CDOIF

Chemical and Downstream Oil Industries Forum

Supplement to Guideline – ‘Environmental Risk Tolerability for COMAH Establishments’

Frequently Asked Questions

Frequently Asked Questions (FAQs)

In completing environmental risk assessments for the establishment, it is important to consider how the CDOIF publication should be applied. The CDOIF methodology provides a high level first pass screening exercise which we have called Phase 1. A further more comprehensive Risk Assessment(s) may be required – this is called Phase 2:

Phase 1: As set out in the CDOIF guidance. Phase 1 screening comprises of two parts, see FAQ's below.

Phase 2: Not covered by the CDOIF guidance. Phase 2 assessments should only be completed if deemed necessary following the Phase 1 screening (for example if Phase 1 screening indicates there is no MATTE potential then detailed Phase 2 work will not be required). Phase 2 work should be carried out in conjunction with the local CA site inspection teams, and where necessary specialist consultants

The following commentary provides answers to commonly asked questions relating to the Phase 1 screening.

FAQ's General

What is the status of the CDOIF Guidance?

The status of the guidance is described in the Foreword.

How will CDOIF guidance work in conjunction with the containment policy score card?

For existing sites, the scorecard is a measure of compliance with the Containment Policy (CP). It is possible that the site can be compliant with the Containment Policy, without a measure being in place, if assessment shows it is not reasonably practicable to upgrade (see scorecard column L) – i.e. an ALARP demonstration. The Phase 1 screening and subsequent Phase 2 risk assessment (where necessary) determines what additional measures may be necessary to meet the CP (So Far As Is Reasonably Practicable). In other words, the screening and subsequent risk assessment will help to clarify the 'yellow' on the scorecard.

How long will the guidance remain 'live', allowing changes to it to be made as appropriate?

The guidance will remain open for the foreseeable future to allow for calibration as necessary. Note that CDOIF guidance can be updated at any point through its lifecycle.

Does this guidance help clarify duty holder responsibility under the environmental liability directive?

No, you will need to talk to your relevant trade body and discuss this separately with relevant government departments and agencies. See also https://www.gov.uk/government/publications/environmental-damage-prevention-and-remediation-regulations-2009-guidance-for-england-and-wales

Does the guidance provide any qualification or guidance on what constitutes harm or adverse effect?

Refer to L111 and DETR 1999 for more information as to what constitutes harm. Additional information is also provided in section 3.2.1 of the CDOIF Guidance.

What level of detail is the CA expecting for the Phase 1 Screening?

Worked examples for both simple and complex sites will be provided. Refer also to the FAQ's for Part 1 and Part 2 below. Many sites may already have much of the information required in order to complete the screening.

Reference should also be made to Appendix 5 of the CDOIF guidance which provides a template to assist in grouping substances to determine MATTE potential.

Can you use representative scenarios to simplify the screening process?

Yes, refer to the CDOIF guidance section 4.2.2 and to the Safety Report Assessment Guides (SRAG, http://www.hse.gov.uk/comah/srag.htm) for further information (please also note the expectation to include a scenario/scenarios exploring a multi-tank/multi-bund fire following explosion where this is credible).

How will the agencies ensure consistency across regulator training such that a national approach is taken to establishment risk assessment?

This will be achieved through training of regulatory teams. Inspection teams are kept appraised of the developing guidance and other relevant publications. The Better Regulation Review (BRR) challenge mechanism provides a process to query or challenge application of CP at a site level. The CA in agreeing a deadline for completion for Phase 1 screening has in its resourcing an approach to collectively review phase 1 results on a sector basis

FAQ's Part 1: Defining the types of environmental harm

What types of products should you consider in the Phase 1 screening?

If you are a COMAH establishment, any incident that can *credibly* cause a MATTE where a COMAH dangerous substance is involved should be included in the Phase 1 assessment. Table 4 in Appendix 5 provides some guidance to help you do this.

Can you 'group' similar products to reduce the number of screening assessments required?

Yes, this is a valid mechanism for simplifying the screening process. Reference should also be made to Appendix 5 of the CDOIF guidance which provides a template to assist in grouping substances to determine MATTE potential.

Do you need to complete an event tree for every scenario?

This would be considered a level of detail not required for phase 1 screening; however a simple event tree may be appropriate to demonstrate multiple pathways to single or separate receptors. The purpose of the phase 1 screening is to help determine the level of detail and nature of the assessment at phase 2 (refer to CDOIF guidance section 2.2 for further information).

