

Driving Consistency in the Estimation of Severity Levels in PHA Studies

Richard Piette, M.Sc.E., CPSP, MCIC, P.Eng.
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Forward-Looking Statements – This investor presentation contains certain “forward-looking statements” within the meaning of the United States Private Securities Litigation Reform Act of 1995 and “forward-looking information” within the meaning of applicable Canadian securities legislation (collectively, “forward-looking statements”), including statements about Suncor’s growth strategy, expected future production and operating and financial results and expectations with respect to dividends and share re-purchases, that are based on Suncor’s current expectations, estimates, projections and assumptions that were made by Suncor in light of its experience and its perception of historical trends. Some of the forward-looking statements may be identified by words such as “objective”, “targets”, “estimates”, “anticipated”, “plans”, “goal”, “vision”, “strategy”, “expects”, “proposed”, “intention”, “continue”, “may”, “will”, “outlook”, “opportunity”, “pursuing”, “illustrative” and “projected” and similar expressions. Forward-looking statements are not guarantees of future performance and involve a number of risks and uncertainties, some that are similar to other oil and gas companies and some that are unique to Suncor. Users of this information are cautioned that actual results may differ materially as a result of, among other things, assumptions regarding expected synergies and reduced operating expenditures; volatility of and assumptions regarding oil and gas prices; assumptions regarding timing of commissioning and start-up of capital projects; assumptions contained in or relevant to Suncor’s 2014 Corporate Guidance; fluctuations in currency and interest rates; product supply and demand; market competition; risks inherent in marketing operations (including credit risks); imprecision of reserves and resources estimates and estimates of recoverable quantities of oil, natural gas and liquids from Suncor’s properties; the ability to access external sources of debt and equity capital; the timing and the costs of well and pipeline construction; assumptions regarding the timely receipt of regulatory and other approvals; the ability to secure adequate product transportation; changes in royalty, tax, environmental and other laws or regulations or the interpretations of such laws or regulations; applicable political and economic conditions; the risk of war, hostilities, civil insurrection, political instability and terrorist threats; assumptions regarding OPEC production quotas; and risks associated with existing and potential future lawsuits and regulatory actions.

Although Suncor believes that the expectations represented by such forward-looking statements are reasonable, there can be no assurance that such expectations will prove to be correct. Suncor’s most recently filed Annual Information Form/Form 40-F, Annual Report to Shareholders and other documents it files from time to time with securities regulatory authorities describe the risks, uncertainties, material assumptions and other factors that could influence actual results and such factors are incorporated herein by reference. Copies of these documents are available without charge from Suncor at 150 – 6th Avenue S.W., Calgary, Alberta T2P 3Y7, by calling 1-800-558-9071, or by email request to info@suncor.com or by referring to the company’s profile on SEDAR at www.sedar.com or EDGAR at www.sec.gov. Except as required by applicable securities laws, Suncor disclaims any intention or obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. Suncor’s actual results may differ materially from those expressed or implied by its forward-looking statements, so readers are cautioned not to place undue reliance on them. Suncor’s outlook includes a planned production range, capital expenditure spend and refinery utilization based on our current expectations, estimates, projections and assumptions (collectively, the “Factors”), including those outlined in our 2014 Corporate Guidance available on www.suncor.com/guidance, which Factors are incorporated herein by reference.

Presentation of Financial Information – Unless otherwise noted, all financial information has been prepared in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board and Canadian generally accepted accounting principles (“GAAP”) as contained within Part 1 of the Canadian Institute of Chartered Accountants Handbook.

Effective January 1, 2013, Suncor adopted new and amended accounting standards, described in the Accounting Policies and Critical Accounting Estimates section of Suncor’s annual Management’s Discussion and Analysis dated February 28, 2014 (the “MD&A”). Comparative figures presented in this presentation pertaining to Suncor’s 2012 results have been restated while comparative figures pertaining to Suncor’s results prior to and including 2011 have not been restated in accordance with the respective transitional provisions of the new and amended standards.

All financial information is reported in Canadian dollars, unless otherwise noted. Production volumes are presented on a working-interest basis, before royalties, unless otherwise noted.

