

APPENDIX B

Radioactive Materials
Health Physics Procedures
Clevite Research Center Nuclear Program

CLEVITE RESEARCH CENTER
Division of Clevite Corporation

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STANDARD PROCEDURE

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GENERAL

The provisional procedures Nos. 1 through 4 dated March 1, 1957, Nos. 5 through 9 dated May 15, 1957, and Nos. 10 and 11 dated May 20, 1957 issued by the Health Physics Department of Clevite Research Center are replaced by the following Standard Procedure.

This Standard Procedure has been prepared as part of the Clevite Research Center Nuclear Program. Its intention is to provide maximum safety to operating personnel, other employees, and to the public. Due to the potentially hazardous nature of many of the operations which will be carried out under the nuclear program, strict compliance with this procedure is mandatory.

1. CLOTHING

- A. White, blue bordered lab coats shall be worn by all employees remaining in isolated areas for less than a complete 8-hour shift.
1. These lab coats shall be kept on hangers provided at the entrance of each isolated area.
 2. Additional supplies of these lab coats will be maintained in the stock room on the first floor, south wing.
 3. These lab coats shall not be removed from the isolated area to which they are taken.

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- a) The supervisor of each isolated area shall have these lab coats collected weekly and deposited in the container provided for that purpose in the isolated locker room.
- B. Green uniforms shall be worn by all employees remaining in isolated areas for a complete 8-hour shift.
1. These uniforms shall not be worn except in isolated areas, traveling between isolated areas, or traveling between isolated areas and the isolated locker room.
 - a) These uniforms shall be removed and kept in the isolated locker room during lunch periods.
 2. These uniforms shall not be worn for more than one complete 8-hour shift.
 - a) Additional supplies of these uniforms will be maintained in the stock room, first floor, south wing and will be dispensed as needed.
 - b) These uniforms, which have been worn, shall be deposited in the container provided for that purpose in the isolated locker room.
- C. Employees entering isolated areas shall wear white, blue bordered lab coats or green uniforms depending upon their work assignments from their supervisor.

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- D. Plastic gloves shall be worn by all employees performing jacketing or dejacketing operations on S. S. material.
1. Additional supplies of these gloves will be maintained in the stock room, first floor, south wing.
 2. These gloves, which have been worn, shall be placed in the container provided for them in the isolated locker room at the end of each shift.
- E. White cotton gloves shall be worn by all employees performing any operation, except jacketing or dejacketing, on S. S. material, except when plastic gloves are designated by their supervisors.
1. Additional supplies of these gloves will be maintained in the stock room, first floor, south wing.
 2. These gloves, which have been worn, shall be discarded at the end of each shift in the non-accountable burnable waste cans provided in each isolated area.
- F. Safety shoes with yellow toes and heels shall be worn by all employees remaining in isolated areas for extended periods of time.
1. These shoes are not to be worn outside of, or taken from, isolated areas.
 2. Supervisors in isolated areas shall designate the employees who are to receive these shoes.

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G. Storm rubbers or plastic shoe covers shall be worn by all employees remaining in isolated areas for short periods of time.

1. Supplies of these rubbers and shoe covers will be maintained at the entrance of each isolated area.

H. Measurements for, and supplies of, green uniforms, white, blue bordered lab coats, gloves, storm rubbers and plastic shoe covers shall be arranged for at the stock room, first floor, south wing by supervisors of employees designated to wear them.

II. FIRE PROTECTION

All S. S. materials, magnesium, titanium and zirconium are pyrophoric materials, able to ignite spontaneously, particularly when in the form of chips, turnings, or fines. The following procedures must be followed when these materials are being worked upon.

A. An Ansul Metal-X 30 fire extinguisher must be placed just outside the enclosed area in which these materials are located.