How do you consider escalation in the risk assessment?

Only credible scenarios should be considered in the Phase 1 screening – i.e. what volume of product could credibly be lost to the receptor? (Refer to the Safety Report

Assessment Manual [SRAM] section 13 for help on determining credibility). It is important to understand what factors of an incident could affect the pathways to the receptor (for example a controlled burn may mean less product reaching a receptor, but tackling a fire may cause pollution from firewater/foam).

What is meant by 'mitigated' and 'unmitigated' when applied to the screening process?

The first step of the Phase 1 screening process is to determine the types of environmental harm that could occur, and whether these have MATTE potential – in the guidance this is referred to as the '*unmitigated* consequence', section 4.1 provides more information on this term.

For example: It is assumed that a storage tank fails. Primary containment (pipes, vessels, control systems) has been lost and the contents of the tank is free to migrate via the pathway to the receptor, unhindered by the existing secondary or tertiary containment, interceptors, pollution controls, spill response etc. No credit is taken at this stage for good design practices, inspection and maintenance regimes etc. This enables the 'worst case' source-pathway-receptor scenarios to be understood, and may indicate that - without any mitigation - the establishment presents an intolerable risk to the receptor/s.

The second step of the Phase 1 screening process is to complete the risk assessment by aggregating failure frequencies – these may be mitigated or unmitigated risk frequencies, section 6.2 provides more information.

For example: The same source-pathway-receptor scenarios examined in the first step are re-evaluated taking credit for the existing mitigation, such as good design measures, inspection and maintenance regimes, secondary and tertiary containment, monitoring systems, fire suppression systems, pollution detectors, human factors, emergency and spill response etc.

In summary, the whole screening process can be broken down into:

STEP 1 – Determine if you have a MATTE potential based on the products and volumes that you store (Appendix 5 can help to map this out). The scale of the unmitigated consequence can now be determined, which tells you what your target frequencies are (i.e. what is Intolerable/TifALARP/Broadly Acceptable).

STEP 2 – now you have the target frequencies, use section 6.2 to help aggregate the failure frequencies (these frequencies may be either mitigated or unmitigated) to determine what further risk reduction mechanisms may be required. The CA will as necessary query the origin of the claimed failure frequencies used, and any layers of protection that are claimed.

The worked examples provided to assist in the application of the guidance provides a practical example as to how to complete these two steps.

How can I determine the duration of environmental damage?

The Energy Institute have been commissioned to develop a report on environmental recovery periods based on incident reviews – this is due for release at the end of 2014.

In the interim, relevant publically available resources can be used to look for similar incidents involving similar products to provide a best estimate of duration. Resources include:

- EMARS: https://emars.jrc.ec.europa.eu/
- Aria: http://www.aria.developpement-durable.gouv.fr/?lang=en

- ITOPF Reports: http://www.itopf.co.uk/information-services/publications/technical-reports/

Where can I get more detail relating to underlying environmental information for consequence assessment, for example soil permeability?

Resources are identified in Appendix 3 of the CDOIF guidance; it is also recommend that a discussion is held with local agency inspection teams.

Can small streams which don't qualify as a receptor in terms of their length be considered as a pathway to further receptors?

Yes, this forms part of the source/pathway/receptor analysis.

In addition, if surface water does not have a WFD classification then it should be considered whether it could be a receptor as per 3.2.2 – Widespread Habitat (land/Water) – see threshold for non-designated water, p.13.

How do you assess land that is already contaminated within the site boundary?

Section 3.2.4 provides additional information on how to treat contaminated land on site. The Phase 2 assessment may provide further evidence as to why a MATTE is not credible based on a detailed assessment of the contaminated land within the site boundary (see environmental damage regulations guidance).

How do you consider non-productive groundwater, for example if the groundwater is on (or under) site but not going anywhere, or has no foreseeable use?

Non-productive groundwater is not considered a receptor, but may be a pathway. For Phase 1 screening, the EA mapping evidence (refer to appendix 3 and section 3.2.3 of the guidance) may be utilised to demonstrate that the body of water is not shown as a groundwater body. If this is not the case then more detailed analysis may be required during the Phase 2 assessment to demonstrate why the body of water is not considered as a receptor with MATTE potential – it is recommended that this should involve a dialogue with the relevant agency before detailed work is commenced.

Do the area thresholds quoted in the guidance include the area within the site boundary?

