



## Chemical Attack Tabletop Exercise

## Time-Volume Relationship Formula\*

This formula may be used to calculate resource needs for transporting patients during emergency operations. The formula takes into account resources (in this case transport units), the number of patients, and the time it takes to transport the patients. The formula can be rearranged in order to calculate the information you are looking for. The variables in the formula are:

X = Number of transport units

N = Total number of patients to be transported

n = Number of patients that can be transported on each trip

T = Total time required to transport all patients

t = Roundtrip transport time required for each trip

To find the number of transport units needed use:  $X = Nt/Tn$

Number of transport units = (Total number of patients X Roundtrip transport time) ÷ (Total time required to transport all patients X Number of patients that can be transported on each trip)

To find the total number of patients that can be transported use:  $N = XTn/t$

Total number of patients = (Number of transport units X Total time required to transport all patients X Number of patients that can be transported on each trip) ÷ Roundtrip transport time

To find the total time required to transport all patients use:  $T = Nt/nX$

Total time required to transport all patients = (Total number of patients X Roundtrip transport time) ÷ (Number of patients that can be transported on each trip X Number of transport units)

\* Adapted from: Emergency Medical Services: Special Operations Activity Manual. United States Fire Administration, National Fire Academy, 1st Edition, 4th Printing.