species habitat, cultural/historical resource)		X	All is private property, Sensitive Species (Indiana Bat, Massasauga Rattlesnake, Bald Eagles) Site was surveyed for the rattlesnakes and it was determined to not be a good habitat for them.
F. Secondary Fuels Sources: (e.g., nearby oil storage facility, pipeline, or vegetation)		X	Grass, Trees, Etc. Establish a safe zone and designate as off limits to burning operations
G. Secondary Sources of Ignition: (e.g., flares)	X		Dry Hay Establish a safe zone and designate as off limits to burning operations
H. Map: Attachment #___	X		See General Site Safety Plan
I. Medical Emergencies: (ISB-Related)	First Aid : Staging area Hospital Name: See General Site Safety Plan Phone: See General Site Safety Plan Has the hospital been contacted to verify whether burn and/or smoke inhalation victims can be handled? Yes Doctor: E/R		

¹ Refer to the general site safety plan for entire spill location.

2. BURN OBJECTIVES

All work shall be conducted in accordance with procedures established during pre-burn briefings and below.

ISB operations:

To remove oil stained vegetation as completely as possible and clearing out vegetation to allow better access to any problems areas that continue to produce a large amount of sheen.

Detailed objectives will be developed daily as part of the overall burn plan described in Section 4.1 of this plan (or refer to the applicable burn operations plan). Daily objectives will be communicated to personnel during the pre-departure safety briefing

3. RESPONSE ORGANIZATION

3.1 **Contact List:** See Annex B.

3.2 **Personnel Responsibilities:** The following subsections describe personnel responsibilities for burn operations with respect to safety:

3.2.1 **Burn Coordinator** provides the coordination link between all burn operations and the FOSC.

3.2.2 **Burn Safety Officer.** The responsibilities of the Burn Safety Officer for ISB operations include (but are not limited to):

- Ensuring worker health and safety during burn operations;
- Conducting pre-burn safety briefing on operational procedures and goals;
- Identifying potential emergencies;
- Explaining emergency communication protocols and emergency burn-termination criteria;
- Coordinating implementation of this plan;
- Maintaining this plan and providing daily updates (as needed);
- Acting as liaison with Site Safety Officers from other organizations participating in the response effort; and
- Reporting to the FOSC via the Burn Coordinator.

3.2.3 **Burn Technicians.** While wearing appropriate PPE, and using approved equipment conduct burning operations in accordance with this plan.

4. BURN AREA CONTROL

4.1 **Burn Plan:**

- Burn Feasibility: **With low water, relative dry conditions, and 5-15 knot winds.**
- Operational checklists:
 - Dry hay, Propane, torches on site and ready for use.**
 - Bristolville FD on site with 2 brush fire fighting setups**
 - Personnel are dressed in appropriate PPE for assigned task.**
 - FD contains fire in predetermined area and prevents uncontrolled spread for fire.**
 - **Allow fire to burn itself out due to lack of fuel.**
 - **When determined by FOSC, police area to ensure that there are no hot spots that could reignite when unattended.**
- Action plan: **method to start and sustain fire will be to spread dry hay through our area to be burned, and then ignite with propane torches. Weather forecast for 14 May 13, is Mostly Cloudy with 0% rain and winds 7-9 mph S-SSW.**

- Burn termination criteria: **Should worker or public health be threatened.**

4.2 **Site Control:** Anyone entering or departing a burn area, or associated control zones, reports to the Burn Safety Officer. All persons entering the burn area must subscribe to this portion of the approved Site Safety and Health Plan by signature. All personnel will have adequate training on insitu burn operations, and on hazardous waste operations safety and health (see Section 12 for training requirements).

4.3 **Traffic Control:** Movement of non-response vehicles in the vicinity of the burn should not be affected due to the location of the burn.

4.4 **Vessel Location:** N/A.

4.5 **Igniters: Manually operated propane torches will be used to start and sustain the burn.**

Ignition Safety: Ignition of the oil slick should receive careful consideration. Weather and water conditions should be kept in mind, and proper safety distances adhered to at all times. Given the range of igniter types and ignition methods, manufacturer specifications for proper deployment will be followed.

