The relatively greatest retention of radioactive material has been found in the cages of the animal room. Only brief visits need be made to this area, which otherwise is isolated in that it is surrounded by heavy concrete on floor, ceiling and one wall and by the 4 in. (10 cm.) thick tile on the other walls. Furthermore, the radiation at the surface of the animal cages is not sufficient to reach as far as the door facing the working area in room 2, let alone the counting area in room 3, where the delicate Geiger scaler has given consistently normal background counts.

Readings on the radiation survey meter taken along the drains have shown a complete absence of radioactivity. This was to be expected at the level of our operation. In work with radioactive phosphorus, with which we have so far been primarily concerned, the Atomic Energy Commission regulation states that with appropriate dilution as much as 200 mc. may be disposed of through the waste pipes in the course of one week. In view of the fact that an average of only 10 mc. of P^{32} has been required for a tracer study, even in a large monkey, and because the completion of such an experiment has taken a week or more, it is obvious that only a very small fraction of 200 mc. would enter the waste pipes in the course of one week.

From the first year's experience we do not foresee any major problems of contamination or any early replacements of fixtures aside from the air filters. These need periodic replacement because of dust, whether radioactive or not. During the first year of operation the filters had to be replaced once because of dirt, but there has been no evidence of radioactive contamination of the filters.

It is obvious, therefore, that the prerequisites mentioned in the introduction have been readily attained. Furthermore, we believe that the precautionary measures will permit higher levels and more diverse types of operation than those currently involved.

SUMMARY

This paper describes the construction, the cost and the operation of a laboratory for making radioisotope studies in experimental animals. The unit is relatively small and inexpensive, yet fairly complete for operation on a university level. The facilities required for biological radioisotope work are arranged within a small segregated area so that experiments can be conducted from beginning to end without the need of transferring animals, specimens or chemicals to any other part of the surrounding building.

In the elaboration of plans and specifications for this laboratory the authors received valuable advice from Dr. A. K. Solomon, of the department of biophysics, Harvard Medical School, and Prof. Philip Drinker, of the department of industrial hygiene, Harvard School of Public Health. Mr. G. S. Reichenbach and Mr. M. First, of the department of industrial hygiene, worked out the detailed blue prints of the exhaust ventilation system and Mr. W. P. Hooper, assistant superintendent of buildings and grounds, Harvard Medical Area, prepared all other specifications and supervised the installations. The Atomic Energy Commission, under whose contract the present radiotracer studies are being conducted, defrayed the cost of the exhaust apparatus of the radioisotope unit.