**IMUG 2022 Workshop – EARLY Demo**

**Start with NRC Sample Problem-Point Estimates LNT**

**Save As: EARLY Demo**

**Define emergency response to have three cohorts as follows:**

**Alarm time is 2 hours after reactor shutdown**

**Cohort 1**

**Description: General Public**

**Population fraction: 0.895**

**Initial and middle subphases of evacuation are 0.5 hour and 2 hours, respectively.**

**Evacuation speeds are 4, 2, and 8 m/s during the three sequential subphases.**

**Evacuee speeds are reduced to 0.7 of normal when there is precipitation.**

**No KI ingestion**

**Evacuation occurs within 16.1 km from the site and evacuees travel to 48.3 km then receive no further dose during the emergency phase**

**After the alarm, members of the cohort spend 2 hours before taking shelter**

**Members of the cohort shelter for 2 hours before evacuating**

**Cohort 2**

**Description: Evacuation Tail (last 10% to evacuate)**

**Population fraction: 0.100**

**Initial and middle subphases of evacuation are 1 hour and 4 hours, respectively.**

**Evacuation speeds are 2, 4, and 8 m/s during the three sequential subphases.**

**Evacuee speeds are reduced to 0.7 of normal when there is precipitation.**

**No KI ingestion**

**Evacuation occurs within 16.1 km from the site and evacuees travel to 48.3 km then receive no further dose during the emergency phase**

**After the alarm, members of the cohort spend 5 hours before taking shelter**

**Members of the cohort shelter for 4 hours before evacuating**

**Cohort 3**

**Description: Non-Evacuees**

**Population fraction: 0.005**

**No KI ingestion**

**Normal Activity Shielding and Exposure parameters for Cohort 3 are as follows:**

**Cloudshine shielding factor: 0.70**

**Inhalation protection factor: 0.50**

**Skin protection factor: 0.50**

**Groundshine shielding factor: 0.40**

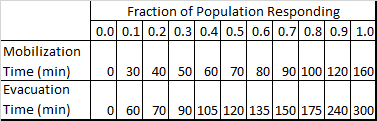
**Run the MACCS calculation using the Population Movement output to determine the evacuation timing of the general population.**

**What is the total, population-weighted, early fatality risk within 16.1 km of the site for all cohorts?**

**What is the total, population-weighted, cancer fatality risk within 16.1 km of the site for all cohorts?**

**What is the total, population-weighted, cancer fatality risk within 32.2 km of the site for all cohorts? Why is it not much different than the risk within 16.1 km?**

**What is the total, population-weighted, cancer fatality risk within 80.5 km of the site for all cohorts? Why is it much lower than the risks within 16.1 or 32.2 km?**



**The above table provides mobilization and evacuation times for the general public. How does the current evacuation plan compare with the site ETE data?**