Non-GAAP Financial Measures – Certain financial measures in this presentation – namely operating earnings, cash flow from operations, free cash flow, return on capital employed (“ROCE”), Oil Sands cash operating costs and last-in, first-out (“LIFO”) – are not prescribed by GAAP. Operating earnings, Oil Sands cash operating costs and LIFO are defined in the Advisories – Non-GAAP Financial Measures section of the MD&A and reconciled to GAAP measures in the Financial Information and Segment Results and Analysis sections of the MD&A. Cash flow from operations, ROCE and free cash flow are defined and reconciled to GAAP measures in the Advisories – Non-GAAP Financial Measures section of the MD&A. These non-GAAP financial measures are included because management uses the information to analyze operating performance, leverage and liquidity. These non-GAAP financial measures do not have any standardized meaning and, therefore, are unlikely to be comparable to similar measures presented by other companies. Therefore, these non-GAAP financial measures should not be considered in isolation or as a substitute for measures of performance prepared in accordance with GAAP. Except as otherwise indicated, these non-GAAP measures are calculated and disclosed on a consistent basis from period to period. Specific adjusting items may only be relevant in certain periods.

Crude cost is the average crude oil purchase price per barrel including transportation costs for the applicable refinery.

Cost per flowing barrel is indicative of the expected initial capital required to produce or process first oil for a given project divided by the anticipated oil production or processing capacity of that project. The measure is included because management uses the information to analyze capital efficiency. Cost per flowing barrel does not have any standard meaning and therefore is unlikely to be comparable to similar measures presented by other companies. Readers are cautioned not to place undue reliance on this measure.

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Planned net capacity is Suncor's planned production capacity on a calendar day basis, which takes into account regular planned maintenance on an annual basis. Target first oil is the indicative timing of the start-up and commission of new capital projects, when oil production is first anticipated.

References to Suncor's leading position on a net earnings per barrel of crude capacity basis for its R&M operations amongst its North American peers is applicable for the period from 2010 to 2013, and was compiled by Suncor using publicly reported company information for the following peers: Alon, Chevron (US Downstream), Phillips 66 (ConocoPhillips' US R&M prior to Q2 2012), ExxonMobil (US Downstream) HollyFrontier, Husky (Downstream), Imperial Oil (Downstream), Marathon Petroleum, Tesoro, United Refining, Valero, Western Refining, Hess (up to Q1 2013), Murphy Oil (US R&M up to Q4 2011) and Sunoco (up to Q4 2011). Imperial Oil and US-based companies report net earnings using a last in, first out method. Suncor and Husky report using a first-in, first-out inventory valuation method.

Reserves and Resources — Reserves and contingent resource information presented herein is presented as Suncor's working interest or gross interest in the project, as the case may be (operating and non-operating) before deduction of royalties, and without including any royalty interests of Suncor, and is at December 31, 2013, except in the case of the resources attributed to the Kobes/Altares areas of northeast British Columbia (approximately 7.3 TCF), which is at June 30, 2012. For more information on Suncor's reserves and contingent resources, including Suncor's interest, location of the reserves and resources and the product types reasonably expected, please see Suncor's most recent Annual Information Form/Form 40-F dated February 28, 2014 available at www.sedar.com and www.sec.gov.

Proved reserves are those reserves that can be estimated with a high degree of certainty to be recoverable. It is likely that the actual remaining quantities recovered will exceed the estimated proved reserves. Probable reserves are those additional reserves that are less certain to be recovered than proved reserves. It is equally likely that the actual remaining quantities recovered will be greater or less than the sum of the estimated proved plus probable reserves. 2P reserves are proved plus probable reserves. Estimates of reserves attributable to individual properties may not reflect the same confidence level as estimates of reserves for all properties, due to the effects of aggregation. Suncor's 2P reserves in Canada are equal to 7,298 MMBoe.

Contingent resources are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations using established technology or technology under development, but which are not currently considered to be commercially recoverable due to one or more contingencies.

The contingent resource estimates provided herein are a best estimate and are considered to be the best estimate of the quantity that will actually be recovered. It is equally likely that the actual remaining quantities recovered will be greater or less than the best estimate. The best estimate of potentially recoverable volumes is generally prepared independent of the risks associated with achieving commercial production. There are numerous uncertainties inherent in estimating quantities and quality of these proved and probable reserves and contingent resources, including many factors beyond our control. Contingencies may include factors such as economic, legal, environmental, political and regulatory matters or lack of infrastructure or markets.

Estimates of contingent resources have not been adjusted for risk based on the chance of development. There is no certainty that it will be commercially viable to produce any portion of the resources and there is no certainty as to the timing of such development. For movement of contingent resources to reserves categories, all projects must have an economic depletion plan and may require, among other things, additional delineation drilling, regulatory applications, or sanction from the company's Board of Directors and any joint venture owners to proceed with development.

In general, significant factors that may change contingent resources estimates include further delineation drilling, which could change the estimates either positively or negatively, future technology improvements, which would positively affect the estimates, and additional processing capacity that could affect the volumes recoverable or type of production. Additional facility design work, development plans, reservoir studies and delineation drilling are often completed in the course of preparing the company's application for regulatory approvals. Once there is a high level of certainty of receiving all regulatory and corporate approvals, and all other contingencies are removed, the resources may then be reclassified as reserves.

