|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **QRA**  **PRE-CONSULTATION**  **FORM** | | | | Reference Number: | | |
| **Instructions:**   1. All forms are to be duly completed upon submission to MHD at Contact\_MHD@mom.gov.sg 2. Applications are to be submitted together with the following relevant documents:  * Form A (for enquiry on transportation Quantitative Risk Assessment) or * Form B (for enquiry on fixed Installation Quantitative Risk Assessment) or * Form C (for enquiry on pipeline Quantitative Risk Assessment) * Site layout plan showing location of the proposed activities and the hazardous material(s) * Safety Datasheets (SDS) | | | | | | |
|  | **DETAILS** | | | | |  |
|  | 1. Company Name, UEN and Address: | | | | |  |
|  | 1. Name of Contact Person: | | | | |  |
|  | 1. Email Address: | | | | |  |
|  | 1. Telephone Number: | | 1. Fax Number: | | |  |
|  | 1. Proposed Activities and/or Facilities: | | | | |  |
|  | |  | | | Click here to enter a date. | |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Name of Applicant in BLOCK LETTERS | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Signature of Applicant | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Date | |

Please indicate the intention of this pre-consultation and list all the queries, if any.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Form A (for enquiry on transportation Quantitative Risk Assessment)**   1. Fill up the table below, indicating the proposed chemicals to be transported. Kindly highlight any proposed chemicals already being transported in different quantities or/and routes. | | | | | | | | | | | |
| Material Name | Physical State  (Solid/Liquid/Gas) | Hazard Class | GHS Classification[[1]](#footnote-1) | 30min AEGL-3 | Flashpoint (°C) | Transport in Bulk Tank  (Yes/No) | Unit Capacity of Container  (kg/litres/tonnes) | Max Quantity Transported per Trip  (kg/litres/tonnes) | Total Number of Trips per Year | To[[2]](#footnote-2) | From |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Form B (for enquiry on fixed installation Quantitative Risk Assessment)**   1. Is this an expansion or a change of an existing plant? (Yes/No) 2. If yes, has QRA been done for existing plant? (Yes/No)[[3]](#footnote-3) 3. Fill up the table below, indicating ALL (including new and existing[[4]](#footnote-4)) chemicals being processed. | | | | | | | | | | |
| Material Name | Physical Storage State  (Solid/Liquid/Gas) | Hazard Class | GHS Classification[[5]](#footnote-5) | 30min AEGL-3 | Flashpoint (°C) | Existing  Max Quantity  (kg/litres/tonnes) | New  Max Quantity  (kg/litres/tonnes) | Max Pressure  (Barg) | Max Temperature  (°C) | Comment |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Form C (for enquiry on pipeline Quantitative Risk Assessment)**   1. Is this a change of an existing pipeline or an extension/branching from an existing pipeline? (Yes/No)   If yes, has QRA been done for existing pipeline? (Yes/No)[[6]](#footnote-6) | | | | | | | | | | | | |
| Material Name | Physical State  (Liquid/Gas) | Hazard Class | GHS Classification[[7]](#footnote-7) | 30min AEGL-3 | Flashpoint (°C) | Max Pressure  (Barg) | Max Flowrate (kg/s, L/s) | Length of Pipeline (m) | Diameter of Pipeline (m) | Above ground (A), Under Ground (U) | To[[8]](#footnote-8) | From | |
|  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(Optional)** Worst case scenarios harm distances (check relevant boxes below and indicate the WCS harm distances):   |  |  |  | | --- | --- | --- | | ☐ Pool Fire | Thermal radiation distance to 4 kW/m2: | \_\_\_\_\_\_\_\_\_ m | | ☐ Jet Fire | Thermal radiation distance to 4 kW/m2: | \_\_\_\_\_\_\_\_\_ m | | ☐ BLEVE / Fireball | Thermal radiation distance to 4 kW/m2: | \_\_\_\_\_\_\_\_\_ m | |  | Overpressure distance at 1psi: | \_\_\_\_\_\_\_\_\_ m | | ☐ Flash Fire | Distance to LFL: | \_\_\_\_\_\_\_\_\_ m | | ☐ Vapor Cloud Explosion | Overpressure distance at 1psi: | \_\_\_\_\_\_\_\_\_ m | | ☐ Pressure Vessel Burst | Overpressure distance at 1psi: | \_\_\_\_\_\_\_\_\_ m | | ☐ Toxic Release | Toxic dispersion distance to 30min AEGL-3: | \_\_\_\_\_\_\_\_\_ m |   List any other information[[9]](#footnote-9) that may facilitate the pre-consultation | | |
|  |  |  |
|  | | |

