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A DIGEST OF TECHNICAL INFORMATION

PERMISSIBLE EMERGENCY LEVELS OF RADIOACTIVITY IN WATER AND FOOD

This bulletin, intended for radiological and health officials, describes the maximum permissible levels of radioactivity in water and solid or liquid foods to be consumed in the period immediately following an atomic explosion. These emergency levels are consistent with those being used by the Atomic Energy Commission, the Department of Defense, the U. S. Public Health Service, and the Food and Drug Administration.

Radioactive Contamination

Responsible officials should know the maximum contamination levels that can be tolerated during the emergency period, and should be equipped to monitor foods and water that are suspect. Consumption of food or drinking water containing appreciable concentrations of radioactive material, in terms of peacetime limits, may be permitted for short periods of time under emergency conditions. Table 1 gives the maximum levels of beta-gamma activity, and table 2 the maximum levels of alpha activity that should be tolerated for the stated estimated consumption periods.

Values in table 1 on beta-gamma activity are applicable only during the month immediately following an atomic bomb burst. After 1 month, these values should not be used because a greater portion of the radioactivity will be due to the more hazardous longer-lived fission products and a more complete study which may include a radiochemical analysis is necessary.

During the first month it may be assumed that food and water adjudged safe from a beta-gamma measurement do not contain hazardous quantities of alpha emitters.

TABLE 1.—Acceptable Beta-Gamma Activity*

Estimated consumption period	uc/cc	dps/cc
10 days	9×10^{-2}	3×10^3
30 days	3×10^{-2}	1×10^3

* See footnote for Table 2.

Values given in table 2 on alpha activity are not limited to the month immediately following an explosion but apply as emergency values to any 10- or 30-day period.

TABLE 2.—Acceptable Alpha Activity*

Estimated consumption period	uc/cc	dps/cc
10 days	5×10^{-3}	180
30 days	1.7×10^{-3}	60

*The curie (c) is a unit of radioactivity representing 3.7×10^{10} disintegrations per second (dps). The microcurie (μ c), one millionth of a curie, is a more convenient unit and the concentrations of radioactivity are expressed in microcuries per cubic centimeter (μ c/cc).

Application of These Emergency Values

These are not peacetime permissible limits of radioactivity in water and food for either long- or short-term consumption. Responsible officials can utilize these values during emergency periods with the conviction that water and food contaminated below these limits can be used with no real hazard.

Nonperishable foods too contaminated by beta-gamma emitters for immediate consumption should not be destroyed because natural decay of radioactivity will reduce the radiation to safe values.

Detecting Contamination in Food and Water

Many standard commercially available instruments are sufficiently sensitive to detect these emergency levels. Almost any instrument with a gamma sensitivity of 0.5 mr/hr (1 milliroentgen per hour equals 0.001 roentgen per hour) and capable of detecting beta radiation is satisfactory.

Bibliography

"Handbook of Atomic Weapons for Medical Officers," issued by the Departments of the Army, Navy, and Air Force under the designations: DA Pamphlet 8-11; NAV MED P-1330; AFM 160-11. June 1951.

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