4.5.1 **Hand-held Igniter Systems:** The person deploying the hand-held igniter will be trained in the use of the igniter. Follow safety recommendations of manufacturer.

Type of Igniter: **Propane Torch**

Additives: N/A

Manufacturer: _____

Point of Contact: **Ed Kiernicki 586-2546-2321**

Attach an MSDS for additives and igniter contents.

4.6 **Premature and Secondary Ignition Sources:** Proper consideration must be given to the proximity of potential ignition sources up until the time of deliberate ignition. Also, before deliberate ignition, the wind direction and Speed will be considered to ensure that no one is within or near any potential large concentrations of vapors which might flash upon ignition. Ignition should commence from an appropriately safe distance. Monitoring should be considered to rule out unintentional ignition.

4.7 **“Go/No Go” Policy:** The organization must ensure delegation of authority of veto power, prior to ignition. FOSC, Bristolville Fire Chief and safety officer can veto the commencement or continuation of the burn based upon safety concerns within each area of responsibility. Each commander must ensure that all personnel are in the correct and safe place and that all equipment is in proper working order before ignition of the burn. **If an emergency situation arises after ignition of the burn, FOSC, Bristolville Fire Chief and safety officer can terminate the burn by following emergency communication procedures (see Section 8.3.1.2).**

4.8 **Termination of Burn:** In most circumstances, the FOSC should plan to allow the fire to burn to completion once it has ignited. However, premature termination of a burn may be necessary if worker and public health is threatened due to a wind or weather shift, or a secondary ignition of another source is a possibility. The Fire Department can extinguish the fire with their brush fire fighting gear. Refer to the applicable burn operations plan for more detail on terminating a burn.

4.9 **Pre-Ignition Checks**

1. FOSC gives final approval to burn.

2. Burn safety officer reiterates the locations of safe areas where personnel can retreat and regroup, should an emergency arise.

Fire should be ignited only after all pre-burn checks and requirements, as outlined in the FOSC approval applications and operational checklists, are met.

(Refer to Annex C or the burn operations plan for detailed burn operations.)

5. HAZARD EVALUATION

5.1 Airborne Particulates: Considered by most experts to be the main airborne health hazard associated with in-situ burn emissions, particulates are small pieces of solid carbon or liquid hydrocarbon suspended in the air. Particulate matter is a by-product of incomplete combustion. Hazard Description: Particulates less than 10 microns (millionths of a meter) in diameter can reach the deep portion of the lungs (the critical gas exchange area) and become a burden on the respiratory system. Thus the air quality standards are expressed as a fraction of particulates smaller than 10 microns in diameter (annotated as PM-10). The median size of particulates in the smoke from oil fires is 0.5 microns, posing a definite hazard to respiration. Studies show that the ground level concentrations of PM-10 nearby in-situ burn events usually remain below safety levels (except for the area directly in the smoke plume). For most people, exposure to inert particulates becomes a problem only at high concentrations. However, sensitive individuals may develop problems at levels much lower than that.

Permissible Exposure Limits (PEL) for PM-10: For response personnel, the following exposure limits apply: OSHA PEL: 15 milligrams per cubic meter (mg/m³) total particulate 8 hour mean 5 mg/m³ respirable particulates (PM-10) 8 hour mean Symptoms of Overexposure : Excessive PM-10 will burden the respiratory tract and cause breathing difficulties. Basic Precautions: Using respirators and eye protection suitable for protection from particulate matter will reduce exposure. The best precaution, however, is to avoid overexposure altogether. Keep personnel out of the smoke plume. For hazards associated with other burn emissions constituents, refer to Annex D.

