

namely: (1) the efficiency of ion exchange resins for this type of process; (2) determination of operating curves under set conditions for typical types of ions; (3) determination of amount of leakage or efficiency of ion exchange resin in order to estimate decontamination factors; (4) effect of reagents which might cause precipitation or complexing; (5) effect of solvents, greases, detergents or precipitates; (6) possible concentration by incineration. Two procedures, complete deionization and partial deionization, are described. Experimental evidence was obtained to show that (a) a high decontamination factor may be obtained using synthetic solutions which represent laboratory conditions; (b) a high concentration factor may be obtained making possible the compacting of the wastes into small volumes; (c) the presence of ordinary contaminants such as oils, solvents and precipitates do not have a great deleterious effect.

NUCLEAR SCIENCE ABSTRACTS.

MODERN RADIATION-DETECTION INSTRUMENTS FOR HEALTH PROTECTION. EVERETT W. MOLLOY and ARNOLD O. BECKMAN, *Mach. Eng.* **71**:649 (Aug.) 1949.

The authors give a brief summary of the nature and ionizing effects of the different types of nuclear radiation and then describe in popular terms the operation of several detectors. This description includes separate sections on ionization chambers, Geiger counters and proportional counters. They discuss the use of these detectors in the more common types of detecting instruments. In the concluding section they describe the type of instrument which indicates the total amount of radiation received by the worker over a given period.

NUCLEAR SCIENCE ABSTRACTS.

UNITS OF RADIOACTIVITY. L. F. CURTISS, R. D. EVANS, WARREN JOHNSON and GLENN T. SEABORG, *Phys. Rev.* **77**:142 (Jan. 1) 1950.

In November 1947 a joint committee of the division of Chemistry and Chemical Technology and the Division of Mathematical and Physical Sciences of the National Research Council was appointed to make recommendations regarding standards and units of radioactivity. This committee suggested that the curie be defined as a quantity of material undergoing 3.7×10^{10} disintegrations per second, the rutherford as a quantity of material undergoing 10^6 disintegrations per second, and that the roentgen rate per hour at 1 M. be adopted for the quantitative comparison of gamma ray sources.

NUCLEAR SCIENCE ABSTRACTS.

PROTECTING PHOTOFLUOROGRAPHIC PERSONNEL FROM EXCESSIVE RADIATION. WILLARD W. VAN ALLEN, *Pub. Health Rep.* **65**:865 (July 7) 1950.

This report emphasizes that personnel operating photofluorographic equipment may be exposed to excessive radiation and indicates the studies which the United States Public Health Service has undertaken to determine the most effective protective technics.

The author notes that radiation hazard is serious because (1) the energy required for photofluorography is greater than that for conventional radiography, (2) the number of daily exposures may be great, and (3) the space and portability requirements of the equipment interfere with employment of the usual protective devices.

The problem is being studied by continuous monitoring of personnel using film badge technics and determination of radiation fields surrounding equipment. The results of the first five weeks of the monitoring study are presented. The data show that initially 20 per cent of personnel received more than the minimum tolerable dose of radiation. However, follow-up procedures eliminated all personnel from the overexposed group during the second, fourth and fifth weeks.

Isodose curves of the secondary radiation fields about a typical unit are presented. These indicate that all personnel working in the unit must be shielded by suitable