stand are most useful and time saving. With them we no longer need to consult the instruction manual or a set of sample scans each time we make an exposure. When the detector head is used with the crystal facing away from the stand, one must imagine that the detector head and patient are rotated to either the "crystal-up" or "crystal-down" positions to determine which switch settings one should use. However, this can be done very easily.

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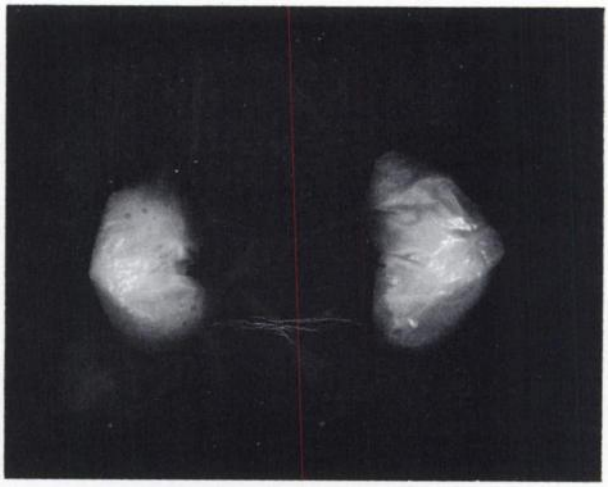
INEXPENSIVE HUMAN ORGAN PHANTOMS

Ever since the advent of imaging devices, nuclear medicine personnel have used organ phantoms in an effort to perfect scanning techniques. The need for such devices became even more obvious in nuclear medicine training programs. A number of approaches to acquiring adequate phantoms have been used ranging from costly plastic commercial products to a variety of inexpensive inadequate tissue substitutes.

Recently a commercial product, Super Stuff,* has been used as a material of tissue equivalence in several investigative procedures. The resident faculty at the Nuclear Medicine Institute has extended its use to the production of human organ phantoms. The phantom material is prepared by mixing an 18-gm package of powder with approximately 300 ml of water. Each package will produce approximately 300 gm of material. By combining packages and mixing well in a plastic bag the approximate weight of any organ can be realized. The use of the plastic bag insures a vessel for mixing as well as controlling contamination. The radioactivity is usually added to the last "batch" and, thereafter, the degree of mixing determines the homogeneity or nonuniformity of the "organ" depending upon the clinical state to be simulated. Following mixing, the mass of tissue-equivalent material appears a pink, gelatinous mass which can be molded easily to the desired form or placed in a variety of organ casts. A simple cardboard retainer wall has been used at the Nuclear Medicine Institute to effect this end. Para-organ tissue scatter can be simulated by surrounding the "organ" with uncooked rice.



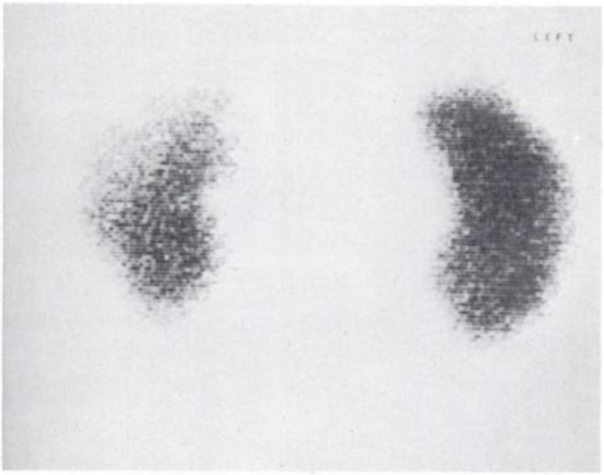


FIG. 1. Kidney phantom made of "Super Stuff" and scan.

* Super Stuff—Whamo Corporation, San Gabriel, California.

Figure 1 shows a kidney phantom and the resultant scan. An obvious "cold" lesion appears in the superior pole of the right kidney (anterior view). Cold lesions of any size can be placed anywhere by using tumor equivalent material. Hot lesions can be placed in the "organ" by using material from the same tumor-equivalent preparation containing more radioactivity. In this way, any organ containing any type or any number of lesions can be simulated.

SUMMARY

A method of producing human organ phantoms has been described. These phantoms have proved to be successful, inexpensive and easy to reproduce. A variety of clinical states can be duplicated by the placement of "cold" lesions, "hot" lesions or nonuniform mixing to effect a device for perfecting imaging techniques for all nuclear medicine programs.

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