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MONSANTO CHEMICAL COMPANY - UNIT III

R/c

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COMMENTS ON HANDLING OF RADIOACTIVE SUBSTANCES

(Information Report)

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GENERAL

There are two modes of attack in attempting to handle radioactive materials so as to reduce the hazard to operators. First, the operators can be equipped with protective devices such as rubber gloves, respirators, special clothing, etc. Second, the "hot" operations can be isolated.

The first method is by far the easiest to put into effect for chemists who are not trained radiochemists. No changes in their normal habits about a chemical laboratory are necessary except addition of the protective equipment. No changes in their thinking processes are necessary --- the chemistry of an operation is considered; procedures to determine certain facts are devised; these procedures are put into effect immediately without having to consider the contamination angle at all, since the use of protective devices can, in general, protect the individual through any operation. But, contamination of the entire working area results. This should cause no difficulty if every person in the area is protected at all times by gloves, respirators, and clothing. If this is not done, then the chemist is protecting himself at the expense of his colleagues.

The second method --- that of isolation of "hot" operations --- should not be too difficult to obtain if the following procedure is followed:

1. Begin operations in a clean area.
2. Devise procedures in extreme detail and try to provide everything necessary to keep contamination enclosed.
3. Provide routine air, wipe, and hand counts to detect any spread of contamination.
4. Assign a clean-up man to immediately eliminate these "hot" spots.

Unfortunately, the first two of the above points are not simple. This is especially true if this method is to be applied to a laboratory which has been operating under the first method.

Also, and this is important, this method can easily fail if not given the whole hearted cooperation of the operators involved. And, perhaps even more important, this method can fail if the simple, general rules of conduct between laboratories are not observed.

In short, unless given complete support by every laboratory in the building, indeed by every individual --- maintenance men especially ---, this method will fail.

Suggestions on Moving from a "Hot" Laboratory

1. Construct twelve boxes as in figure:

Three of these should be equipped with shelves 8" apart; the rest of the boxes should have no shelves. They must be of sturdy construction.

Time - One Day.

2. In addition to the above boxes, several cardboard cartons should be obtained.

3. All movable items from drawers, cupboards, desks, files, and hoods should be sorted into these boxes. All material no longer needed should be placed in cardboard boxes and removed. All material which will be needed should be carefully placed in the wooden carriers and removed to a storage space pending decontamination.

Time - One Day.

Chemists - Two.

Laborers - Two.

4. All material in the wooden boxes should be decontaminated or replaced.

Time - Three to four weeks could be taken.

Chemists - Needed to handle notebooks.

Laborers - Decontamination squad.

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Painters - One.

Chemists - One (one day).

Time - Three Weeks.

6. The inside of the hoods containing equipment should be painted by chemist. The entire laboratory should be painted with two coats of white paint.

Laborers - Four.

Time - One Day.

5. The laboratory should be washed with main object to remove dust and dirt. All glass surfaces should be decontaminated. The air filters should be removed and the filter holder thoroughly cleaned --- preferably hosed with water.

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