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## **Building up the "Global Experiment": IAEA's Early Attempts to Standardize Radiation Dosimetry**

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This paper traces the beginnings of the IAEA's radiation dose intercomparison program that targeted all Member States and involved the World Health Organization in order to standardize dosimetry on a global level. In the early 1960s the need for exact measurements of radiation doses was especially acute in radiation therapy given the new powerful radiation technologies that made their appearance in medical centers across the globe and the new demands on radiation protection of the patients. From x-ray machines that emitted radiation of low energy and with limited penetrating power, radiation therapy shifted gradually to isotopic teletherapy units that contained radioactive isotopes such as cobalt-60 and to supervoltage range X-ray machines. Reliable dosimetry and the determination of standard techniques to measure radiation doses became thus the top priority of the newly established IAEA. Yet, to standardize dosimetric measurement methods, techniques, and instruments one had to devise a method to compare with high accuracy absorbed dose measurements in one laboratory with those performed by its peers. In 1964 the Agency started to build up what I call the "global experiment," an immense intercomparison of radiation doses with participating laboratories from across Member States. I argue that only an international organization with great political and diplomatic power such as the IAEA was in a position to design, plan, and execute such an ambitious project. The first step was the distribution of chemical dosimeters to institutions interested in the dosimetry of high-energy electron beams in major European laboratories for intercomparison. Then followed similar intercomparisons of dosimetric measurements involving other types of instruments and finally the IAEA established a postal dosimetry intercomparison service, one of the most important services to the Member States today. The paper explores the history of this program, focusing on the peculiarities of the IAEA.