BOEs — Certain natural gas volumes have been converted to boe on the basis of one barrel to six thousand cubic feet. Boe may be misleading, particularly if used in isolation. A conversion ratio of one barrel of crude oil or natural gas liquids to six thousand cubic feet of natural gas is based on an energy equivalency conversion method primarily applicable at the burner tip and does not necessarily represent value equivalency at the wellhead. Given that the value ratio based on the current price of crude oil as compared to natural gas is significantly different from the energy equivalency of 6:1, utilizing a conversion on a 6:1 basis may be misleading as an indication of value.

Reclamation — Reclamation at Suncor is a carefully monitored process with two distinct components: (i) transformation of the area, including tailing ponds, into a solid material that can support vegetation, wildlife and landscape restoration, which includes landform design and oil placement; and (ii) re-vegetation in a way that the reclaimed landscape can support vegetation and wildlife as a self-sustaining ecosystem. When Suncor claims that it has reclaimed land or plans to reclaim land, the reclaimed land will have met or is intended to meet the two distinct components identified in this paragraph.

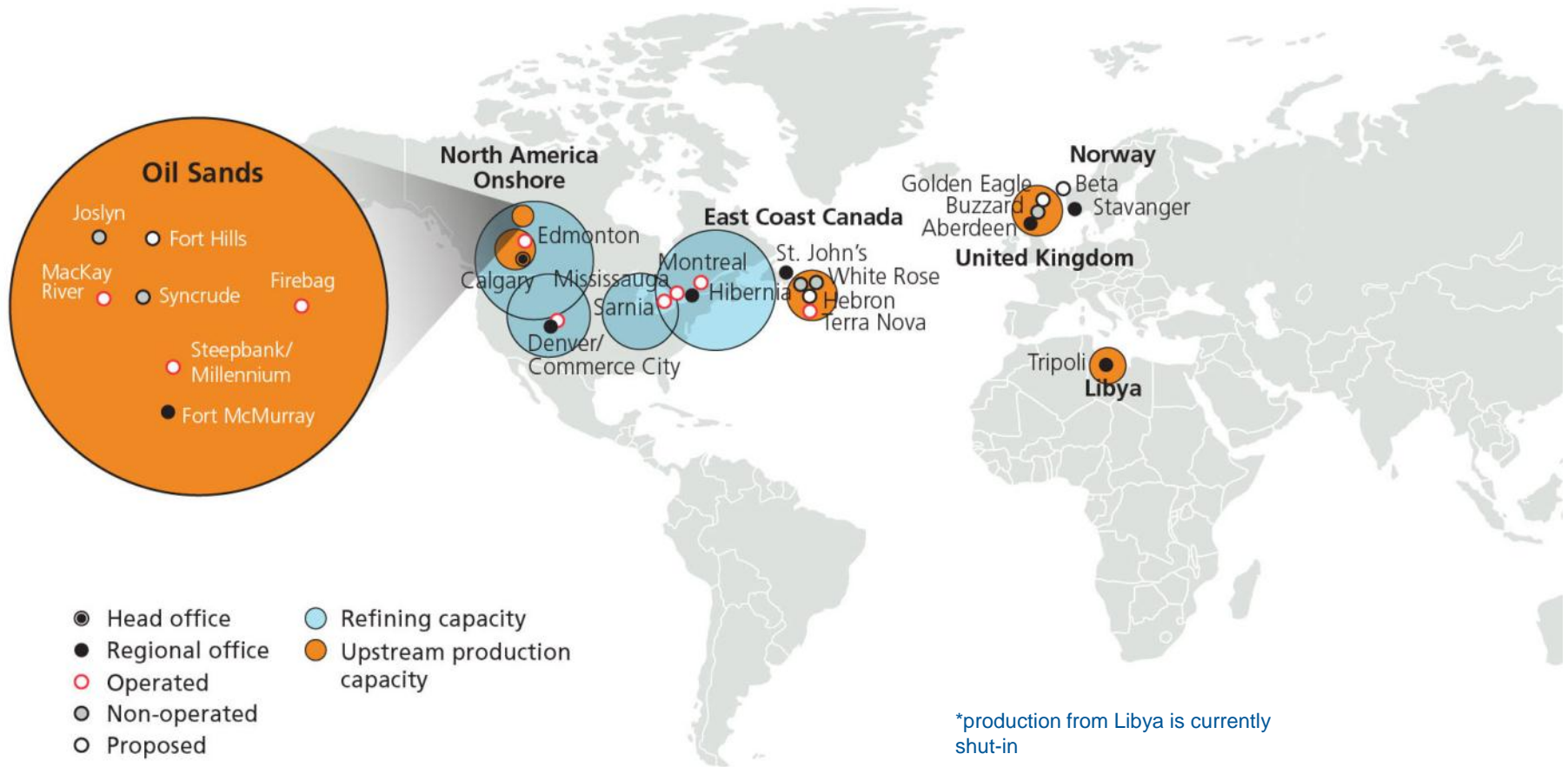
WHO WE ARE



Canada's largest integrated energy company

- Leader in oil sands development
- Conventional and offshore production
- Refining 462,000 barrels per day
- Retailer with more than 1,450 Petro-Canada stations

