# THE RADIAC CALCULATOR NO 2

## DESCRIPTION OF CALCULATOR

1. The calculator is used in conjunction with Radiac Survey Meter readings at known locations which are related to the time after explosion of a bomb or, more usually, from 7 hours after the mid-point time of an attack, ie the DR7 time. Fallout maximum must have been reached and the steady decay period have started.

## CONSTRUCTION

2. a. Outer disc: marked in Roentgens which may be a dose or a dose-rate.

b. Intermediate disc: marked in mins/hours/days/weeks relating to time after explosion.

c. Inner disc: marked in mins/hours/days/weeks and used in measuring the total dose received over a period of time.

## METHODS OF USE

3. To determine future or past doses or dose rates

a. Note dose from radiac survey meter on outer disc.

b. Note time after explosion at which the dose was taken on intermediate disc.

c. Locate (b) under (a), then read off future or past dose or dose rate opposite the appropriate time after explosion.

4. To determine the dose absorbed in a known time

a. Method 1:

(1) Set outer and intermediate discs at the known dose and time as in 1. above.

(2) Locate the time after explosion at which the exposure will start on the inner disc opposite the "start exposure" arrow.

(3) On the inner disc add the known period of exposure to the start time and follow the guide lines back to the outer disc where the dose accrued is read off. This dose is that absorbed during the time of exposure. Interpolate carefully between the guide lines where necessary.

b. Method 2

(1) Set outer and intermediate discs at the known dose and time.

(2) Determine the midpoint time of exposure (eg if exposure is for 4 hours starting at H + 10, the mid-point is H + 12).

(3) Read off the dose rate opposite the midpoint time and multiply it by the length of the exposure.

5. To determine the period of time which can be spent in a radio-active area before a particular dose is accrued:

a. Set outer and intermediate discs at the known dose and time. Set the inner disc with the time at which exposure will start opposite the "start exposure" arrow.

b. Locate on the outer disc the dose to be accrued and follow the guide lines (interpolating as necessary) through to the inner disc. Where the guide line meets the inner disc read off the time after explosion at which the exposure must end.

c. Deduct the time shown opposite the "start exposure" arrow from the time determined at b. above, to give the number of hours which can be worked.

6. To determine earliest start time: (where permitted dose and exposure times are known)

a. Method 1:

(1) Set outer and intermediate discs at known dose and time.

(2) Locate the permitted radiation dose on the outer disc and follow guide lines (interpolating as necessary) up to the inner disc.

(3) By trial and error turn the inner disc to fit the known period of time between the "start exposure" arrow and the point found at (2) above.

(4) Read off from the inner disc the time at which exposure can start, which is under the "start exposure" arrow.

b. Method 2:

(1) Set outer and intermediate discs at known dose and time.

(2) Divide the maximum permitted dose by the time in which it is to be accrued to obtain a midpoint dose.

(3) Read off under the dose determined at (2) above, a time on the intermediate disc which is the midpoint time of exposure.

(4) Deduct half the total exposure time to give a start time.

NB: The "H + " times will need to be converted to clock times for the customer.