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Nuclear Products

TEL. (AREA 612) 633-9420

June 22, 1972

Frank C. Davis  
Materials Branch  
Directorate of Licensing  
U. S. Atomic Energy Commission  
Washington, D.C. 20545

Dear Mr. Davis:

I have your letter of 15 June 1972 requesting further information on our afterloading cervical applicator systems.

I will attempt to answer the questions you raised in the order which they were presented.

Question #1 - A copy of drawings #B1921-1145, 1146 and 1147 are included. You will note that these include all dimensions. Further, my files indicate that you may not have received a copy of our assembly key, #A1921-1231. On the chance this has occurred I have included a copy of this drawing also.

Question #2 - The staking process used is a very gentle tap of the thin area on the source holder end (drawing #B1921-1145). The size CA capsules which are used drop in well below the area which is tapped and are not subjected to any stress during this operation. Further, the source assemblies are examined, both visually and by a smear test, by our Quality Control group prior to shipment of the source to the customer. On all smear tests we require that contamination of less than 0.0001 microcuries be found.

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NT TO COMPLIANCE

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Question #3, #4, #5, #6 - I have elected to answer all of these questions at once since it appears that these have to do primarily with the design and operation of the Fletcher-Suit afterloading applicator itself.

As discussed in our telephone conversation, we do not manufacture the Fletcher-Suit applicator but only side carriers (Model 6H6D) containing sources to be used in the applicator, as well as cartridges to be inserted into the uterine tandems. In the case of all of our afterloading systems the 6H6A cartridge is used; the only variations having to do with length of the components. The particular dimensions are spelled out on the assembly key (A1921-1231). I have attached hereto a copy of a catalog from the Radium Chemical catalog which shows, at somewhat greater detail, the construction of the Fletcher-Suit applicator. It should be understood that this shows the applicator as designed for use with separated sources which the doctor inserts himself into the side carriers and into the plastic tubes designed for insertion into the afterloading tandems. This unit is very old (approximately 10 years) and it was developed by Drs. Fletcher and Suit at M. D. Anderson Hospital based on their earlier applicator which is essentially identical but does not have the afterloading features. It should be noted that the side carriers (marked on the sketch) slip into the afterloading ovoids and flip over into an appropriate position when inserted to their full length. The applicator is first installed in the patient, properly positioned and then the side carriers containing each one Cs-137 source and the cartridges containing any number of sources are inserted into the afterloading ovoids and the tandem respectively.

*Call from Tom today  
re applicator contact 341 side carrier & ovoid  
sources. Attachments & material in glove compartment.*

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*bulk material*

The Fletcher-Suit applicator itself is manufactured of chrome plated stainless steel and is relatively well described on the catalog page. Dimensionally, the tandems have an outside diameter of approximately 1/4" with an I.D. of about 3/16" and a total length of about 10.5". They are equipped with a cap at the appropriate end to clamp the cartridge inserted into the tandem in place during exposure of the patient. The afterloading ovoids located at the ends of the hinged square tubes are about 1-1/8" long and 3/4" in diameter with the square tubes having an overall length of approximately 6". The tandem is inserted into the uterus during the treatment with the afterloading ovoids being used to treat the area about the cervical os and the ovarian area. The plastic spacers shown above the afterloading ovoids are used to increase the diameter in cases where the physician wishes to accommodate a larger area or space the organs from the radiation sources.

*what?*

The number of millicuries used is not fixed on this assembly. Typically, the side carriers will be loaded with one Cesium source containing 10-20 milligram Radium equivalent (25-50 millicuries Cs-137). However, we manufacture the size CA tube in up to 40 mg Ra eq (100 millicuries) and the physician can specify this if he so desires. In the case of the tandems, the afterloading cartridges will contain from 1-4 sources and will be loaded, usually, on the order of 10-60 mg Ra eq (25-150 mCi Cs-137). The loading depends on the specifications given to us by the physician who generally will custom tailor his cartridges and side carriers to his particular mode of treatment.

It should be clearly understood that we at 3M do not specify the type of treatment, nor have we designed the applicator, nor do we indicate to the physician

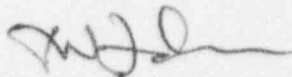
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how the applicator is to be used, etc. This is purely a medical decision based on the significant amount of literature which has been published in the area of treating of carcinoma of the cervix as well as specific to both the Horwitz and the Fletcher-Suit afterloading systems.

I think this information should be adequate, although it's possible that I have missed something. It's a little difficult to describe this unit without actually showing how it works. If, by any chance, you are attending the Nuclear Medicine meeting in July we will have a display and samples of all these afterloading applicators will be available for inspection and review. It might be practical for someone in your group to take a look at these at that time. If you have any questions please feel free to contact me personally at any time.

Very truly yours,



T. N. Lahr  
Manager, Pilot Plant

TNL:pr

Enclosure