5.2 Environmental Monitoring for Chemical Hazards:

To ensure the health and safety of responders, the site safety plan must restrict all responders from entering the smoke plume or from approaching the fire perimeter. Data analyzed from the Newfoundland Offshore Burn Experiment (NOBE) demonstrated that PM-10 levels were low upwind and outside of the smoke plume. Until further experience is gained, however, it is strongly recommended that PM-10 levels be monitored for worker's health and safety

Even though data on other ISB gaseous emissions suggest that concentrations do not seem to pose a risk if responders remain safe distances and upwind from the burn, concentrations of carbon dioxide are high at ground levels close to the burn. If for some reason, a responder must move close-in to the burn, proper personal protection equipment and monitoring must be administered. Additionally, a multiple burn scenario has not been tested. Should multiple burns be proposed, sampling for other hazards such as carbon monoxide, carbon dioxide, and polynuclear aromatic hydrocarbons, in addition to PM-10, is highly advised. The following monitoring may be conducted; if used, monitoring equipment will be calibrated and maintained in accordance with the manufacturer's instructions (electronic equipment will be calibrated before each day's use):

INSTRUMENT	FREQUENCY
<input checked="" type="checkbox"/> Combustible gas	<input checked="" type="checkbox"/> continuous, <input type="checkbox"/> hourly, <input type="checkbox"/> daily, Other:
<input checked="" type="checkbox"/> WBGT/heat stress	<input checked="" type="checkbox"/> continuous, <input type="checkbox"/> hourly, <input type="checkbox"/> daily, Other:
<input checked="" type="checkbox"/> Particulate Monitors	<input checked="" type="checkbox"/> continuous, <input type="checkbox"/> hourly, <input type="checkbox"/> daily, Other:

Zones of potentially hazardous substances may be encountered based upon wind and weather patterns. Projected extent and direction of plume of oil vapors prior to burn and smoke plume during the burn (along with any other applicable hazards found during the site survey) will be marked on the attached site maps.

5.3 Burn Hazards

Although safe practices should eliminate the possibility of a responder getting burned during an ISB, contingencies for such a scenario must be identified. Depending on the severity of the burn, damage inflicted will vary from superficial reddening of the skin to extensive surface blistering and death of underlying tissues. However serious, the correct first aid treatment is to cover the burnt surface with loosely applied, dry, sterile dressings. To reduce the dangers of infection, handling the burnt area must be reduced to a minimum and any temptation to clean its surface resisted. All burns of more than a trivial nature should be referred to the hospital.

5.4 Other Hazards:

Heat Proximity: Exposure of personnel to uncomfortable or dangerous levels of heat can be minimized or eliminated with proper considerations for personnel placement during a burn. Personnel should come no closer than five fire diameters for any extended length of time.

Heat Stress: In an in-situ burn event, the combination of hot weather and flame radiation can pose potentially dangerous situations for response personnel. Certain safety problems are common to hot environments. Heat tends to promote accidents due to slippery palms, dizziness, lower mental alertness, or fogging of safety glasses. If the victim is conscious and able to drink fluids, provide caffeine-free, cold liquids, preferably water.

Heat stroke is a serious condition which occurs when the body's temperature regulatory system fails and sweating becomes inadequate. A heat stroke victim's skin is hot, usually dry, red, or spotted. Body temperature is usually 105 degrees or higher, and the victim may be mentally confused, delirious, or unconscious. Unless the victim receives quick and appropriate treatment, brain damage and/or death can occur. Any person with signs or symptoms of heat stroke requires immediate hospitalization; however, first aid should be administered immediately with the intent to lower the body temperature. Move the victim to a cool area, thoroughly soak the clothing with cold water, and vigorously fan the victim.

Heat exhaustion is caused by the loss of large amounts of body fluid and salt through sweating. A victim suffering heat exhaustion usually still sweats, but experiences weakness or fatigue, giddiness, nausea, or headaches. Severe cases may exhibit vomiting or unconsciousness. The skin is clammy and moist, the complexion is pale or flushed, and the body temperature is normal. Treatment requires rest in a cool place and intake of liquids (caffeine-free).

Other hazards not ISB-specific: For other hazards refer to the general oil spill site safety plan for the incident.

6 PERSONAL PROTECTIVE EQUIPMENT (PPE) Refer to Annex A.

7 DECONTAMINATION PROCEDURES

Contaminated personnel, and personnel entering contaminated areas, will be decontaminated in accordance with the current work plan or attached decontamination layout.

8 EMERGENCY PROCEDURES

8.1 Emergency Medical Procedures

Refer to applicable section of the general site safety plan for the incident. IF an ISB-specific injury occurs:

- Contact the appropriate hospital or first aid station identified in General Site Safety Plan, as appropriate.
- Dispatch medical aid, as required.
- The Burn Coordinator will enlist assistance of any crew member capable of rendering additional assistance.
- Medical evacuation by ambulance to the pre-identified hospital will be decided by the Burn Coordinator in conjunction with the Burn Safety Officer.