1. No other extinguishing materials may be used on these materials because they will increase the burning rate.

B. Machining operations must be performed using the following precautions:

1. A flooding supply of a proper coolant, high-flash point mineral oil or water-soluble coolant, must be used.

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2. Speeds, feeds, and cutting tools must be chosen to prevent chips from being ignited by the heat of the cutting operation.
 3. Chips must be removed from the machine frequently and taken far enough away so that they cannot be ignited by a hot chip from the cutting operation.
 4. All chips not in storage or on machine beds must be kept in accountable, non-burnable, covered, vented containers and the chips must be submerged in high-flash point mineral oil.
- C. Powdering operations must be performed using the following precautions:
1. All loading and unloading of containers in which these materials are powdered or stored will be done in an argon atmosphere.
 2. A maximum of 3 lbs. of these powdered materials will be processed or stored in any one container.
 3. None of these powdered materials will be stored in the powdering operation area.

III. MAXIMUM PERMISSIBLE CONCENTRATIONS

- A. Air in the Clevite Research Center:

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1. 110 alpha disintegrations per minute per cubic meter of air.
 - a) All operations will be thoroughly investigated where the rate of alpha disintegrations exceeds 50 alpha disintegrations per minute per cubic meter of air.
- B. Air outside the Clevite Research Center:
 1. 4 alpha disintegrations per minute per cubic meter of air.
- C. Water released from the Clevite Research Center:
 1. 15,000 alpha disintegrations per minute per liter.
- D. Surfaces within an isolated area but not in direct contact with S. S. material:
 1. 100 alpha disintegrations per minute per square foot of surface.
 2. 2000 beta-gamma disintegrations per minute per square foot of surface.
- E. Surfaces of equipment or material leaving isolated areas:
 1. 10 alpha disintegrations per minute per square foot of surface.

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2. 200 beta-gamma disintegrations per minute per square foot of surface.

IV. SANITATION

- A. There will be no eating, drinking or smoking in isolated areas.
- B. Employees working in isolated areas shall use only the sanitary facilities provided for in the isolated locker room.

V. MOVEMENT OF EMPLOYEES AND MATERIAL BETWEEN ISOLATED AREAS

- A. All employees moving from one isolated area to another must remove their shoe covers or yellow painted safety shoes at the exit of the isolated area they are leaving; and must put on shoe covers or yellow painted safety shoes at the entrance of each isolated area they are entering.
- B. Material being moved from one isolated area to another must be carried in identified tote pans.
- C. Hand trucks, identified by yellow paint are for use in isolated areas only.
- D. Tote pans conveyed by truck from one isolated area to another must be transferred to non-contaminated trucks during transportation outside isolated areas.

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- E. If transfer from "clean" truck to yellow painted truck is not done, tote pans must be hand-carried in isolated area.

VI. CLOTHING FOR VISITORS

- A. Visitors entering isolated areas will be required to wear white, blue bordered lab coats, and plastic shoe covers.
- B. Supplies of these lab coats and shoe covers will be maintained at the entrances to isolated areas.

VII. LOCKER SHOWER ROOM

- A. The entire locker shower room shall be an isolated area.
- B. It will be divided into two areas, a "clean" area and a "possibly contaminated" area separated from each other by a partition with a doorway in it.
- C. The locker area will be the "clean" area and the remainder of the area will be the "possibly contaminated" area.
- D. All employees working in isolated areas must shower each night before changing to street clothes.

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VIII. PHYSICAL EXAMINATIONS

- A. All employees hired or transferred to work in isolated areas shall be given a physical examination including a complete blood count, a urine analysis and chest X-ray.
- B. The complete blood count and urine analysis shall be repeated at quarterly intervals.
- C. The pre-employment physical examination, including the complete blood count, urine analysis and chest X-ray, shall be repeated annually.

IX. EQUIPMENT LEAVING AN ISOLATED AREA

- A. Before equipment is moved from an isolated area it shall be smear tested, decontaminated if necessary, and retested to make certain that it does not exceed established limits for maximum permissible concentrations of licensed material on surfaces of equipment.

X. JANITOR AND DECONTAMINATION EQUIPMENT

- A. Janitor decontamination equipment shall be painted yellow to distinguish it from like equipment not used in isolated areas.
- B. It shall be stored in an isolated area.