SUNCOR OPERATIONS



Outline

- Define the opportunity.
- Determination of the Average Vulnerability.
- Determination of consequence / likelihood pairings.
- Development of a PHA severity determination tool.

Team Members

- Marc Guindon – Suncor Energy
- Chris Wells – Suncor Energy
- Rich Piette – Suncor Energy

Opportunity

- Inconsistent selection of severity level associated with releases of hazardous materials for similar scenarios at different sites in a given technology.
 - Can be a function of the facility’s age or location, but also...
 - Impacted by the “experiences” of PHA study team members.
 - Impacted by the degree of incorporation of industry incidents into the PHA study.
- Can result in improper risk assessment leading to over or under protection of a hazardous process.
- Hence there is need for a consistent process across the company.

Proposal

- Development of a PHA Screening Tool with the following vision:
 - Capable of evaluating a large number of scenarios across the company, with the potential to expand.
 - User friendly - Simple interface with minimal inputs and calculations performed “behind the scenes”.

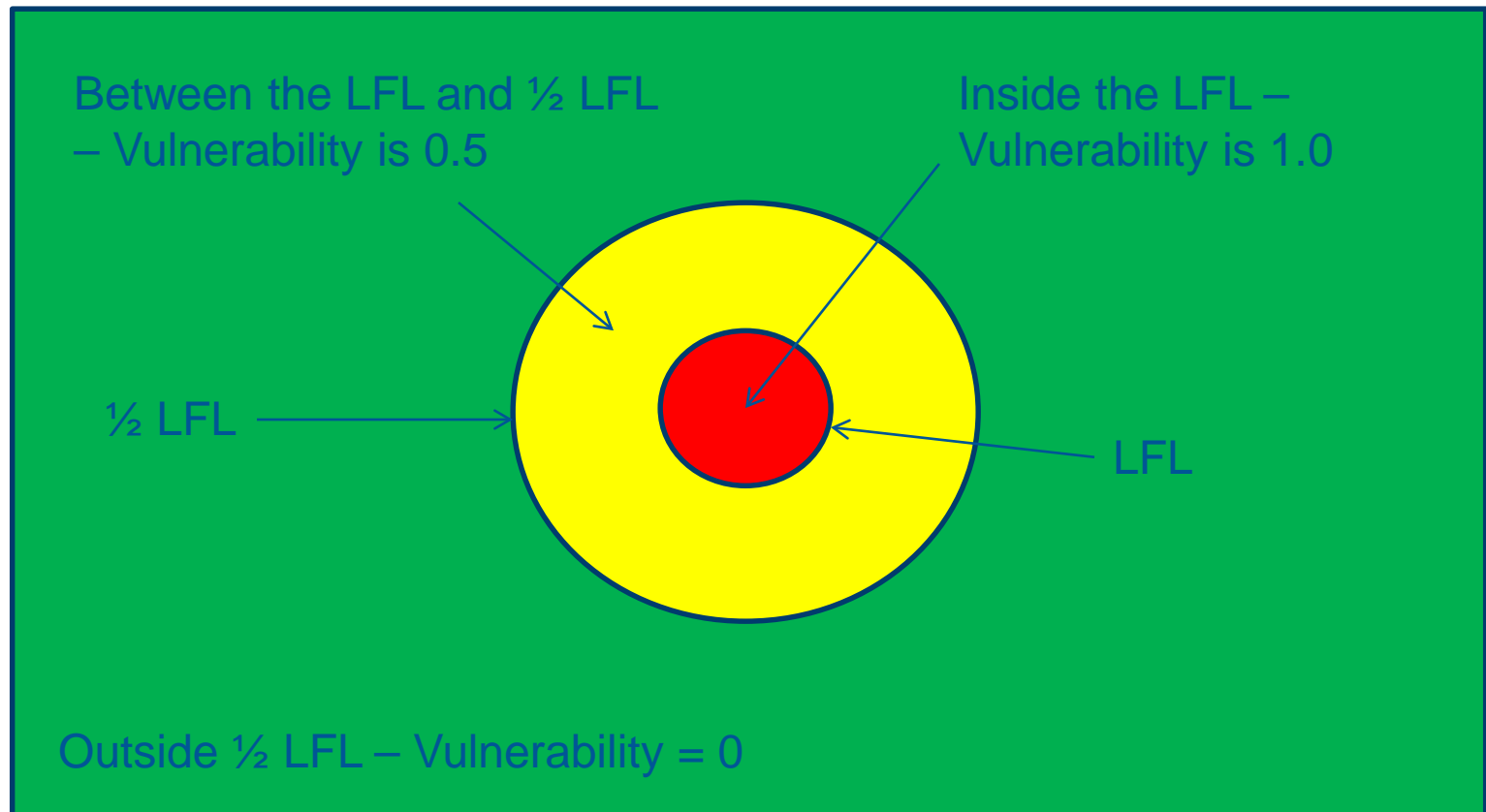
Scenario Selection

- Since the modeling of releases is resource-intensive, the number of scenarios initially considered was limited.
 - A total of 11 chemicals were initially selected (9 flammable, 2 toxic). The intent was to capture the maximum number of scenarios across the company.
 - Different combinations of temperature, pressure, and hole size were modelled using PHAST software.
 - Initially a total of 888 scenarios were modeled in order to populate a database.

