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RECD AUG 17 2009

TO: Telecommunications & Software Support

RE: Design and Construction Standards Update

Completed
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DIVISION(S): 13

SECTION(S): 13 21 00

☐ Minor change to correct format problem or typographical errors
No entry in the revision log required

☑ Revision Log Entry Required

Description of Change: Modify minimum face velocity and component requirements of hoods in radioisotope laboratories.

☑ Copy of changes sent via email also
clh291
cal9

Modify Section 13 21 00 per the following (deletions are shown struck through and additions are double underlined). Remainder of section is unchanged.

13 21 00 RADIOISOTOPE LABORATORY DESIGN

.01 General

A. A laboratory designed for the use of chemicals is suitable for most of the experiments at a university using radioactive material. Benchtops, shelving and sinks should have smooth impervious surfaces with a minimum of joints. Stainless steel is very suitable and may be required where chemicals are used that dissolve or react with organic coatings. Soapstone, wood, and other porous material should not be used. However, trays and absorbent paper are ~~required~~ recommended when using any ~~significant~~ quantity of radioactive material making it possible to work with even these poor surfaces.

.02 Floors

A. Floors should also be impervious. Tile floors have joints that can collect contamination but have the advantage that contaminated sections can be easily removed and replaced. Epoxy finishes can also be provided that are smooth, impervious, long-wearing and repairable.

.03 Eating Area

A. One item that is often overlooked is the need for an eating area separate from the laboratory. In radioisotope laboratories food storage, food preparation, and eating or drinking are prohibited. Therefore, refrigerators and sinks in laboratories may not be used for storage, refrigeration of food, or washing eating utensils. The eating area must be an area separate from the laboratory; either a separate room or a partition from the rest of the laboratory. If offices are to be used for eating areas, sinks should be provided for food preparation. The study cubicles used inside some laboratories do not meet the requirements for a separate eating area.

.04 Sinks

A. Sink drains may be of any material compatible with the chemicals to be used. Sink traps should be readily removable for recovery of lost items and contamination checks. Glass plumbing should be protected against heavy objects, such as magnetic stirrers, that can fall through large distances in vertical pipes and break the glass pipe. Glass drain should also be protected from freezing and routed so that leakage goes into pipe chases and not through ceilings into laboratories and offices.

.05 Fume Hoods

A. It is the general policy at the University that radioisotope experiments be designed so that a hood is not needed to meet the requirements for concentration of airborne radioactive material. Hoods serve only as a backup in case of unanticipated release of radioactive material. Therefore, well designed chemical hoods are suitable for most radioisotope work.

B. Hoods should be designed for a face velocity of about 100 ~~-500~~ feet per minute. Some hoods with separate makeup air systems may not meet the face velocity requirement but still give satisfactory performance if the collection efficiency for

airborne material released in the hood is equivalent to that of a 100 fpm face velocity.

C. Hoods should be located away from doors, windows, heavy traffic areas and other sources of drafts that could cause backflow from the hood.

D. Sufficient makeup air is to be provided to the hood or room to allow for proper air flow. Blowers should be located as close to the exhaust end of the ducting as practicable. Duct velocity should be as high as possible to reduce duct contamination without creating a noise problem or requiring excessive energy to operate at a high pressure drop.

E. One exception to the above hood requirement is the design of hoods for radioiodination. Such hoods must meet the following additional requirements:

~~1.~~ A minimal linear face velocity of 1~~25~~00 fpm minimum~~, 150 fpm maximum with sash full open.~~

1.

2. An activated carbon filter for radioiodine plus a prefilter to reduce dust loading of the activated carbon. The activated carbon filter should be designed for a minimum contact time of 0.25 second. Filters are to be of standard AEC design (24" x 24" cross-section, up to 12" deep) and interchangeable with HEPA filters.

~~3.~~ Stainless steel interior for ease of decontamination.

~~4.~~3. ~~A minimum width of 60 inches.~~

~~5.~~4. A mercury-free manometer to indicate filter pressure drop mounted at the hood face.

~~6.~~5. A low-flowrate alarm. A direct reading manometer with pressure switches such as the Dwyer Photohelic gauge can serve as the manometer and flow-rate alarm.

END of revision

Update Commentary:

Section was updated primarily for the following reasons:

1) To improve energy performance (reduce consumption) of radioisotope laboratories while maintaining safety
2) To eliminate the use of manometers containing mercury in new installations