8.2 Emergency Fire Procedures:

- DO NOT attempt to fight fires other than small fires. A small fire is generally considered to be a fire in the early stages of development, which can readily be extinguished with personnel and equipment in the immediate area in a few minutes time.
- DO NOT take extraordinary measures to fight fires.
- You MUST sound the appropriate fire signal (three blasts with an air or foghorn) if fire cannot be put out quickly.
- Alert nearby personnel to call for assistance.
- Notify supervisor.
- The Burn Safety Officer will ensure that the fire is extinguished before restarting work.

8.3 **Emergency Termination of Burn:** Refer to Section 4.8 for burn termination procedures.

8.3 Communications

8.3.1 **Radio Communication:** *N/A, All personnel will be within sight of each other.*

8.3.2 **Emergency Communications:** An emergency can be communicated or declared verbally and Cell phones.

8.3.3 Emergency Phone Numbers

- Federal On-Scene Coordinator/Site Safety Officer: **Elizabeth Nightingale (734) 770-8402**
- ER Site Safety and Health Officer: **Ed Kiernicki (586)246-2321**
- Burn Coordinator/Safety Officer: **CWO David Studer (609)351-8524**
- Bristolville FD Chief: **Chief French (330)240-8147**
- Hospital: **(911)(voice), (330) 381-4000(voice)**

If a victim is in route, alert the hospital for incoming patient with burn-related injuries.

9 TRAINING AND SITE SAFETY MEETINGS

9.1 **Training:** Prior to any response effort, all personnel must be OSHA and HAZWOPER training certified, as per 29 CFR 1910.120. Thereafter, classroom and/or hands-on refresher training must be completed by all personnel annually, emphasizing the particular hazards of a burn event to response personnel, equipment, and the general public. Training must also include experience with equipment and general response techniques, oil and residue recovery, ignition techniques, etc., to ensure safe operations.

9.2 **Burn Safety Meetings:** Prior to the commencement of the ISB response effort, a safety orientation for all personnel should be conducted prior to the ignition of the burn. At a minimum, these meetings will describe the work to be accomplished, safety procedure changes, and site-specific safety considerations.

Burn Safety Officer: **CWO David Studer**

9.3 Sign Up Sheet

Team Member (Print Name)	Contact Number (Phone, Pager)	Signature	Date

Annex A: Personal Protective Equipment

A.1 General Policy: Employers are responsible for supplying personal protective equipment (PPE), as required by OSHA [29 CFR 1910.120 (g)]. Level of PPE should be evaluated based upon the threats identified in the site characterization and hazard evaluation. If an employer is providing equipment, including respirators [29 CFR 1910.134], OSHA regulations for training, selection, maintenance, and medical examination and monitoring must be followed.

According to safe in-situ burn practices, workers should be kept out of the smoke plume and at a safe distance from the fire, thus higher level PPE requirements may be unnecessary. People with fire protective equipment may feel overconfident in their protection and move too closely to the fire. If personnel are close enough to the flames to need this type of equipment.

The recommended PPE ensemble is Level D for the entire burn response operation. During pre-ignition and the burn phase, personnel should have access to respirators and goggles. (Refer below to specific ensemble configurations.)

Other issues to keep in mind include:

- People handling burn residues need protective clothing.
- People handling igniters should use flame-resistant coveralls.

A.1.1 Coverall Specification: Coveralls will be of flame and fire resistant type, and lightweight to prevent overheating. Coveralls will be worn at all times by response personnel potentially at risk to exposure. During pre-burn, burn, and post-burn operations, fire-resistant coveralls should not be worn when directly handling spilled oil, because any oil that gets on the suit becomes potentially flammable.

A.1.2 Respirator Specification: Per 29 CFR 1910.134, a respirator will be provided for all personnel involved in the response effort. Those personnel required to wear a respirator must remove facial hair to enable a proper seal of the respirator against the face. During fit testing of respirators, responders will be given the option to select the most comfortable respirator.