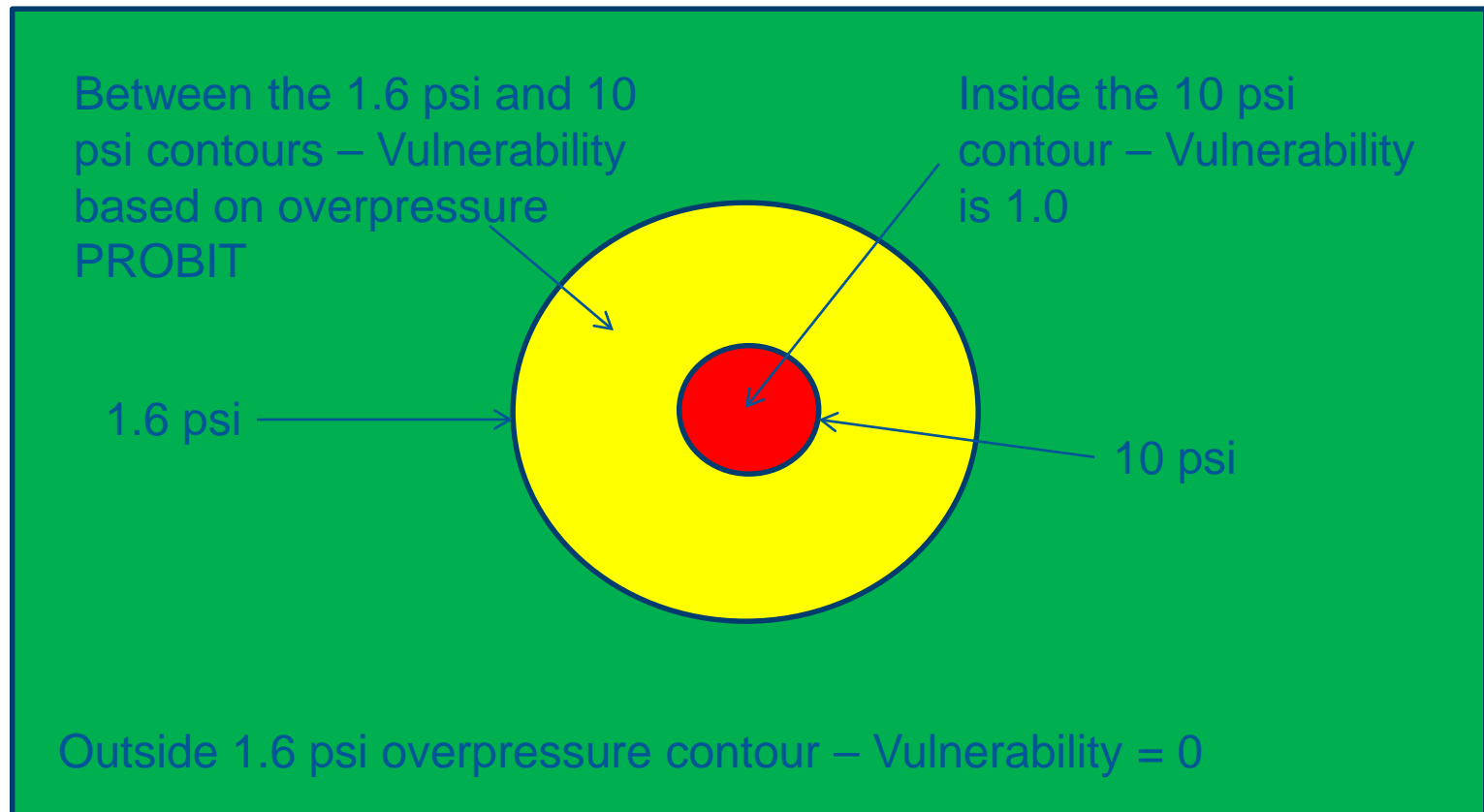
Concept of Average Vulnerability

- Determining the impact on fixed objects (such as buildings and their occupants) is a fairly straightforward process.
- Determining the vulnerability for individuals is not as easy as the number and location of individuals will change over time.
- Need to introduce the concept of average vulnerability.
- Look at the vulnerability at various equidistant locations between the epicenter of the release and the unit limits to determine the average vulnerability within the unit.

