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PAPER TITLE HOW TO ESTABLISH BIODOSIMETRIC LAB. (THE SCIENTIFIC BASES AND REQUIRED EQUIPMENTS)

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ABSTRACT (See instructions overleaf)

Chromosomal aberration in human T-Lymphocyte of peripheral blood are sensitive indicators of radiation exposures even at low levels of dose. At present, chromosome analysis is the method of choice for a biological estimation of an equivalent whole-body dose of actual or suspected over-exposures to ionising radiation.

Cytogenetic dosimetry is a valuable tool in supplementing physical dosimetry in practical radiation protection since, individual ; body doses down to 100 mSv. gamma-rays can be reliably detected. There are some limitations for a quantification of individual acute exposures below 50 mGy; for partial-body, chronic exposures and in particular for incidents with incorparation of radionuclides with selective depositions.

Four biodosimetric methods are used for the evaluation of the radiation dose, viz: glycophorin-A (GPA)-somatic mutations; chromosome translocations; micronulei; and dicentrics. Two of these biodosimeters; (GPA) and translocations are stable with time post-exposure and are therefore expected to integrate radiation damage under chronic exposure conditions. The other two (micronuclei and dicentrics); are unstable, and can only detect recent exposures.

Two different approaches were used to detect chromosome translocations in peripheral blood lymphocytes -viz: fluorescence in situ hybridization (FISH) and G-banding.