

29-01348-10

UNION CARBIDE CORPORATION

SPECIALTY CHEMICALS DIVISION

P.O. BOX 670, BOUND BROOK, NJ 08805

TELEPHONE (201) 356-8000

April 12, 1985

Dr. John Glenn
U.S. Nuclear Regulatory Commission
Region 1 Material Licensing Section
631 Park Ave.
King of Prussia, PA 19406

Dear Sir:

Enclosed are documents detailing proposed additions to our license.

- 1) Check for \$700
- 2) A copy of our current license.
- 3) Information on radioactive material and purpose of use, a new facility plan, training for personnel responsible for new sources, a waste management plan, and a copy of our revised Radiation Regulation.
- 4) A typical test procedure for tracer studies.

The proposed changes are the addition of two 25 millicurie Americium 241 gauges for measuring sample thickness, and the addition of a laboratory for storage and use of Carbon 14 in radiotracer experiments. The tracer studies have been previously carried out at our R&D facility in Tarrytown, N.Y.

I trust the attached will suffice for issuance of amendment number 11. Please advise if additional information is required.

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By...	Brown
Orig. To...	
Action Compl...	✓

12780
\$700/3m
Application
4/26/85
Brown

Very truly yours,

J.D. Keough
Radiation Protection Officer

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U.S. AIR FORCE
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RADIOISOTOPE INFORMATION

Isotope: CARBON 14

Chemical/Physical Form: Cationic, anionic, nonionic or
amphoteric polymers.

Maximum Amount Present At Any Time: 500 millicuries

Isotope: AMERICIUM 241

Chemical/Physical Form: Enclosed solid (sealed source) for
level gauge.

Maximum Amount Present At Any Time: 50 millicuries

PURPOSES FOR WHICH LICENSED MATERIAL WILL BE USED

The Americium 241 sealed source will be used as a gage to measure the thickness of test samples of polymers. Two units will be located side by side; each source strength will be 25 millicuries.

The C-14 will be used as follows:

Exempt quantities of radioactive polymers will be introduced into typical cosmetic formulations and applied to surfaces simulating skin and hair. The retention of these polymers to surfaces will be determined by liquid scintillation counting. The quantity of radioactive material will not be greater than 100 microcuries per experiment. Samples of exempt quantities of material will be transferred in the hood in Bldg. 98 Lab 441. No more than 10 exempt quantity samples will be stored in the work section of this laboratory. Appendix 1 details a typical experiment involving the subject radioisotope.

Training for Individuals:

R.G. Angell will be responsible for the Americium 241 source. He has no formal radiation training, but is familiar with Union Carbide Bound Brook's Radiation Safety Program and has read the operations manual NDC 103 RHL including section B.1, Safety Aspects.

Dr. R.G. Eagar, Group Manager will be responsible for all work involving C 14. His qualifications are as follows:

Training	Where Trained	Duration	Type
Principles and practices of radiation monitoring (exempt quantities of Iodine, nonexempt quantities of Cesium.)	Bridgewater College	3 weeks	Formal training
Radiotracer techniques in biological experiments (Tritium and C 14- exempt amounts)	Caltech	5 years	On the job

Dr. R.G. Eagar has managed the radioisotope work described in this application at the Tarrytown Research Center since July, 1982. He is familiar with the requirements of the U.C.C. Bound Brook Radiation Safety Program.

through the fume hoods so this yields a wide open average face velocity of 145 ft/min. The maximum changes in the laboratory are:

$$1600 \text{ cfm} \times 60 \text{ min.} / 2596 \text{ cu. ft.} = 37 \text{ air changes/hour}$$

To maintain balanced air pressures between the nonexempt isotope storage room and the exempt isotope-polymer working area, a filter panel will be provided above the door.