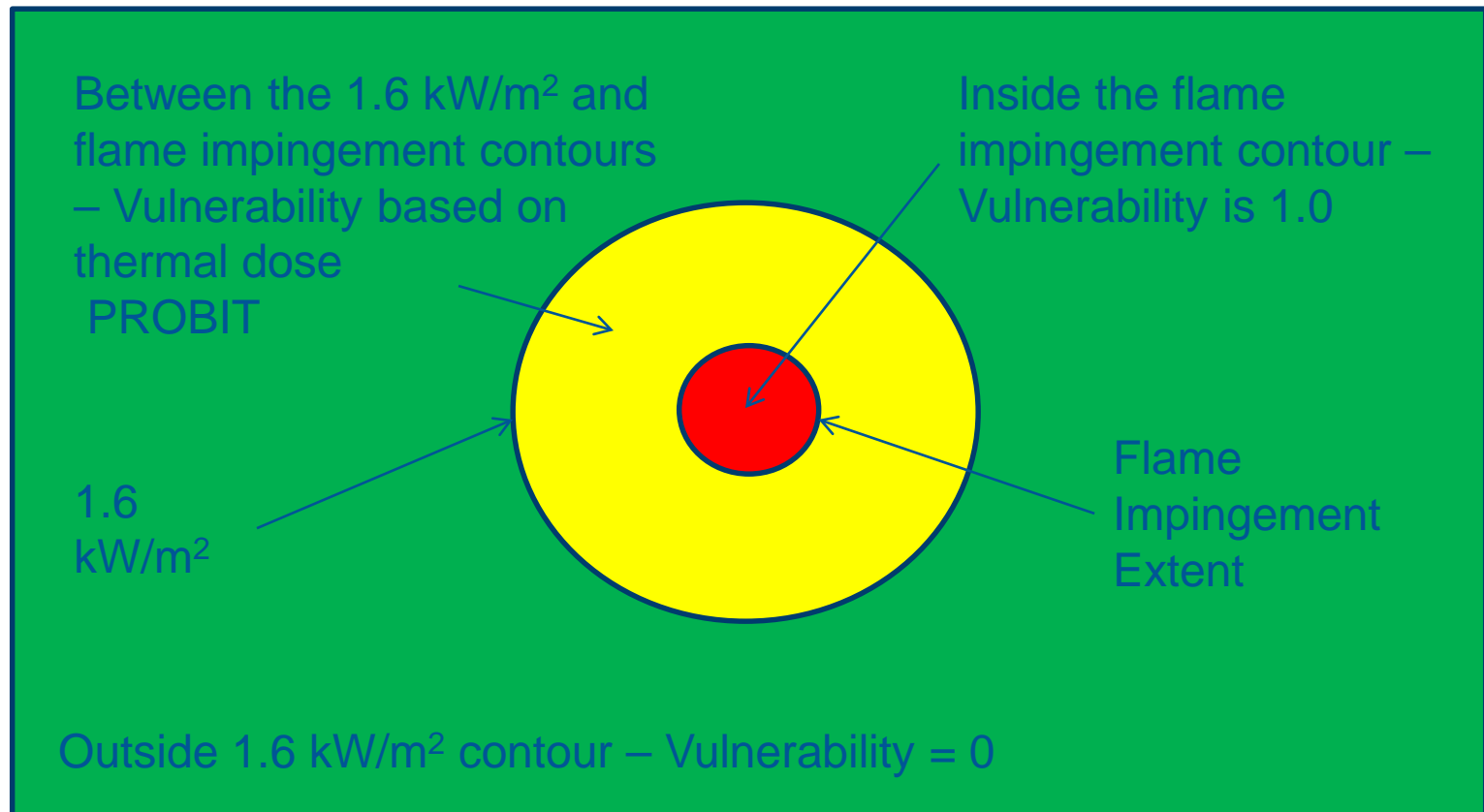
Flash Fire Vulnerability Illustration



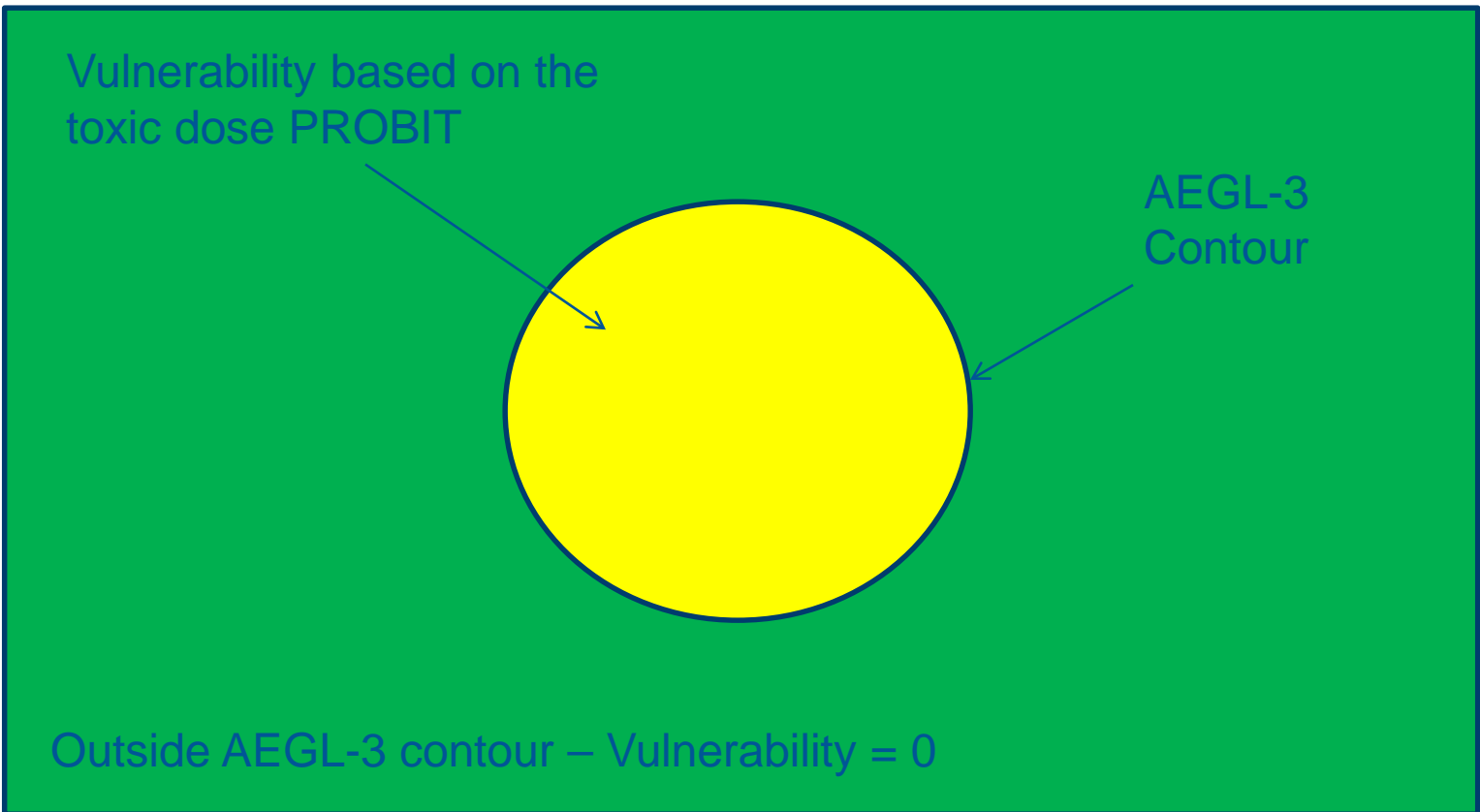
Vapour Cloud Explosion Vulnerability Illustration



Pool Fire Vulnerability Illustration



Toxicity Vulnerability Illustration



Using Average Vulnerability to Determine Severity Level

Sample Risk Matrix

1 or more events per year	F6	High Risk	Extreme Risk	Extreme Risk	Extreme Risk	Extreme Risk
Between 1 and 0.1 events per year	F5	Moderate Risk	High Risk	Extreme Risk	Extreme Risk	Extreme Risk
Between 0.1 and 0.01 events per year	F4	Moderate Risk	Moderate Risk	High Risk	Extreme Risk	Extreme Risk
Between 0.01 and 0.001 events per year	F3	Low Risk	Moderate Risk	Moderate Risk	High Risk	Extreme Risk
Between 0.001 and 0.0001 events per year	F2	Low Risk	Low Risk	Moderate Risk	Moderate Risk	High Risk
Between 0.0001 and 0.00001 events per year	F1	Low Risk	Low Risk	Low Risk	Moderate Risk	Moderate Risk
		C1	C2	C3	C4	C5
		First aid Injury	Medical aid / Restricted duties injury	Temporary Disability / Lost time injury	Permanent disability injury	Fatality

