

INTRODUCTION TO LOC

For each activity the possible Loss of Containment (LOC) scenarios have been identified. The consequences, dangerous CO₂ concentrations and lethality ranges of these LOC scenarios have been calculated. Together with the failure frequency of these LOC scenarios the cumulative risk of most of the activities was calculated and the results were compared with the applicable Dutch risk criteria. The identification of the LOC scenarios and their corresponding failure frequencies followed the Dutch guidelines for Quantitative Risk Assessments.

A QRA gives insight into the risks to human life of a certain activity by calculating the potential effects of a variety of scenarios as well as considering the probability of occurrence of these scenarios. A simple representation of the QRA process is given in Figure 7.

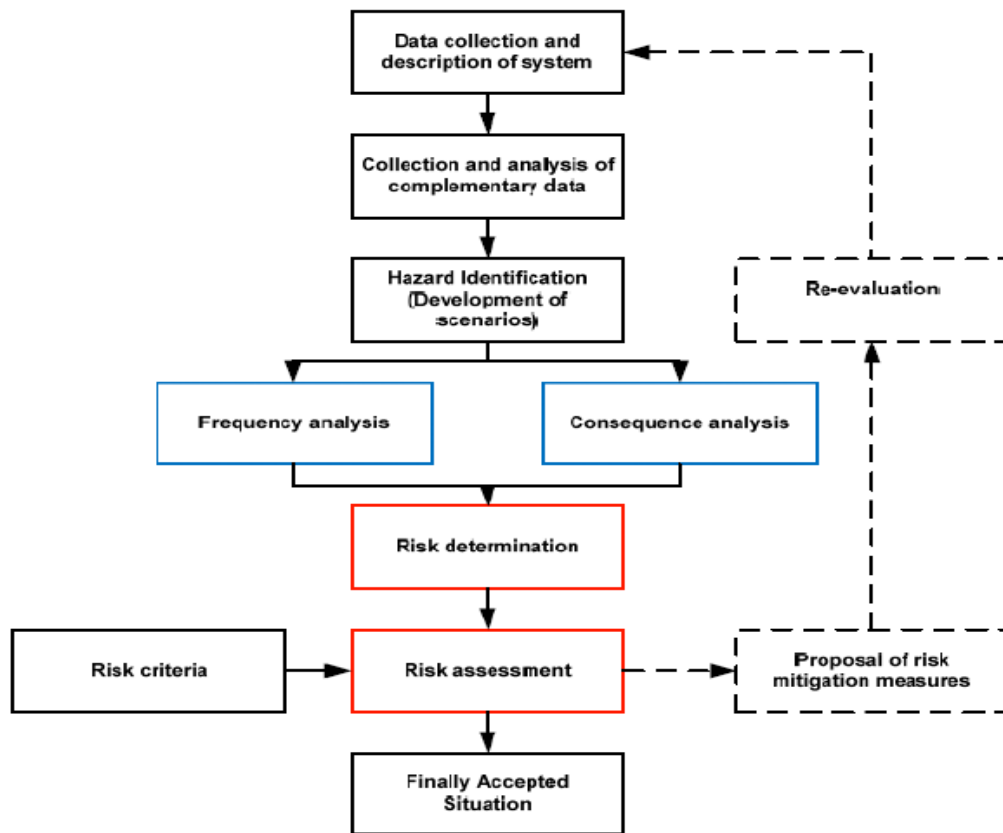


Figure 7: QRA risk assessment procedure

DNV's safety study will address the potential hazardous consequences and risks associated with the following activities of the LLSC:

- CO₂ terminal at inland emitter terminal (including liquefaction, storage and loading activities);
- Transport of CO₂ by barge from a certain emitter to the CO₂ terminal in the Port of Rotterdam;
- Pipeline transport of low pressure CO₂ from different emitters located in the Port of Rotterdam to the CO₂ terminal in the Port of Rotterdam;

- CO₂ terminal in the Port of Rotterdam (including liquefaction, storage, compression and (un)loading activities);
- The pipeline transport of high pressure CO₂ from the CO₂ Hub in the Port of Rotterdam to an offshore sink;
- Transport of CO₂ by seagoing vessels from the terminal location in the Port of Rotterdam to open sea;
- CO₂ discharge at open sea at a (un)loading tower

Source: <http://hub.globalccsinstitute.com/publications/co2-liquid-logistics-shipping-concept-llsc-safety-health-and-environment-she-report/41>