A-2 PPE Ensembles

Level D Ensemble:

- Oil-resistant coveralls

OPTION: Street clothing may be worn by supervisory personnel, technicians, specialist, etc., that will not be exposed to oil or the immediate flame proximity.

- Rubber steel toe/shank safety boots with textured bottoms
- Rubber/latex or leather work gloves
- Rubber rain pants, jacket, and hood (as needed)
- Rubber apron (as needed)
- Quart bottle to carry fluids (during heat stress alert)
- Hearing protection (ear plugs)
- Insect repellent (if necessary)
- Hard hat
- Safety goggles
- Sunscreen

Level C Ensemble:

- Fire-resistant coveralls
- NFPA rated fire-resistant gloves
- Half or full mask cartridge respirator
- Fire-resistant hood

- Face shield, as required
- Dust, fume, mist cartridge
- Organic vapor cartridge (on-hand for oil vapors prior to burn)
- Goggles

Annex B: Contact List

Function and Name Phone	Number
Federal On-Scene Coordinator/Site Safety Officer: Elizabeth Nightingale	(734) 770-8402
ER Site Safety and Health Officer: Ed Kiernicki	(586)246-2321
Burn Coordinator/Safety Officer: CWO David Studer	(609)351-8524
Bristolville FD Chief: Chief French	(330)240-8147

Annex C: Burn Operations

C.1 Ignition Safety: Ignition of the combustibles should receive careful consideration. Weather conditions should be kept in mind, and proper safety distances adhered to at all times. Given the range of igniter types and ignition methods, manufacturer specifications for proper deployment will be followed.

C.2 Fire Control: Depending upon response operation circumstances, the ISB command may wish to manipulate the combustion rate of the fire. Misting with water will slow or extinguish the fire.

C.6 Burn Effectiveness Monitoring: On site safety personnel will assist the FOSC with monitoring the burn's effectiveness.

C.8 Termination of Burn: In most circumstances, the FOSC should plan to allow the fire to burn to completion once it has ignited. However, premature termination of a burn may be necessary if the wind or weather shifts unexpectedly, or if secondary ignition of another area is a possibility. Spraying the fire with water will extinguish the fire.

C.10 Routine Communications: Instructions regarding general response procedures will be communicated as necessary by the FOSC.

Annex D: ISB Emissions

In addition to particulate matter less than ten microns in diameter (PM-10), other substances are emitted during an ISB event. For example, small amounts of toxic gases, including sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and carbon monoxide (CO), are produced. Carbon dioxide is produced in levels that need consideration. Also, small amounts of polynuclear aromatic hydrocarbons (PAHs) present in the unburned oil are emitted from the fire as a product of incomplete combustion. The above substances were sampled and analyzed extensively in the multi-national, multi-agency 1993 Newfoundland Offshore Burn Experiment, commonly referred to as "NOBE." From experience gained, data suggest that emitted gases pose minimal threats to worker health and safety, if personnel remain safe distances from the fire, and upwind from the smoke plume. However, questions still remain and caution must be taken as initial burns are tested in an operational response setting until further data are gathered to repeat and validate NOBE's findings. Secondly, different ISB scenarios such as multiple burns have not

been studied. Therefore, should a responder need to move close-in to the fire PPE and monitoring should be administered.

The following table summarizes the health hazards associated with an ISB event.