Yes

The Water Framework Directive guidance establishes area of impact criteria for a change in groundwater body status which differs from the CDOIF guidance. What area of impact should reflect a MATTE?

CDOIF has adopted the minimum area of impact of 1ha from the reporting requirements of the Seveso Directive and has established tolerability criteria on this basis. Thus, for COMAH risk assessment of groundwater impacts, severity of harm should use WFD chemical classification parameters BUT in terms of extent WFD area rules do not apply and the CDOIF agreed areas should be used. These have been developed to reflect the differing value of different types of groundwater (e.g. drinking water vs non-drinking water).

Considering multiple 'pathways' to a receptor following loss of containment can be difficult, particularly for large complex sites, is there a more efficient approach?

Developing conceptual site model may be a more efficient appropriate for Phase 1 screening. Greenleaves 3, Chapter 2, section 2.3 provides information on how to develop a conceptual model, refer to https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69450/pb13670-green-leaves-iii-1111071.pdf

Is it necessary to calibrate the tolerability requirements to help identify where the greatest risks exist?

Calibration is important to ensure that all relevant factors have been accounted for – for example realistic failure frequencies, and credit for mitigation measures that have been applied – what is important is to identify gaps and potential improvements that can be applied to reduce the risk. Refer also to section 4.3 of the CDOIF guidance for additional information.

What boundaries should be applied to help define where the highest risk lies?

It is appropriate to set boundaries to help with phase 1 screening - simple boundaries should be defined such as minor release rate and major release rate. Data sources such as FRED (see below) already define these.

FAQ's Part 2: Risk criteria and evaluating risks

Where can I get failure rate data to enable me to complete the high level risk assessment?

Generic failure rate data is available from several sources, for example:

- HSE's Failure Rate and Event Data (FRED), see http://www.hse.gov.uk/landuseplanning/failure-rates.pdf
- The EA, SEPA and NRW 'All Measures Necessary' Guidance
- Company specific data that you may have (though this would need to be substantiated as part of any demonstration to the CA)

When completing risk assessments, mitigated failure rates can be used so long as they are clearly defined.

It is recommended that for phase 1 screening FRED data is used for simplicity, but company data is equally acceptable subject to the caveat above.

What boundaries should be applied to help define where the highest risk lies?

It is appropriate to set boundaries to help with phase 1 screening - simple boundaries should be defined such as minor release rate and major release rate. Data sources such as FRED already define these.

How far back do you need to go for unmitigated risk, for example double skinned tanks, bund liners?

Any appropriate measures that reduce the risk to the receptor can be adopted when completing a risk assessment – refer to the FAQ below on failure rates

For multiple receptors affected by one area of site, do you need to consider all of those receptors, or just that which has the most sensitive threshold?

The expectation is that all consequences should be assessed for each receptor. However, where the source/pathway and products/volumes are the same, risk aggregation need only be completed for the most sensitive threshold.

Do you need to add up all failure data for each tank, pipeline and valves etc. to determine the risk from the establishment?

Yes, but for the Phase 1 screening assessment the FRED data (or company data) used could already aggregate individual failure modes into a failure rate (for example the different ways in which a single tank can lose containment) in which case it does not need to be aggregated again. It is recommended that you check your source data, its

origins and whether or not it includes aggregated failure modes. Also note that you only need to aggregate *independent* failure rates (e.g. independent tanks within a bund that can harm the same receptor).

Is a LOPA required as part of the Phase 1 screening?

No, this is not a requirement for Phase 1 screening - qualitative assessments are sufficient. Larger higher risk sites may require QRA/Semi-Quantitative assessment at Phase 2.

What measures can be used to reduce the risk of a MATTE?

There are many different measures that could be employed to reduce the risk of a MATTE. These could be either preventative or mitigatory measures, for example, primary, secondary or tertiary containment or planned responses to reduce the risk of pollution following a loss of containment.

How will assessments be judged if outcomes are 'intolerable' for receptors on-site or those already contaminated, or receptors that are not significant?

A discussion with the CA will determine if the risk is intolerable – further phase 2 assessments may be required to more accurately represent the risk. It is not the intent of the CA to issue prohibition notices as an immediate response to screening results since these might be based on overly conservative assumptions, or credit might not have been taken for all risk reduction measures in place. A Phase 1 intolerable risk would trigger further dialogue on risk reduction measures and more detailed QRA as appropriate. (N.B.: L111 para 352 – 359 discusses Serious deficiency and Prohibition of use)