

## \*\*\* UMR REACTOR STANDARD OPERATING PROCEDURES \*\*\*

SOP: 600

Title: LABORATORY RULES

Revised: February 10, 1988

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## A. Purpose

To ensure that all personnel abide by safe operating practices and limit their radiation exposure to as low as reasonably achievable (ALARA).

These rules apply to students in the laboratory courses, such as NE304 and 308, as well as other persons (including reactor staff) who are irradiating samples or are counting irradiated samples.

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## B. Precautions and Rules

1. Keep the laboratory area neat and clean at all times.
2. Return all equipment and nonradioactive material to their original location. Make sure all equipment used is either turned off or on depending upon its function.
3. A film badge or dosimeter shall be worn by the student or researchers at all times. If you do not have a film badge, check out a dosimeter at the Reactor Secretary's desk.
4. Eating, drinking, or smoking are prohibited in the reactor bay and the counting rooms, and those areas will be posted accordingly.
5. Protective apparel, such as gloves, safety glasses and possibly lab coats should be worn when needed during lab operation.
6. Plastic gloves shall be worn only in the bay area or lower level area while handling radioactive sample. Do not wear gloves outside of these areas.
7. a) Only burnable radioactive wastes will be placed in the Yellow rad-waste can. Burnable radioactive wastes for purposes of this SOP are defined as reading less than 0.1 mr/hr above background.  
b) Non-burnable radioactive wastes shall be segregated and stored for ultimate disposal. Non-burnable wastes are those contaminated wastes reading greater than 0.1 mr/hr above background or

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glass, metal and liquids.

8. a) If the sample is non-radioactive it is to be disposed of in the Red waste can.
- b) If the sample is radioactive, has a half-life less than 20 days and reads less than 5 mrem/hr at 1 foot it is to be disposed of in the Yellow rad-waste can (located in the bay area and lower level of the Reactor Building).
- c) If the sample has a half-life greater than 20 days and is greater than 5 mrem/hr at 1 foot, special considerations must be made. Immediately consult a member of the reactor staff. Such samples will be stored in a properly marked container or (deletion) envelope. Include the following information on the container/envelope: |Rev.

Date:

Your Name:

Contents: To include isotope, form solid or liquid,  $T_{1/2}$  and activity.

Radiation Level: To include contact and 3 foot readings in mrem/hr.

Class Number:

and label it with magenta and yellow radioactive tape.

9. All samples greater than 100 mrem/hr on contact must be monitored by a Reactor Operator or the Health Physicist, prior to handling or counting.
10. Liquid samples will be allowed on the reactor premises by special permission only. Consult reactor staff prior to entry into the Reactor Facility.
11. Be aware of what you can and cannot irradiate, in accordance with Technical Specifications 3.7.2. |Rev.
12. Practice procedures, perform a walk through using non-

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radioactive substances before performing with radioactive substances.

13. Do not transfer radioactive materials to unauthorized persons. Do not remove samples from the Reactor Facility unless the By-Product Release Form has been properly completed. (See SOP 604.)
14. Survey lab areas, equipment, and personnel after every experimental procedure involving radioisotopes during and after completion of the experiment.
15. All personnel who have handled radioactive materials shall always use the frisker station to check for possible contamination prior to exiting the bay area. Always keep the frisker probe pointed downward to avoid contamination of the frisker. | Rev.
16. Use time, distance and shielding to reduce exposure to yourself and to others.
17. Review written procedures and maintain them on hand for laboratory operations.
18. If the building alarm is activated, immediately evacuate the Reactor Building in a safe, calm manner. Proceed directly to the decontamination room located in the basement of the Physics Building.
19. Know the procedures for cleaning a minor spill. They are: Stop the release, Warn reactor personnel of any mishaps, Isolate the area, and Minimize your exposure, and Secure the building ventilation fans. (SWIMS). (See Attachment A for exact procedures to be used for cleaning minor radioactive spills.)
20. Visitors are allowed in the Reactor Building, however, they must observe the visitor rules posted beside the main security door and must be accompanied at all times.
21. Before any experiment can be performed, an irradiation request form must be turned in, fully completed and signed by the proper personnel, preferably at least 24

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hours in advance. (See SOP 702).

22. Violation of these laboratory rules could result in unsafe and unprofessional conditions. You should monitor your lab partners as well as yourself for compliance. Failure to comply will result in dismissal from a specific laboratory session. Repeated violations will result in preclusion from the Reactor Building.
23. Pause momentarily to check for possible contamination when passing through the portal monitor prior to exiting the building. The portal monitor will be checked annually with a radioactive source to determine that the tubes are functioning

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Attachment A

CLEANING MINOR RADIOACTIVE SPILLS

Note: If more than microcurie activities are involved in a spill or if the contamination extends beyond a single room, Health Physics Services must be contacted immediately to supervise the decontamination effort.

1. Put on gloves and protective clothing such as a laboratory coat to avoid body and clothing contamination.
2. Absorb spilled material with absorbent paper or cloth to limit spread of contamination.
3. Define and mark off contaminated area. Do not remove objects or allow people to leave contaminated area until monitored.
4. Decontaminate area by cleaning with ordinary cleaning solutions. Start at least contaminated area and proceed towards area of greatest contamination.
5. Dispose of contaminated cleaning papers, cloths, and other materials in radiation waste receptacles.
6. Survey area and objects with survey meter and with swipe tests to insure contamination is removed.
7. Check personnel involved with spill and remove any contamination.
8. Slight contamination of skin and hands can usually be removed by using ordinary hand soaps or detergents and lukewarm water. Decontamination of eyes or wound should only be accomplished under the supervision of a physician.
9. Notify Health Physics of spill and of remedial action.

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