



# CSCHE ERA Guideline Development

Status for PSMC  
June 8, 2017

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# Intention of Status Presentation

- Status Only; i.e. “FYI”
- Not seeking support on any particular issue at this time
  - All issues are currently manageable
- Interest in maintaining continuity of effort
  - Project development and documentation **at advanced stage**
    - **Extensive knowledge from much research work has been achieved**
  - Prefer to maintain current working scope and direction for discussion/ decisions by the guideline development team
    - **This presentation builds upon all previous presentations**
  - Sequentially, PSMC will have an opportunity to review & comment when a “readable” draft version is produced by the development team
- This presentation
  - Should take around 10 minutes
  - There is a bit of useful information to share
  - **Please hold questions for the end**

# Item 1 of 4 - completed (most significant update)

- Comprehensive Updating of the Orientation Information Package
  - This document doubles as
    - an extensive scoping document; e.g., “Terms of Reference”, and
    - basic starting draft for guideline content and structure
  - Contains content on
    - needs-based environmental risk decision methods, and
    - “how to” flow process
    - both of these elements are commonly seen in all external ERA guidelines
  - Major enhancement completed in early 2017 with useful/ practical content from two pipeline Ecological & Human Health RAs submitted to the NEB:
    - Northern Gateway Pipeline NEB EHHRA
    - Trans-Mountain Pipeline Expansion NEB EHHRA
  - Note: Human Health is not part of the current CSChE ERA scope (maybe for future research and update)

# Item 1 of 4 (Cont'd)

- Comprehensive Updating of the Orientation Information Package (Cont'd)
  - **Structured like a typical NFPA standard** with sections, sub-sections, “one line” standard elements vs. typical paragraph-structured ERA Guidelines
    - **Benefit therefore is**
      - **80% content defined**
      - **80% of “narrative writing” done**
    - Approach will look familiar to industry and regulators
  - If we were to adopt “paragraph” structured approach
    - Result would be
      - 80% content defined still, but
      - “narrative writing” would be = 0%
  - **I will promote to Development Team to adopt the NFPA approach**

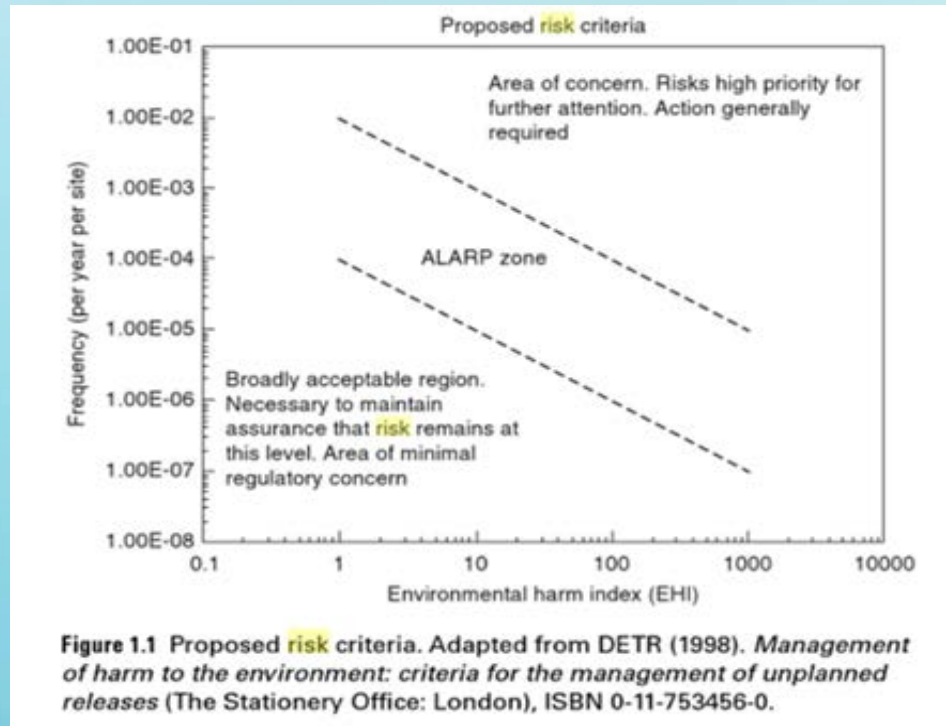
## Item 2 of 4 - completed

- Earlier this year, we obtained a copy of booklet from UK Dept. of Environment, “*Management of Harm to the Environment: Criteria for the Management of Unplanned Releases*”
- Copyright issue
  - Was resolved using received UK Gov’t Open License
- Benefit
  - pdf copy was created and distributed to development team for their review
- **This reference is critically important to guideline because**
  - **it is unique in the world with a national publicly published quantitative risk acceptance criteria for (acute) environmental harm from human activities**
  - vs. use of “risk characterization narrative arguments” used in typical ERA guidelines

# Item 2 of 4 (Cont'd)

## Management of Harm to the Environment: Criteria for the Management of Unplanned Releases

- Environmental Harm Index =  $\frac{Severity}{Severity_{ref}} \times \frac{Extent}{Extent_{ref}} \times \frac{Recovery}{Recovery_{ref}}$
- Reference Factors Define a Significant Impact on Environment
- EHI = 100; typical for “major” accidents observed in the past
- Risk Criteria based on expected frequency of spill and associated EHI