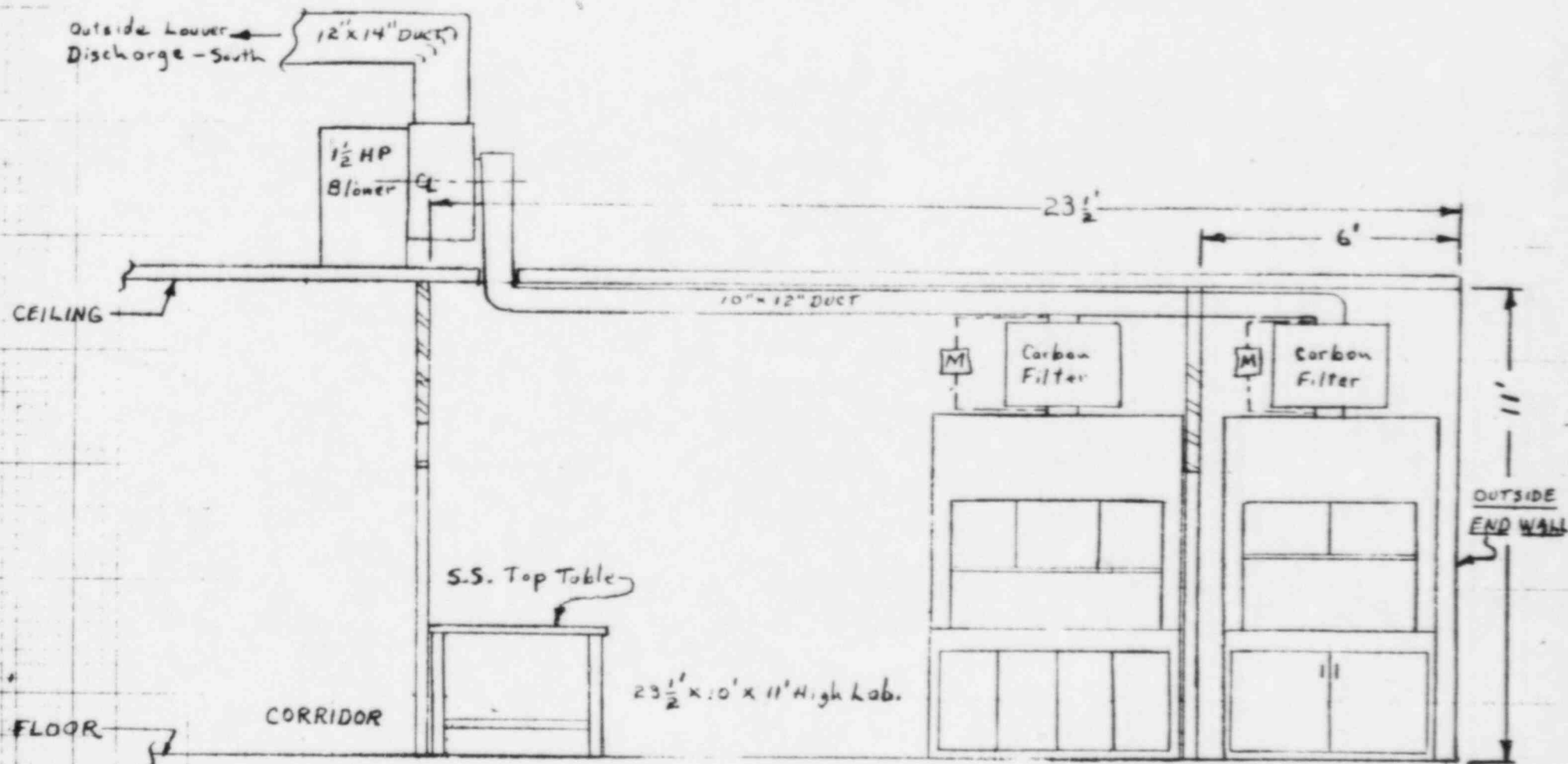
C. Fume Hoods

The 4' fume hood in the nonexempt isotope room is all stainless steel with seamless coved-corner with sides, back, and work surface integrally welded without any cracks, openings, crevices, or seams. No utility services are connected to the hood structure other than electricity for interior fluorescent light fixture. The hood has double wall construction with design for ease of decontamination and cleaning. A 9" diameter vertically upward exhaust connects to a filter housing containing an absolute filter. The housing is of stainless steel. Air exiting from the filter goes through a 10" x 12" rectangular exhaust duct at the ceiling.

