SYMPOSIUM ON RADIATION EFFECTS AND DOSIMETRY

INTRODUCTION

By V. P. Calkins

In order to discharge one of its prime responsibilities, Committee E-10 on Radioisotopes and Radiation Effects sponsored a Symposium on Radiation Effects and Dosimetry at the Third Pacific Area Meeting in San Francisco during October, 1959.

The objective of this symposium was twofold: (1) to clarify some of the confusion existing throughout the country in the field of radiation dosimetry, and (2) to summarize some of the latest data pertaining to the effects of radiation on various materials.

To achieve the first objective, a series of seven papers on radiation dosimetry were prepared and presented by a widely diversified group of authors. These papers cover the dosimetry field in a broad manner: radiochemical determination of uranium burnup, recent developments in gamma dosimetry, neutron spectra from activation data, reactor flux by calorimetry, removal dose as an environmental measurement of X-rays and gamma rays, dosimetry nomenclature in the United States, and a final paper on dosimetry in Europe and the USSR. By discussing the methods and terminology being used for determining radiation dosages and by presenting the status of dosimetry in Europe and USSR, it is hoped that work leading toward the evaluation and standardization of both radiation measurement techniques and nomenclature can progress at a much more rapid pace. Such evaluation and standardization would greatly facilitate a more realistic interpretation of the effects of radiation on various materials.

The latest data pertaining to the effects of radiation on various materials are presented and summarized in a series of papers which include such topics as: the effects of gamma radiation on electrical properties of Teflon, standardization of terminology for gamma and electron beam radiation sources, atomistic interpretation of radiation effects in metals, effects of radiation on pressure vessel steels, and dynamic radiation effects testing methods. An additional paper which was not presented at the Third Pacific Area Meeting has been included in this symposium volume. This paper, entitled "Radiation Effects in Steel," is a rather comprehensive survey of the published information on the effect of neutron radiation on the mechanical properties of steel.

It is hoped that the twofold objective of this particular symposium has been achieved, at least to the extent that the proper direction for future work on dosimetry and radiation effects has been more clearly blazed. If such has been achieved, both the authors and symposium committee members will feel that their efforts have been amply rewarded.