

EC52 - Pre-Instructional Survey

Name: _____ Date: _____

1. List some different SIL selections techniques and the general strengths and weaknesses of each. Describe the parameters that are used in the SIL decision-making process.

EC52 – Pre-Instructional Survey Answer Sheet

1. **3-Dimensional Risk Matrix:**

A relatively simply, quick, qualitative technique. Requires clear boundaries between frequency and severity choices in order to be repeatable. May produce conservative answers (depending upon how it is calibrated). Considers the parameters of consequence, likelihood, and number of protection layers.

Risk Graph:

Another relatively simple, quick, qualitative technique. As with the risk matrix, requires clear boundaries between frequency and severity choices in order to be repeatable. May also produce conservative answers (depending upon how it is calibrated). Considers the parameters of consequence, probability of occupancy, probability of avoidance, and demand rate. Consideration of additional protection layers is not explicit in a traditional risk graph, but can be incorporated when considering demand rate

Explicit LOPA (Layer of Protection Analysis):

A more detailed, semi-quantitative technique. Takes more time, but often produces more reasonable (i.e., lower) answers. Requires much more up front effort generating all the numbers that are required (e.g., initiating event frequencies, performance of various layers, tolerable risk levels), but may easily save money in the long run. Explicit LOPA considers consequence – which is used to select a tolerable frequency target, initiating event frequencies, protection layer probabilities of failure (also potentially using enabling events and conditions modifiers in a similar way to protection layers).

Implicit) LOPA:

Similar to explicit LOPA, but does not specify numerical tolerable risk targets, although they are actually embedded in the technique. Implicit LOPA considers consequence, likelihood of initiating event, effectiveness of protection layers (and can also consider enabling events and conditional modifiers, similarly).