TABLE 42-A

CLASSIFICATION OF ISOTOPES ACCORDING TO RELATIVE RADIOTOXICITY PER UNIT ACTIVITY

(The isotopes in each class are listed in order of increasing atomic number)

Class 1 (very high toxicity)	Sr-90 + Y-90, °Pb-210 + Bi-210 (Ra D + E), Po-210, At-211, Ra-226 + 55 per cent °daughter products, Ac-227, °U-233, Pu-239, °Am-241, Cm-242
Class 2 (high toxicity)	Ca-45, °Fe-59, Sr-89, Y-91, Ru-106 + °Rh-106, °I-131, °Ba-140 + La-140, Ce-144 + °Pr-144, Sm-151, °Eu-154, °Tm-170, °Th-234 + °Pa-234, °natural uranium
Class 3 (moderate toxicity)	°Na-22, °Na-24, P-32, S-35, Cl-36, °K-42, °Sc-46, Sc-47, °Sc-48, °V-48, °Mn-52, °Mn-54, °Mn-56, Fe-55, °Co-58, °Co-60, Ni-59, °Cu-64, °Zn-65, °Ga-72, °As-74, °As-76, °Br-82, °Rb-86, °Zr-95 + °NB-95, °Nb-95, °Mo-99, Tc-98, °Rh-105, Pd-103 + Rh-103, °Ag-105, Ag-111, Cd-109 + °Ag-109, °Sn-113, °Te-127, °Te-129, °I-132, Cs-137 + °Ba-137, °La-140, Pr-143, Pm-147, °Ho-166, °Lu-177, °Ta-182, °W-181, °Re-183, °Ir-190, °Ir-192, Pt-191, °Pt-193, °Au-196, °Au-198, °Au-199, Tl-200, Tl-202, Tl-204, °Pb-203
Class 4 (slight toxicity)	H-3, °Be-7, C-14, F-18, °Cr-51, Ge-71, °Tl-201

° Gamma-emitters.

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age and spillage, and even welded seals have been known to fail The hazard can be severe and great care should be taken in handling such sources Even if no known accident has occurred, such sources should be tested for leaks by a standard procedure at scheduled intervals, by someone with experience in such matters

Radiation-producing machines For many years, radiation-producing machines have been in use and proper operation of X-ray machines has been described in many publications. If an accelerator is to be obtained and used, radiation safety personnel with special training or experience will be required to assure that it is properly installed and operated (see NBS Handbooks 50, 55, and 76 and NSC Industrial Data Sheet 475 *X-Rays in Industry*)

Portable machines offer many of the same kinds of radiation safety problems as do nonportable sources of corresponding intensity, as well as special problems related to the portability and lack of stationary shields.

Radioisotopes. Use of radioisotopes in the laboratory may encompass a wide range of hazards, depending upon the quantities and types of radioisotopes used as well as