The 5' fume hood in the exempt isotope-polymer working area is of the same construction as the 4' fume hood described above with its own filter. It also exits to the 10" x 12" rectangular exhaust duct. Each filter is equipped with a differential pressure manometer to indicate where the filter needs changing.

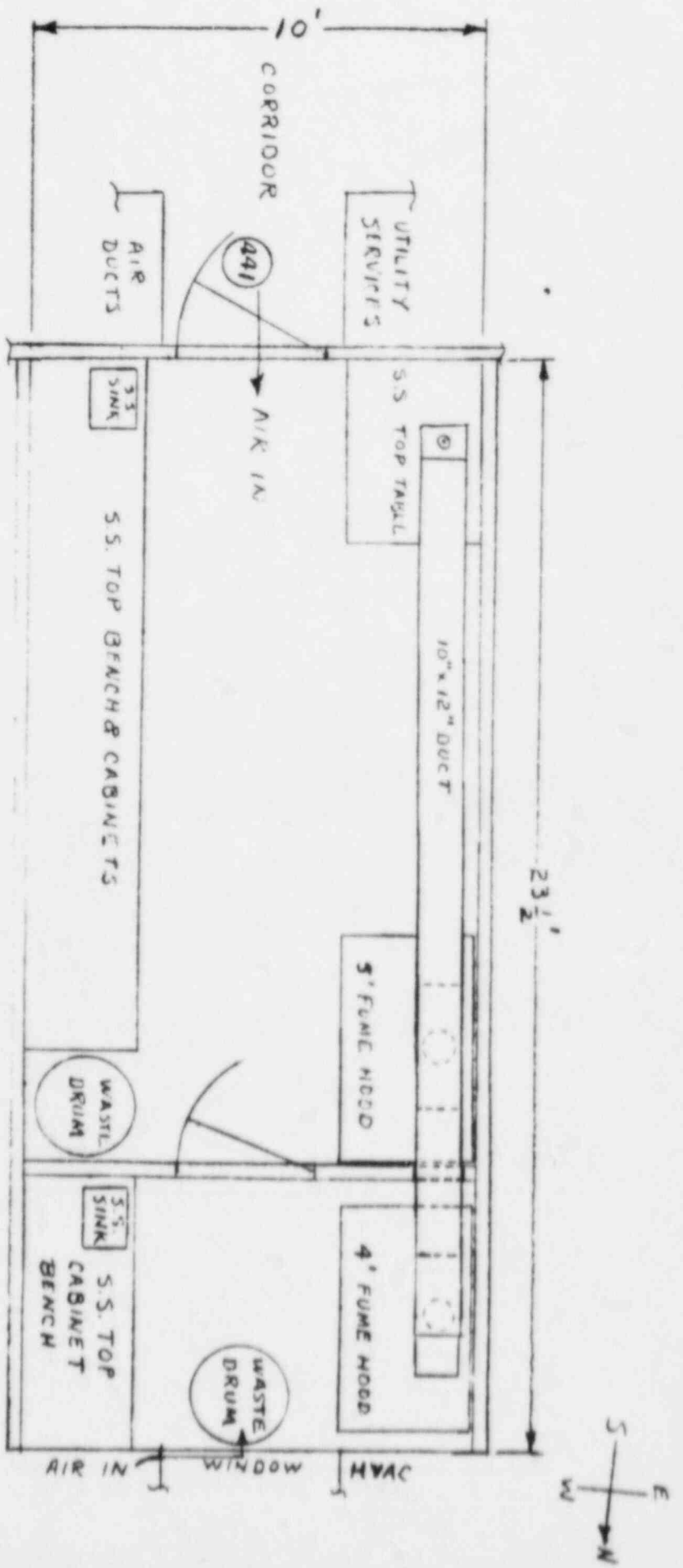
With the 10" x 12" rectangular duct exhausting both hoods, it goes upward through the cement ceiling to the building fifth floor where an up blast blower having an adjustable V-belt drive and 1 1/2 hp motor will drive the blower at 1050 rpm. This blower with a 14 1/4" diameter inlet and a 14 3/8" x 10 11/16" outlet will move 1780 cfm at 2" static pressure. The discharge from the blower will go through a 16" x 12" rectangular duct 20 feet long to an outdoor louver adjacent to other building exhaust air discharge.