Severity Determination – Fire and Explosion

- Initially assess the frequency of a fatality associated with each applicable receptor:
 - Flash Fire
 - Vapour Cloud Explosion
 - Jet Fire
 - Pool Fire

$$F_f = IEF \times V_{avg} \times OF \times P_{ign}$$

- F_f : Frequency of a fatality.
 IEF : Initiating Event Frequency
 V_{avg} : Average Vulnerability (previous steps)
 OF : Occupancy Factor
 P_{ign} : Probability of Ignition

Severity Determination – Fire and Explosion

Occupancy Factor:

- The aggregate hours per week spent in the unit by all personnel (operator, trades, contractors, staff, etc...) divided by 168.

Probability of Ignition:

- Data from CCPS's publication on the determination of ignition probability has been incorporated into the database.

Sample Risk Matrix

1 or more events per year	F6	High Risk	Extreme Risk	Extreme Risk	Extreme Risk	Extreme Risk
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Between 0.1 and 0.01 events per year	F4	Moderate Risk	Moderate Risk	High Risk	Extreme Risk	Extreme Risk
Between 0.01 and 0.001 events per year	F3	Low Risk	Moderate Risk	Moderate Risk	High Risk	Extreme Risk
Between 0.001 and 0.0001 events per year	F2	Low Risk	Low Risk	Moderate Risk	Moderate Risk	High Risk
Between 0.0001 and 0.00001 events per year	F1	Low Risk	Low Risk	Low Risk	Moderate Risk	Moderate Risk
		C1	C2	C3	C4	C5
		First aid Injury	Medical aid / Restricted duties injury	Temporary Disability / Lost time injury	Permanent disability injury	Fatality

Severity Determination – Fire and Explosion – Scaling factors

$$F_{pd} = IEF \times V_{avg} \times OF \times P_{ign} \times 6.8$$

$$F_{td} = IEF \times V_{avg} \times OF \times P_{ign} \times 109$$

Severity Determination – Toxicity

- Very similar approach to Fire and explosion evaluation.
- Initially assess the frequency of a fatality associated with the toxic release

$$F_f = IEF \times V_{avg} \times OF$$

F_f : Frequency of a fatality.

IEF: Initiating Event Frequency

V_{avg} : Average Vulnerability (previous steps)

OF: Occupancy Factor

- Permanent Disability to Fatality ratio is 25.
- Temporary Disability to Fatality ratio is 397

Development of a Severity Determination Tool

Severity Determination Tool

- In order to ensure consistent application of the methodology an Excel-based tool has been developed for PHA teams.
- Simple interface allowing for the quick screening of fire and toxic release scenarios.

Key Inputs/Outputs

- Total unit occupancy (hours/wk)
- Total surface area of impact (m²)
- Initiating event frequency

Drop down menus

- Material
- Pressure
- Temperature
- Hole size
- Phase (liquid or gas, for verification)
- For toxics (10 minute or 60 minute exposure time)
- For explosion (confinement and congestion); based on dispersion footprint

Outputs:

- Severity and frequency level on the Risk Matrix

Severity Determination Tool - Developments

- Since the initial roll-out of the tool several locations across the company have successfully used the tool for risk analysis activities within the PHA work process.
- Additional process conditions for the initial materials and new materials have been inserted into the database since the initial roll-out.
- The tool has been successfully updated to incorporate changes to the corporate Risk Matrix that have occurred since the initial roll-out.

Severity Determination Tool - Cautions

- Due to the limitation on the number of scenarios in the database, the selection of the process conditions from the “dropdown” menu is important – more mass from a liquid release.
- If LFL Extents go beyond the boundaries of the process unit, consider changes in population density.
- The “occupancy factor” defined by the PHA team may be voided in the event that the PHA team also identifies a safeguard involving a “field” operator response.

Summary

- This presentation summarizes ONE approach to estimate the severity level from the release of hazardous materials resulting in fire, explosion and toxic impacts.
- This is meant to be a screening tool due to the limited number of products and process conditions.
- If more detailed information is required then advanced modeling should be performed.
- Answers will vary by company and will be a function of risk tolerances defined by the company but can be customized.

Questions?

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