# Item 3 of 4 – completed

- Revalidated

- The Interest and time availability of current team members to continue supporting and participating in the project
- New best day and time for online meetings

- Response

- 18 out of 22 responded
- “Yes’s” (**15**)
  - Process Safety → **5**; Industry → **3** (with dual role accounting for some)
  - Environmental experts/ consultants (**includes expert modeler**) → **5**
  - Regulators → **4**
    - Alberta Energy – process safety, **environmental sciences** (new group)
    - BC Oil & Gas Commission
    - Ontario TSSA
  - **This is enough cross-representation to proceed with next phase of work** (explained on next slide)
- Those Who Can’t Participate (i.e., due to time unavailability) but Interested in Ongoing Communications (e.g., documents) – **3**
- No Responses – **4**
  - These are customary “non-responders”

# Item 4 of 4 – immediate next step

- Schedule/ re-start online team meetings to review primarily:
  1. Orientation Information Package (OIP) (89 pgs)
  2. Environmental Risk Based Decision Methods (integral to item #1) (36 pgs)
  3. Supporting Documents with Additional Information Details

Read shareable link to documents:

[https://drive.google.com/open?id=0B4hKgrr\\_Gus5NGIxRTIIQIM3eEU](https://drive.google.com/open?id=0B4hKgrr_Gus5NGIxRTIIQIM3eEU)

- Engaging team for review and input will afford eventual guideline
  - Credibility
  - Integrity
  - End User Acceptance
- First meeting has been set up with adequate advanced timing for June 13th
  - Good planned attendance
    - 4 out of 5 process safety experts
    - 4 out of 5 environmental experts
    - 2 out of 4 regulators
    - 2 out of 3 industry reps



# Item 4 of 4 (Cont'd)

- OIP and Environmental Risk Based Decision Methods documents = 125 pages combined
  - Consider prepared documents to be “straw models”
  - The **Development team will review/ discuss/ decide** significant/ philosophical items; that is, will review every page but not every item.
  - Other items (e.g., specific details) will be reviewed by exception where issues are raised by team members (from individual review)
- Propose to meet
  - Every 3 weeks; 2 hours per meeting
    - Where, depending on focus of planned discussion, adequate required members plan to participate
      - various focus = process safety, consequence assessment, common areas of interest
  - Meeting strategy is based on following considerations:
    - Team members being all volunteers with very busy day jobs
    - Trying not to do too much time too fast; i.e., pace needs to be doable for team members

# Item 4 of 4 (Cont'd)

- Time prediction on remaining work; accounts for:
  - Holding scheduled team review/ discussion meetings as discussed previously
  - Testing/ calibrating risk criteria
  - Preparing a “readable” draft version of guideline as an outcome
- Clarifying factors that influence time needs
  - Significant amount of content to review/ decide with team
  - Controlled fair pace for content review during online team meetings
  - Allowance for possible cancelled meetings due to inadequate attendance due to
    - Vacation period
    - Other critical priorities
      - Conflicts with day job priorities; includes; e.g., for me, all house moving activities over period of weeks

# Item 4 of 4 (Cont'd)

- Factors influencing time needs (Cont'd)
  - Calibrating Risk Criteria (significant work)
    - Starting basis - published UK Dept. of Environment's Risk Criteria
      - Directly applicable only to spills to rivers and estuaries
    - Original reference not applicable to:
      - Terrestrial environment
        - Much more complex than aquatic environment; selection of parameters not straightforward
        - Need to identify relevant parameters and corresponding risk criteria
        - Cites future research work
      - Groundwater
        - Need to develop applicable risk assessment method with possible additional parameters and suitable criteria
        - Cites future research work
      - Offshore
        - Not part of department jurisdiction

# Item 4 of 4 (Cont'd)

- Factors influencing time needs (Cont'd)
  - Calibrating Risk Criteria (Cont'd)
  - **Contemporary published information/ methods and expertise are now available to cover other environments (need to utilize team's knowledge)**
    - **Terrestrial**
      - Transport and fate models now exist
      - May need to use simplifying assumptions for concentration distribution and exposures
      - Using other research reference, have developed equivalent “relative harm index” factors (needs to be tested/ calibrated)
    - **Groundwater**
      - For releases to land and permeating below soil, or surface releases channelled to wells
      - Use team's expertise to model/ predict underground contamination depth and spread
      - Use simplifying assumptions for “what constitutes harm”
      - Using original reference framework, have developed equivalent “relative harm index “factor (needs to be tested/ calibrated)
    - **Offshore**
      - Transport and fate models exist
      - May need to use simplifying assumptions for concentration distribution and exposures
      - Using original reference framework for river/ estuary aquatic environments, develop analogous significant impact reference factors (needs to be tested/ calibrated)

# Item 4 of 4 (Cont'd)

- As a result of all of the above time influencing factors, I am currently guessing remaining work to be substantially processed
  - towards end of 2018
- A readable copy for PSMC (and others) for peer review to be available once above work completed
- This concludes the presentation
- Thank-you
- Questions?