Removal of filter elements will be made and disposed of in accordance with Federal, State and local laws.



ELEVATION VIEW - EAST WALL - LAB. 441 BLDG. 98

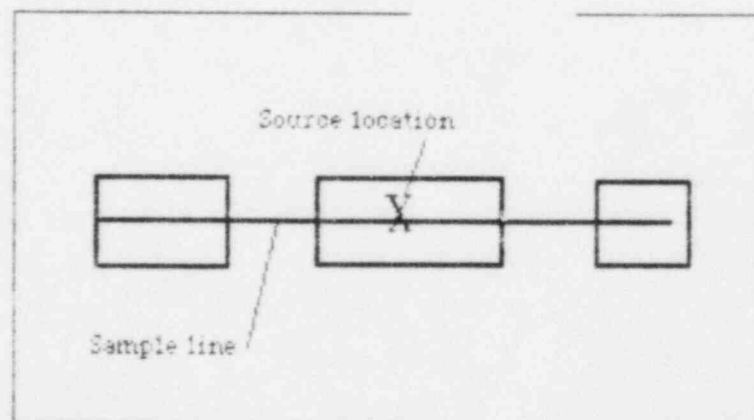
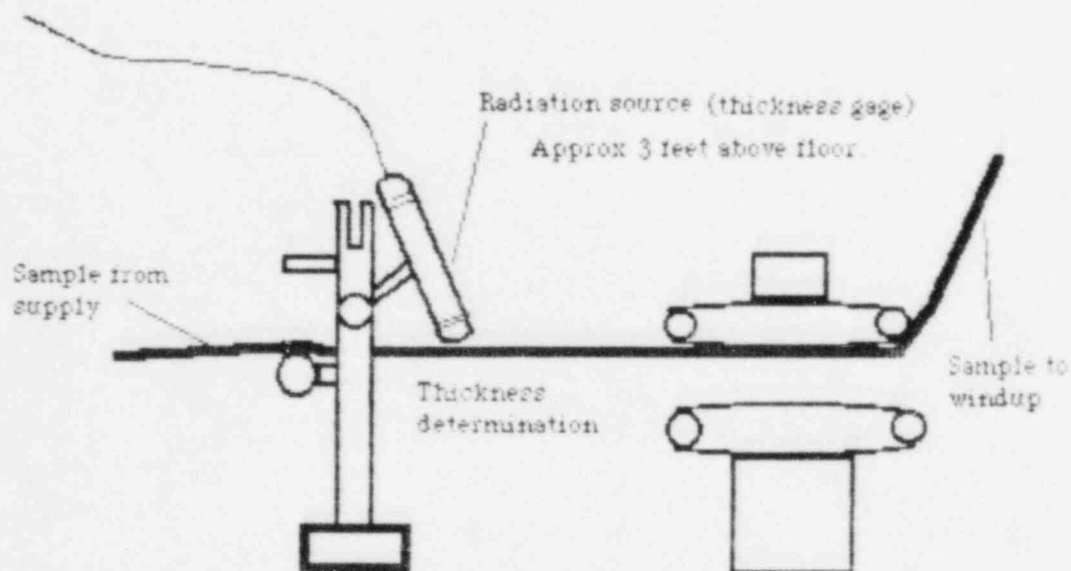
$\frac{3}{8}" = 1 \text{ FT.}$ TAD
4-10-85



PLAN VIEW LAB 441 BLDG. 98

3/8" = 1 FT. T.A.D. 4-10-85

AMERICIUM 241 THICKNESS GAGE LOCATION



Bldg. 97 Prepreg to W lab