

In order to study the possibilities to increase the endurable time of occupancy in a closed air raid shelter a series of experiments has been done in the laboratory and on a bigger scale with groups of 20 to 400 persons occupying a shelter during up to twelve (12) hours.

The mean human metabolic rate during twelve (12) hours occupancy under crowded shelter conditions has been found to correspond with the following figures given pro human and hour:

Oxygen consumption (at +20 C, 760 torr) 25 l

Carbon dioxide production (- " -) 20 l

Heat evolved (total) 120 kcal

Water evolved 120 g

The limits for an acceptable environment during a twelve hours occupancy in a closed shelter have been found to be:

Temperature +28 C

Relative humidity 80 %

Oxygen content 18 %

Carbon dioxide content 2 %

Those figures correspond to a "wet bulb temperature" of +25 C, which ascertains a safe distance to the tolerance limit, which is assumed to be at a "wet bulb temperature" of +30 C.

Two separate processes for carbon dioxide removal, absorption with solid calcium hydroxide or with liquid potassium hydroxide in water solution, have been investigated.

A guide for projecting carbon dioxide removal plants in big shelters for civilians has been compiled.