

<i>E&B Oilfield Services Inc.</i>	Activity: ALL WORK Ignition Sources		Doc No:	HAZ-ID
			Initial Issue Date	4/1/2015
			Revision Date:	4/1/2016
HAZARD IDENTIFICATION AND ASSESSMENT			Revision No.	1
			Next Revision Date:	4/1/2017
Preparation: Kim Bright	Authority: Danny Abegglen	Issuing Dept: Safety	Page:	1 of 3

Purpose

- **Ignition Source Gas / Condensate**
- **Self-ignition of Gas / Condensate**

Key Responsibilities

- Keep flammable materials from ignition sources.
- Watch out for fire hazards in the workplace while work is performed by other employees.
- Maintain the conditions and requirements stated on the safety permit.
- Stop operations if you find any hazardous condition.

Hazard and Risk Identification

You can identify the potential ignition sources in your premises by looking for possible sources of heat which could get hot enough to ignite material found in your premises. These sources could include:

- smokers' material, e.g. cigarettes, matches and lighters;
- naked flames, e.g. gas or liquid-fuelled open-flame equipment;
- sparks from burning products, e.g. bonfires in yards;
- vehicle exhausts;
- electrical, gas or oil-fired heaters (fixed or portable), room heaters;
- hot processes/hot work, e.g. welding by contractors;
- hot ducting, flues and filters;
- extract fans for dust and fume removal systems, e.g. by build-up of debris;
- failure of temperature control thermostats on hot work/cooking processes;
- heat sources, such as gas, electric, radio frequency, thermal fluids;
- steam pipes;
- frictional generated heat from mechanical equipment;
- static charge from mechanical equipment, e.g. conveyor belts;
- poor electrical installations, e.g. overloads, heating from bunched cables, damaged cable; faulty or misused electrical equipment, e.g. fork lift truck charging units;
- light fittings and lighting equipment, e.g. halogen lamps or display lighting or overhead lights too close to stored products;
- hot surfaces and obstruction of equipment ventilation;
- spontaneous ignition and self heating, e.g. oil soaked rags, paint scrapings, crumb and batter residue; and
- arson.
- Indications of 'near-misses', such as scorch marks on fittings, discoloured or charred electrical plugs and sockets, cigarette burns, etc., can help you identify hazards which you may not otherwise notice.

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Risk Assessment

Hazards are classified and ranked based on severity. The program identifies hazards are classified/prioritized and addressed based on the risk associated with the task. (See the risk analysis matrix outlining severity and probability).

Any work around Crude Oil, Natural Gas or fuel has the risk of igniting these materials and causing a fire or explosion. Care must be taken to eliminate ignition sources or comply with Hot work permits.

E&B OILFIELD SERVICES INC. RISK ASSESSMENT MATRIX – IGNITION SOURCE / SELF IGNITION SOURCE

CONSEQUENCE					PROBABILITY				
Severity	People	Assets	Environment	Reputation	A	B	C	D	E
					Not Done	Rarely	Once a week	Several Times in a Week	Multiple Times in a Day
0	No health effect	No damage	No effect	No impact					X
1	Slight health effect	Slight damage	Slight effect	Slight impact					X
2	Minor health effect	Minor damage	Minor effect	Limited impact				X	
3	Major health effect	Localized damage	Localized effect	Considerable impact			X		
4	Single fatality	Major damage	Major effect	National impact	X				
5	Multiple fatalities	Extensive damage	Massive effect	Global impact	X				
Key	Manage for continuous improvement (Low)		Incorporate risk reduction measures (Medium)			Intolerable (High)			

Risk Controls/Methods to Ensure Identified Hazards Are Addressed and Mitigated

Turn off vehicles, welders or other equipment with a motors.

FLAMMABLE LIMITS: 1.05 to 12.5

Flammable Limits given as percentage volume in air at normal atmospheric temperature and pressure.

AUTOIGNITION TEMPERATURE: ~ 249°C (480°F) Based upon Methane.

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HAZARDOUS COMBUSTION PRODUCTS: Any combustion, including incomplete combustion, may form carbon monoxide and carbon dioxide. Burning produces noxious and toxic fumes. Downwind personnel must be evacuated.

FIRE EXPLOSION: HIGHLY FLAMMABLE. Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas. Many liquids are lighter than water. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated.

SENSITIVE TO STATIC DISCHARGE: Flowing gasoline can be ignited by self-generated static electricity; containers should be grounded and bonded.

SPECIFIC HAZARDS THAT MAY ARISE FROM THE PRODUCT - Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Downwind evacuation for at least 300 meters (1000 feet).

JSA Sample

The following describes how identified hazards are addressed and mitigated:

Basic Job Step	Potential Injury or Hazards	Mitigation / Tools
Blowing Down Pressurized equipment , open caps on Launchers or Receivers	Fire, flash back, condensate on skin, H2s	Gas monitor, gloves, wind direction, turn truck off, always watch for others working.