Table 1: Hazard Evaluation

<i>Type of Gas</i>	<i>Hazard Description</i>	<i>Exposure Limits</i>	<i>Symptoms of Overexposure</i>
<i>Particulate Matter < 10 microns (PM-10):</i> Particulates less than 10 microns (millionths of a meter) in diameter can reach the deep portion of the lungs (the critical gas exchange area) and become a burden on the respiratory system. Thus the air quality standards are expressed as a fraction of particulates smaller than 10 microns in diameter (annotated as PM-10).	The median size of particulates in the smoke from oil fires is 0.5 microns, posing a definite hazard to respiration. Studies show that the ground level concentrations of PM-10 nearby in-situ burn events usually remain below safety levels (except for the area directly in the smoke plume). For most people, exposure to inert particulates becomes a problem only at high concentrations. However, sensitive individuals may develop problems at levels much lower than that.	OSHA PEL: 15 milligrams per cubic meter (mg/m ³) total particulate 8 hour mean 5 mg/m ³ respirable particulates (PM-10) 8 hour mean – 15 min STEL Not published	Symptoms of Overexposure: Excessive PM-10 will burden the respiratory tract and cause breathing difficulties.
<i>Polynuclear Aromatic Hydrocarbons (PAH):</i> a group of hydrocarbons found in both unburned oil and the smoke plume. PAHs have very low vapor pressures, and most are not very flammable. In ISB, PAHs adsorb to particulates. Studies show that concentrations in the smoke remain below 0.01 ppm, below exposure limits.	Some PAHs are suspected carcinogens over a long-term exposure; the target organs being the skin and lungs. The hazard is minimal in insitu burn events. Because of the high temperatures, most PAHs are burned in the combustion process, and the concentration is usually higher in the oil than in the smoke.	OSHA PEL: 0.2 ppm for 8 hours (for volatile PAH) – 15 min STEL Not published	None
<i>Carbon Dioxide (CO₂):</i> Colorless, odorless gas produced by burning fossil fuels.	High levels of CO ₂ were detected at ground levels near the fire. Although detection hits were high (500-750 ppm), the levels were well below the exposure limit. Until further data are obtained, consideration to these findings is prudent	OSHA PEL: 5000 ppm for 8 hour mean- 15 min STEL 30,000 PPM	Headache, dizziness, restlessness; parasthesia; dyspnea; sweating; malaise; increased heart rate, elevated blood pressure; coma; asphyxia; convulsions

<p><i>Sulfur dioxide (SO₂):</i> colorless nonflammable poisonous gas with a pungent odor. The concentration emitted in a burn is directly related to the sulfur content of the oil.</p>	<p>Toxic gas and a corrosive irritant to eyes, skin, and mucous membranes by forming sulfuric acid on these moist surfaces. The gas may reach the deep portion of the lung, but not as much as other, less soluble gases. The danger from in-situ burning is minimal; studies indicate that sulfur dioxide emissions remain significantly below the exposure limits</p>	<p>NAAQS: 0.14 ppm for 24 hours- OSHA PEL: 2 ppm for 8 hours- 15 min STEL .25 ppm</p>	<p>Irritation of eyes, skin, mucous membranes, and respiratory system</p>
<p><i>Nitrogen dioxide (NO₂):</i> toxic gaseous by product of oil combustion. It is normally a red-brown gas with an irritating odor</p>	<p>Extremely toxic to humans by inhalation. It is less soluble than sulfur dioxide, so it can reach the deeper portions of the lungs (the critical gas exchange area). Small concentrations can cause pulmonary edema, which can be delayed. Nitrogen dioxide is also a strong irritant to eyes and respiratory tract. Studies of in-situ burn events have shown that concentrations of nitrogen dioxide in smoke emissions remain below 0.02 ppm; well below exposure limits</p>	<p>NAAQS: 0.053 ppm for 24 hours- OSHA PEL: 1 ppm for 8 hours- 15 min STEL 5 ppm</p>	<p>Irritation of eyes, skin, and mucous membranes</p>
<p><i>Carbon Monoxide (CO):</i> product of incomplete combustion of oils. It is a colorless, odorless gas that is toxic to humans.</p>	<p>The toxicity of carbon monoxide is acute: it has a high affinity to hemoglobin in the blood, displacing oxygen and ultimately causing oxygen deprivation in the body's cells. The hazard of carbon monoxide from burn emissions is minimal. Data so far suggest that concentrations in oil fire smoke remain below 5 ppm 150 meters downwind; well below exposure limits</p>	<p>NAAQS: 9 ppm - OSHA PEL: 50 ppm for 8 hours -STEL Ceiling NIOSH</p>	<p>Headache, nausea, dizziness, confusion; at high concentrations asphyxia and death may result.</p>

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Secondary References:

CFR 1910.120 OSHA regulations for Hazardous Waste Sites

CFR 311 Worker Protection

NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance

Manual for Hazardous Waste Site Activities (NIOSH 85-115)

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