**For Existing Sites Undergoing Change/Expansion – involving transition into 2016 QRA Guidelines**

Definitions for Types of Sites:

“**Existing**” sites – Existing brownfield sites

“**Change**” sites – Changes made to existing brownfield sites occurring after the 2016 QRA Guidelines were implemented. Such changes may be due to plant expansion, modifications and Addition & Alteration (A&A) works.

Notes:

1) A single operator’s Installation may consist of one or more types of sites as listed above, i.e. **Existing** site(s) and/or **Change** site(s).

2) For sites that are wholly greenfield sites consisting of new projects occurring after the 2016 QRA Guidelines are implemented, QRA criteria and requirements as indicated in the 2016 QRA Guidelines shall apply.

Definition for “Full-Site QRA”:

“**Full-Site QRA**” – A full-site QRA is a QRA that considers all risks within the contiguous land plot leased to a single commercial entity operating the Installation. This QRA will produce risk results representing the full site’s risk profile (a sum of risks from **Existing** sites and **Change** sites where applicable)

Site-specific Considerations:

For sites consisting of **Existing** sites, any change, e.g. due to expansion / modification / A&A works, that requires a QRA will need to conduct a **Full-Site QRA** as indicated in the 2016 QRA Guidelines. However, in reviewing the QRA for such sites, Agencies will have the following additional considerations:

1. The **Change** sites will be required to adopt the detailed QRA methodology as indicated in the 2016 QRA Guidelines. As for **Existing** sites, simplified QRA approaches may be considered, including:
   * Representative major accident scenarios selected for the QRA may be defined and justified. Reference may be made to Process Hazard Analysis (PHA) and/or top risk contributors identified from past QRAs.
   * Any other QRA approaches and/or scenario selection methods if used, shall be justified accordingly.
2. Risk Contours generated from the **Full-Site QRA** will be referred to by Agencies in checking for compliance against QRA criteria as stipulated in the 2016 QRA Guidelines.
3. In view of case-specific circumstances that may be encountered in the compliance of **Full-Site QRA** risk contours with QRA criteria, the following may be considered subject to pre-consultation with MHD:
   * Failure to comply with QRA criteria – Agencies will consider the requirement for ALARP demonstration if criteria could not be met due to risk contributors from **Existing** sites. If criteria could not be met due to risk contributors from **Change** sites,then risks are to be reduced until the criteria are met.

1. For toxic chemicals, please provide acute toxicity (inhalation) category. [↑](#footnote-ref-1)
2. To attach map(s) indicating the proposed transport route(s) and timing(s). [↑](#footnote-ref-2)
3. If Yes, to attach a copy of QRA no-objection letter(s). [↑](#footnote-ref-3)
4. Applicable only for existing plant. Kindly highlight any existing chemicals already being stored and handled on site under the “Comment” column. [↑](#footnote-ref-4)
5. For toxic chemicals, please provide acute toxicity (inhalation) category. [↑](#footnote-ref-5)
6. If Yes, to attach a copy of QRA no-objection letter(s). [↑](#footnote-ref-6)
7. For toxic chemicals, please provide acute toxicity (inhalation) category. [↑](#footnote-ref-7)
8. To attach map(s) indicating the proposed pipeline route(s). [↑](#footnote-ref-8)
9. E.g. marked up plot plan, layout or other drawings with indication of changed portion and scope, SDS of new chemicals, preliminary QRA report and project timeline. [↑](#footnote-ref-9)